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The inability to pay for health services in Central and Eastern Europe: evidence from six countries

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Background: Out-of-pocket payments for health services constitute a major financial burden for patients in Central and Eastern European (CEE) countries. Individuals who are unable to pay use different coping strategies (e.g. borrowing money or foregoing service utilization), which can have negative consequences on their health and social welfare. This article explores patients' inability to pay for outpatient and hospital services in six CEE countries: Bulgaria, Hungary, Lithuania, Poland, Romania and Ukraine. **Methods:** The analysis is based on quantitative data collected in 2010 in nationally representative surveys. Two indicators of inability to pay were considered: the need to borrow money or sell assets and foregoing service utilization. Statistical analyses were applied to investigate associations between the indicators of inability to pay and individual characteristics. **Results:** Patient payments are most common in Bulgaria, Ukraine, Romania and Lithuania and often include informal payments. Romanian and, particularly, Ukrainian patients most often face difficulties to pay for health services (with approximately 40% of Ukrainian payers borrowing money or selling assets to cover hospital payments and approximately 60% of respondents who need care foregoing services). Inability to pay mainly affects those with poor health and low incomes. **Conclusion:** Widespread patient payments constitute a major financial barrier to health service use in CEE. There is a need to formalize them where they are informal and to take measures to protect vulnerable population groups, especially those with limited possibilities to deal with payment difficulties.

Introduction

The transition period in Central and Eastern European (CEE) countries has brought significant changes to their health systems, including health care financing.[1,2] The severe economic downturn in the 1990s, coupled in many countries with rising unemployment, inflation, low salaries, tax evasion and a large informal sector, led to specific challenges, such as substantial deficits in the public financing of health systems. Countries struggled to retain the coverage levels of the communist period, which had given universal access to a broad range of (admittedly, poor-quality) health services.[3,4] Many opted to ration publicly funded health services, such as through limiting the scope of basic benefit packages or introducing patient cost-sharing. However, not all planned reforms were implemented, and some were reversed, largely due to a lack of political and social consensus.[5–7] Furthermore, implicit rationing had already become a common feature of CEE health systems. This included informal (under-the-table) patient payments, quasi-formal payments (introduced by health care providers to compensate for insufficient funding) and long waiting lists, which compelled patients to seek health care in the private sector.[5,8–10]

As a result, patients in CEE countries are now confronted with various payment obligations when using health services, and out-of-pocket payments constitute a major source of health care financing, accounting, in 2010, for 37.8% of total health expenditure in Latvia, 40.5% in Ukraine and 44.2% in Bulgaria.[11] This imposes a particular financial burden on vulnerable groups in the population, such as those with low incomes or chronic conditions.[12–14] Patients who are unable to pay use different coping strategies, either to meet health care costs (e.g. by limiting other expenses, borrowing money or selling assets) or to avoid payments (e.g. by foregoing or delaying health care utilization).[15–18] Both types of strategy are likely to have negative consequences for health and social welfare at the individual and population level. Although this issue has major policy implications, empirical evidence on the inability to pay in CEE countries is sparse. This is surprising, as it is likely that this problem will grow in the future. The current economic crisis has already led to an increase in the level of unemployment throughout the CEE region and in some countries, deepened poverty and social inequality, while high public budget deficits led some governments to increase their reliance on private sources of health care financing.[19–21]

This article explores the inability to pay for health services in six CEE countries: Bulgaria, Hungary, Lithuania, Poland, Romania and Ukraine. We focus on two key indicators of inability to pay: the need to borrow money and/or sell assets (representing strategies aimed

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at meeting health care costs) and foregoing health service utilization (a strategy to avoid costs). The analysis is based on quantitative data collected in 2010 in nationally representative surveys in the six countries mentioned earlier. The countries present a suitable base for comparison, as they share a similar communist health system legacy, as well as broadly similar health reform objectives. At the same time, our analysis takes account of the diversity across the six countries, including their socio-economic development, integration into supranational structures (with Ukraine left outside the enlarged EU) and differences in the financing and organization of health systems.

Methods

The data analysed in this article were collected in surveys among nationally representative samples of the adult population in each of the six CEE countries (Bulgaria, Hungary, Lithuania, Poland, Romania and Ukraine). The main objective of the surveys was to collect quantitative data on the individual willingness and ability to pay for health services. To ensure comparability of data across countries, the questionnaire was identical for all six countries. It was developed in English and then translated into national languages (back translations were undertaken by independent translators to verify the quality of the translations). The data collection process took place simultaneously in all six countries in a period of 20 calendar days in July–August 2010. The surveys were conducted using face-to-face interviews. The samples were selected using a multi-stage random probability design, which included: (i) distribution of sampling points, (ii) selection of households based on the random route method and (iii) selection of the adult respondent within the household based on the last birthday principle. The data collection resulted in approximately 1000 effective interviews per country. The response rates were 38% in Poland, 42% in Ukraine, 55% in Romania and Lithuania, 67% in Bulgaria and 76% in Hungary. The samples are fairly representative for the countries (Supplementary Appendix 1). The survey questions of interest in this article refer to the inability to pay for health services by individuals (Supplementary Appendix 2).

We applied statistical analyses to investigate associations between indicators of inability to pay and individual characteristics, using the software package Stata 11. To analyse the first indicator of inability to pay (the need to borrow money and/or sell assets), a sequential logit model is used.[22] It allows us to examine the relation between respondents' socio-demographic characteristics and the need of borrowing/selling assets, while accounting for the use of health services and paying for services. The association between the second indicator of inability to pay (foregoing health services) and respondents' characteristics is studied by means of multinomial logistic regression. Differences are analysed for four groups of respondents: users who did not forego services due to payments (reference category), users who forewent services due to payments, non-users who forewent services due to payments and non-users who did not forego services due to payments.

The explanatory variables in both analyses are age, gender, place of residence, education, equivalized household income (using the modified Organization for Economic Cooperation and Development (OECD) equivalence scale[23]), health insurance status, self-perceived health status and presence of a diagnosed chronic illness. Due to the high number of missing data on income (average for all countries: 7.75%), the missing values were replaced using data on the perception of income, obtained in the same survey (Supplementary Appendix 3). A dummy variable (income proxy: 1 = proxied income, 0 = reported income) was included in the model to indicate the replaced missing values.

Variables used in the models are described in Supplementary Appendix 3. The analyses are done separately for each country, as well as jointly for all countries. Because the analyses per country showed similar patterns, this article presents only the results for the aggregated sample of six countries. The models include country indicators, except for Lithuania, which is taken as the reference country, as our initial analysis found that this country usually ranked in the middle in cross-country comparisons.

Results

Tables 1 and 2 present the descriptive statistics related to out-of-pocket payments for health services and the two coping strategies in response to inability to pay (i.e. borrowing money or selling assets, and foregoing utilization). The statistics show that out-of-pocket payments for health services are common in Bulgaria (reported by >70% of outpatient service users and approximately 60% of hospital care users). However, most of these payments are formal and comparatively small. Patients also very often pay for health services in Ukraine, Romania and Lithuania (with up to 70% of users paying for hospital services in Ukraine). In contrast to Bulgaria, payments in these countries are often also informal and relatively high. The percentage of users who report paying for health services is lowest in Poland (where approximately 80% of users did not pay for services at all) and Hungary. Yet, in Hungary, payments for hospitalizations are reported by 46% of users, and the vast majority of payments are informal.

Overall, payments related to hospitalizations are more common and more often include informal payments than payments for outpatient care. The median amount of money paid in a year is also higher for hospital services than for outpatient services. Thus, the burden of hospital payments for individuals is substantial. The highest median share of these payments in annual equivalized household income was reported in Ukraine (7.8%) and Romania (4.7%). For 43.5 and 23.9% of payers in these two countries, respectively, these payments accounted for at least 10% of household income per equivalent adult.

The differences in out-of-pocket payments for outpatient and inpatient services have implications for the coping strategies to deal with the inability to pay. The strategy of borrowing money or selling assets to cover payments is reported more frequently for inpatient than for outpatient services. The median amount of money borrowed is also higher for inpatient than for outpatient services, which seems to be related to the higher payments for inpatient care. The money borrowed is often equal to the entire payment, with the median amount of money borrowed as a percentage of total payment being 70%. Ukrainian and Romanian patients most often report borrowing money or selling assets, whereas in Hungary, this strategy is least commonly reported.

In contrast, the second strategy (i.e. foregoing health service utilization) is more often applied for outpatient care than for hospital services. Not visiting a physician at least once or not being hospitalized due to inability to pay is most commonly reported in Ukraine (by approximately 60% of those in need). In all countries, the median number of foregone services in a year is two for outpatient visits and one for hospitalizations. The average number of foregone services is highest in Romania (3.3 visits to physicians and 1.8 hospitalizations) and lowest in Poland and Hungary.

The results of the sequential logit model (table 3) indicate that paying for health care services is more common not only among younger respondents, women (for outpatient services only), those living in rural areas and individuals with higher income, but also among those with worse health status or a chronic condition. The results also confirm that paying for services is significantly more prevalent in Bulgaria, Romania and Ukraine, whereas respondents in Hungary and Poland less often pay for health services, compared

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Table 1 Out-of-pocket (OOP) payments for outpatient and inpatient services—descriptive statistics

Indicators		Bulgaria	Hungary	Lithuania	Poland	Romania	Ukraine	Total
Number of respondents		1003	1037	1012	1000	1000	1000	6052
Number and percentage of respondents who use services	P	736 (73.4)	826 (79.7)	739 (73.0)	735 (73.5)	651 (65.1)	572 (57.2)	4259 (70.4)
	H	171 (17.0)	219 (21.1)	165 (16.3)	159 (15.9)	192 (19.2)	184 (18.4)	1090 (18.0)
Number and percentage of users who pay for services[a]								
Formal and/or informal payments	P	540 (72.4)	223 (26.9)	316 (42.7)	171 (23.2)	341 (52.2)	322 (56.1)	1913 (44.5)
	H	105 (61.0)	101 (45.9)	99 (59.6)	34 (21.4)	112 (58.0)	130 (70.7)	581 (53.1)
Formal payments	P	512 (67.0)	105 (12.7)	233 (31.5)	142 (19.3)	275 (42.1)	240 (41.8)	1507 (35.1)
	H	97 (56.4)	23 (10.5)	50 (30.1)	13 (8.2)	81 (42.0)	99 (53.8)	363 (33.2)
Informal payments	P	71 (9.5)	174 (21.0)	146 (19.7)	49 (6.7)	187 (28.6)	208 (36.2)	835 (19.4)
	H	34 (19.8)	97 (44.1)	82 (49.4)	26 (16.4)	95 (49.2)	89 (48.4)	423 (38.7)
Amount paid per year (€): median value in payers' sample								
Formal and/or informal payments	P	6.0	35.1	28.6	48.8	46.5	20.6	24.4
	H	25.0	87.7	85.7	48.8	93.0	103.1	73.2
Formal payments	P	5.5	35.1	28.6	48.4	34.9	20.6	17.5
	H	24.0	35.1	57.1	48.8	58.1	103.1	48.8
Informal payments	P	15.0	35.1	28.6	24.3	23.3	10.3	23.3
	H	10.0	105.3	85.7	48.8	46.5	41.2	57.1
Total amount paid as % of equivalized annual income[b]: median in payers' sample	P	0.3%	0.9%	0.9%	1.1%	1.8%	1.7%	0.9%
	H	1.4%	2.3%	2.2%	1.0%	4.7%	7.8%	3.1%
Percentage of payers with a total amount paid $\geq$10% of equivalized annual income	P	3.0%	2.3%	6.2%	3.2%	13.2%	11.4%	6.7%
	H	13.4%	8.2%	16.2%	3.1%	23.9%	43.5%	21.1%

P: outpatient physician services; H: inpatient hospital services.
a: Missing values of payments (number and percentage of users): Bulgaria: P = 51 (6.7%), H = 14 (8.1%); Hungary: P = 13 (1.6%), H = 4 (1.8%); Lithuania: P = 10 (1.4%), H = 1 (0.6%); Poland: P = 13 (1.8%), H = 3 (1.9%); Romania: P = 42 (6.4%), H = 19 (9.8%); Ukraine: P = 6 (1.0%), H = 6 (3.3%).
b: Household income was equalized using the OECD-modified scale, which assigns the weight 1 to the first adult, 0.5 to each additional adult and 0.3 to each child aged <14 years (in our study, a person aged <18).

Table 2 Indicators of inability to pay—descriptive statistics

Indicators		Bulgaria	Hungary	Lithuania	Poland	Romania	Ukraine	Total
Borrowing money/selling assets								
Number and percentage of payers who borrow/sell	P	33 (5.6)	13 (5.5)	35 (10.7)	24 (13.0)	83 (21.7)	60 (18.3)	248 (12.1)
	H	22 (18.5)	12 (11.4)	23 (23.0)	9 (24.3)	45 (34.4)	58 (42.6)	169 (26.9)
Amount borrowed per year (€): median value in borrowers' sample	P	50.0	17.5	57.1	109.8	69.8	51.5	57.1
	H	140.0	87.7	142.9	122.0	93.0	128.9	116.3
Amount borrowed as % of amount paid: median in borrowers' sample	P	93.2%	50.0%	100.0%	63.3%	62.5%	50.0%	66.7%
	H	100.0%	63.3%	66.7%	71.4%	75.0%	66.7%	70.7%
Amount borrowed as % of equivalized income[a]: median in borrowers' sample	P	2.8%	0.6%	2.6%	2.5%	3.3%	3.8%	3.1%
	H	8.5%	2.7%	4.3%	3.7%	4.7%	10.3%	6.3%
Foregoing services								
Number and percentage of users (actual and potential)[b] who forewent services	P	307 (40.4)	257 (29.7)	214 (28.0)	215 (28.5)	284 (42.0)	465 (64.6)	1742 (38.4)
	H	60 (29.1)	27 (11.6)	32 (17.8)	23 (13.2)	94 (39.5)	165 (60.4)	401 (30.8)
Number of foregone services per year: mean and standard deviation in sample of those who forewent[c]	P	2.7 (2.2)	2.5 (2.0)	2.3 (2.1)	2.5 (2.0)	3.3 (4.8)	2.7 (2.2)	2.7 (2.8)
	H	1.6 (1.3)	1.3 (0.8)	1.4 (0.9)	1.3 (0.7)	1.8 (1.3)	2.0 (1.6)	1.7 (1.4)

P: outpatient physician services; H: inpatient hospital services.
a: Household income was equalized using the OECD-modified scale, which assigns the weight 1 to the first adult, 0.5 to each additional adult and 0.3 to each child aged <14 (in our study, a person aged <18).
b: The sample users (actual and potential) included (1) respondents who used health care services in the past 12 months and did not forego any services, and (2) respondents who did not use services but forewent services due to inability to pay.
c: In all countries, the median number of foregone services equals 2 for outpatient physician services and 1 for hospitalization.

with Lithuania. After controlling for the use of health care services and for paying for services, the probability of borrowing money or selling assets increases with a lower health status and a lower income. For individuals with a poor health status, the odds of borrowing money/selling assets to pay for outpatient services and hospital services are, respectively, 5.2 and 3.8 times higher than the odds for individuals in good health. Also, the presence of a chronic illness is significantly associated with this coping strategy (for outpatient services). On the other hand, for a one unit increase in log-transformed income (a 2.72-fold increase), we see an approximately 50% decrease in the odds of borrowing money/selling assets for both types of services. We also observe that borrowing/selling assets is more likely among younger respondents and among those with a university education (for hospital services, $P \leq 0.1$). Furthermore, this coping strategy is significantly more often applied in Romania, but less often in Bulgaria and Hungary, compared with Lithuania.

The association of the second type of coping strategy (i.e. foregoing services) with the selected characteristics of respondents was studied by means of a multinomial logistic regression (table 4).

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Table 3 Borrowing money/selling assets to pay for health services—sequential logit model

Variables	Outpatient physician services						Inpatient hospital services					
	Using services		Paying for services		Borrowing/selling		Using services		Paying for services		Borrowing/selling	
	Coeff.	OR	Coeff.	OR	Coeff.	OR	Coeff.	OR	Coeff.	OR	Coeff.	OR
Age (10 years)	−0.043* (0.022)	0.958	−0.120*** (0.023)	0.887	−0.274*** (0.053)	0.760	−0.061*** (0.024)	0.941	−0.097** (0.044)	0.908	−0.119* (0.070)	0.888
Gender (male → female)	0.497*** (0.064)	1.643	0.212*** (0.070)	1.237	0.032 (0.159)	1.032	−0.064 (0.073)	0.938	0.168 (0.133)	1.183	−0.017 (0.208)	0.984
Residence place (rural → urban)	−0.036 (0.071)	0.964	−0.164** (0.075)	0.848	0.028 (0.155)	1.029	−0.047 (0.078)	0.954	−0.233* (0.144)	0.792	−0.078 (0.215)	0.925
University education[a](no →yes)	0.244*** (0.088)	1.276	0.130 (0.094)	1.139	−0.098 (0.214)	0.906	0.019 (0.103)	1.019	0.113 (0.195)	1.119	0.457* (0.280)	1.580
Perceived health: poor	1.272*** (0.152)	3.568	0.320*** (0.121)	1.377	1.652*** (0.255)	5.216	1.249*** (0.120)	3.486	0.057 (0.212)	1.058	1.323*** (0.343)	3.754
Perceived health: fair	0.692*** (0.086)	1.997	0.211** (0.090)	1.235	0.693*** (0.216)	2.000	0.394*** (0.098)	1.482	−0.013 (0.183)	0.988	0.688** (0.315)	1.990
Chronic condition(no → yes)	1.371*** (0.087)	3.940	0.376*** (0.087)	1.457	0.447** (0.204)	1.563	1.050*** (0.094)	2.858	0.554*** (0.179)	1.740	0.319 (0.306)	1.376
Public health insurance(no →yes)	0.582*** (0.105)	1.789	−0.032 (0.120)	0.969	0.058 (0.232)	1.060	0.473*** (0.128)	1.605	0.199 (0.232)	1.221	−0.021 (0.346)	0.979
Monthly income per adult equivalent[b] (€)	0.338*** (0.058)	1.402	0.271*** (0.068)	1.311	−0.708*** (0.141)	0.493	0.021 (0.069)	1.021	0.388*** (0.132)	1.475	−0.659*** (0.211)	0.517
Income proxy(no →yes)	−0.089 (0.132)	0.915	0.166 (0.156)	1.180	0.422 (0.293)	1.525	−0.197 (0.173)	0.821	−0.670** (0.337)	0.512	0.116 (0.625)	1.123
Bulgaria	0.371*** (0.117)	1.449	1.685*** (0.124)	5.392	−0.895*** (0.277)	0.409	0.067 (0.131)	1.069	0.392* (0.243)	1.480	−0.565* (0.375)	0.569
Hungary	0.457*** (0.115)	1.580	−0.715*** (0.111)	0.489	−0.659* (0.353)	0.518	0.352*** (0.122)	1.422	−0.568*** (0.218)	0.567	−0.520 (0.411)	0.595
Poland	0.182* (0.116)	1.200	−0.907*** (0.120)	0.404	0.402 (0.304)	1.494	−0.010 (0.134)	0.990	−1.626*** (0.261)	0.197	0.253 (0.483)	1.288
Romania	−0.222** (0.111)	0.801	0.635*** (0.116)	1.888	0.720*** (0.238)	2.054	0.264** (0.127)	1.302	0.243 (0.232)	1.275	0.560* (0.340)	1.750
Ukraine	−0.417*** (0.141)	0.659	0.664*** (0.159)	1.942	−0.256 (0.325)	0.774	0.336** (0.168)	1.399	0.938*** (0.315)	2.554	0.266 (0.445)	1.304
Constant	−2.304*** (0.339)		−1.575*** (0.404)		2.070*** (0.825)		−2.764*** (0.410)		−1.813** (0.777)		2.038* (1.233)	
Observations	5809						5929					
Pseudo R^2	0.157						0.116					
LR χ^2	2007.4						773.1					
Probability > χ^2	0.000						0.000					

OR: odds ratio.
Standard errors in parentheses; ***$P \leq 0.01$, **$P \leq 0.05$, *$P \leq 0.1$.
a: The International Standard Classification of Education (ISCED) was applied, University education = ISCED 5–6.
b: The natural log transformation was used.

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Table 4 Foregoing health services due to inability to pay—multinomial logistic regression

Variables	Foregoing outpatient physician services[a]						Foregoing inpatient hospital services[a]					
	Users forewent		Non-users forewent		Non-users did not forego		Users forewent		Non-users forewent		Non-users did not forego	
	Coeff.	RRR	Coeff.	RRR	Coeff.	RRR	Coeff.	RRR	Coeff.	RRR	Coeff.	RRR
Age (10 years)	−0.054** (0.024)	0.948	0.050 (0.037)	1.052	0.011 (0.026)	1.011	−0.003 (0.062)	0.997	0.052 (0.051)	1.053	0.061** (0.026)	1.063
Gender (male → female)	0.167** (0.073)	1.182	−0.371*** (0.109)	0.690	−0.455*** (0.075)	0.635	0.084 (0.191)	1.088	0.254* (0.157)	1.289	0.071 (0.079)	1.074
Residence place (rural → urban)	−0.110 (0.077)	0.896	−0.077 (0.117)	0.926	0.054 (0.083)	1.056	−0.231 (0.190)	0.794	0.124 (0.162)	1.132	0.0003 (0.085)	1.000
University education[b] (no →yes)	−0.221** (0.102)	0.802	−0.137 (0.149)	0.872	−0.379*** (0.102)	0.684	−0.400 (0.300)	0.670	−0.156 (0.220)	0.856	−0.045 (0.110)	0.956
Perceived health: poor	0.553*** (0.122)	1.739	−0.345* (0.223)	0.709	−1.586*** (0.220)	0.205	1.120*** (0.334)	3.066	0.051 (0.258)	1.052	−1.190*** (0.130)	0.304
Perceived health: fair	0.246*** (0.094)	1.279	−0.118 (0.138)	0.889	−0.763*** (0.103)	0.466	0.234 (0.315)	1.263	0.143 (0.216)	1.154	−0.420*** (0.103)	0.657
Chronic condition (no → yes)	0.051 (0.090)	1.052	−1.157*** (0.144)	0.315	−1.452*** (0.107)	0.234	0.212 (0.284)	1.236	−0.089 (0.201)	0.915	−1.062*** (0.100)	0.346
Public health insurance (no →yes)	−0.054 (0.121)	0.948	−1.003*** (0.163)	0.367	−0.391*** (0.127)	0.676	0.353 (0.310)	1.424	−0.611*** (0.239)	0.543	−0.430*** (0.140)	0.651
Monthly income per adult equivalent[c] (€)	−0.333*** (0.069)	0.717	−0.697*** (0.096)	0.498	−0.351*** (0.069)	0.704	−0.417** (0.176)	0.659	−0.494*** (0.141)	0.610	−0.032 (0.075)	0.968
Income proxy (no →yes)	0.449*** (0.156)	1.567	0.294 (0.232)	1.342	0.253* (0.155)	1.288	0.425 (0.440)	1.530	0.497* (0.334)	1.644	0.172 (0.188)	1.187
Bulgaria	0.458*** (0.125)	1.581	−0.056 (0.216)	0.946	−0.276* (0.134)	0.759	0.305 (0.392)	1.357	0.364 (0.312)	1.439	−0.049 (0.138)	0.952
Hungary	0.221* (0.123)	1.248	−0.098 (0.222)	0.907	−0.484*** (0.129)	0.616	−0.165 (0.416)	0.848	−0.702* (0.384)	0.496	−0.341*** (0.126)	0.711
Poland	−0.019 (0.135)	0.981	0.072 (0.229)	1.075	−0.218* (0.129)	0.804	−0.881* (0.553)	0.414	0.102 (0.358)	1.107	−0.025 (0.138)	0.976
Romania	0.401*** (0.128)	1.493	0.328* (0.205)	1.389	0.360*** (0.126)	1.434	0.925*** (0.361)	2.522	0.750*** (0.295)	2.117	−0.193 (0.137)	0.825
Ukraine	0.923*** (0.164)	2.517	0.957*** (0.227)	2.605	0.609*** (0.173)	1.839	1.745*** (0.439)	5.724	1.110*** (0.345)	3.034	−0.144 (0.188)	0.866
Constant	0.725* (0.402)		2.855*** (0.542)		2.382*** (0.399)		−1.033 (1.051)		0.712 (0.819)		2.849*** (0.445)	
Observations	5667						5762					
Pseudo R^2	0.115						0.125					
LR χ^2	1576.9						1025.2					
Probability > χ^2	0.000						0.000					

RRR: relative risk ratio.
Standard errors in parentheses; ***$P \leq 0.01$, **$P \leq 0.05$, *$P \leq 0.1$.
a: Multinominal logistic regression, reference group— users who did not forgo any services.
b: The International Standard Classification of Education (ISCED) was applied, University education = ISCED 5-6.
c: The natural log transformation was used.

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Users and non-users who forewent services due to the inability to pay were compared with users who did not face this problem. A higher income resulted in a lower probability of foregoing services, irrespective of the group (users and non-users). In addition, users were more likely to forego inpatient and outpatient services if their health status was poor. For individuals with poor health relative to individuals with good health, the relative risk ratio of foregoing services is 1.7 and 3.1 for outpatient care and hospital care, respectively. Foregoing outpatient care is also significantly more likely among women and young people. Compared with Lithuania, foregoing outpatient and hospital care is significantly more common in Ukraine and Romania.

Discussion

In this article, we have analysed patients' inability to pay for health services in six CEE countries. The analysis is limited to out-of pocket payments for health services incurred by individuals, not considering other direct costs of illness (e.g. for pharmaceuticals) and indirect costs (e.g. loss of income due to illness) for individuals, and also other household members. This is a potential limitation of our study, as we do not capture the total burden of illness for households. We might also miss some interrelations, as the inability to pay for services can, for example, be a result of high costs for pharmaceuticals. Another drawback of our study is that we investigated only two types of behaviour (i.e. borrowing money/selling assets and foregoing health service utilization), whereas households might also use other strategies to deal with payment difficulties, such as cutting other expenses or using savings. However, in our analysis, we did not aim to depict the full spectrum of coping behaviours, but only examine the two main types of strategies (i.e. strategies aimed at meeting the costs and strategies aimed at avoiding the costs), which have, in various studies, been found to be the most commonly used.[15–18,24]

Our study provides important insights into the prevalence of patient payments for health services in CEE countries and the burden that these payments constitute. The results confirm that paying for health services is common, but also that there are major differences across countries. Reasons for the different patterns and frequency of payments are likely to include the level of public resources devoted to health, as well as differences in attitudes and health system governance.

In Poland and Hungary, countries with a relatively high public health spending per capita,[11] patient payments occur least frequently. In both countries, the use of publicly financed health services does generally not require formal patient co-payments.[25,26] Instead, payments occur in the private sector (due to poor access to publicly financed care, mostly in the outpatient sector), or are requested by public health care providers (quasi-formal payments, mostly for hospital care).[27] The latter practice, which is of questionable legality, is being restricted in Poland. There are also some indications that the spread of informal payments in Poland was reduced as a result of anticorruption measures undertaken in the past years.[28,29] This might explain why Polish respondents relatively rarely reported paying for services. In contrast, in Hungary, there was a high frequency of informal payments (especially for hospital services), which might be due to a more positive attitude towards these payments among health care consumers and policymakers than in some other countries of the region.[30]

In the other countries, i.e. Ukraine, Romania, Lithuania and Bulgaria, paying for health services is common. Among them, Bulgaria is the only country with a universal system of formal co-payments for publicly financed health services.[31] This could explain why Bulgarian consumers most often reported small formal payments. In Lithuania, Romania and Ukraine, informal as well as quasi-formal payments (frequently requested by providers to compensate for insufficient public funding) are widespread, often imposing a double financial burden on patients.[32,33] These payments are largely outside the control of governments and thus not supported by measures to secure equity. The high frequency of these payments, combined with relatively high poverty rates, especially in Ukraine and Romania,[34,35] has catastrophic consequences for patients and their households. Our results indicate that Ukrainian and Romanian patients face the greatest burden of payments and difficulties in paying for health services. As mentioned earlier, the financial burden could be even greater, if other costs of illness were considered, such as the costs for pharmaceuticals, which are particularly high in CEE countries.[11] Policies to reduce out-of-pocket payments, particularly in countries such as Romania and Ukraine, seem to be urgently needed.

Based on the results of our analysis, it can be concluded that patient payments are determined by health care needs on one hand (i.e. poor self-perceived health status, chronic condition), and the ability to pay (i.e. higher income) for better quality and access to services on the other hand. As indicated by our results, individuals who have greater needs but a low ability to pay for services (i.e. those with low income) often forego using health services and more often borrow money and sell assets to cover payments, compared with healthier and wealthier groups.

The choice of a strategy in response to payment difficulties might be affected by the ability of households to mobilize financial resources (resource portfolio), as well as the type of health problems and related costs.[16–18] Individuals with more resources (material, human and social) have also greater ability to borrow money or sell assets.[15,16,24,36] In our study, we observe that younger respondents and those with a university education are more likely to apply this strategy. Households might also try to mobilize resources if the health problem is severe or care is not initiated by the patient.[16,17] Thus, we observe that foregoing care is less common for hospital than for outpatient care, whereas the opposite is true for the strategy of borrowing money/selling assets.

Strategies in response to cost pressure may have adverse consequences for individuals, households and society as a whole. Not seeking health care when needed, as commonly reported by the respondents in our study, might worsen one's health status, ultimately increasing the cost of illness, and might lead to a deterioration of one's health, economic and social status. Borrowing money, if it leads to accumulated debt, might bring similar negative results in the long run.[16,17] Policies are required to protect the most vulnerable population groups and to ensure more equitable access to health services. Replacing informal or quasi-formal payments with a universal system of formal charges might help to protect individuals with low income or poor health, by exempting them from payments or applying fees limits. However, the potential of such policies to enhance equity is limited. First, it is challenging to develop and apply exemption mechanisms that effectively target vulnerable population groups.[37,38] Second, formal fees rarely substitute for informal payments, unless the reasons for their presence are eliminated.[10,39,40] Therefore, public investments in CEE health systems to enhance the quality and accessibility of health services, as well as improved system governance, are crucial to improve equity of health financing and utilization in this part of Europe.

Supplementary Data

Supplementary data are available at *EURPUB* online.

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Key points

- In the most poorly financed CEE health systems, patients are often confronted with payment obligations for health services. Many of these obligations are not state-regulated (as they are informal or quasi-formal) and represent a significant financial burden for households.
- Out-of-pocket payments for health care in CEE countries are determined by individuals' health needs and ability to pay. Those who have greater needs but low income often forego health care or have to borrow money and sell assets to pay for services.
- The choice of coping strategies in response to payment difficulties depends on the ability of individuals to mobilize resources and the type of health services; borrowing money or selling assets is more common for hospital services, whereas foregoing utilization is more often applied in the case of inability to pay for outpatient services.

References

1 Kutzin J, Cashin C, Jakab M, editors. *Implementing Health Financing Reform Lessons From Countries in Transition*. Copenhagen: World Health Organization Regional Office for Europe, on behalf of the European Observatory on Health Systems and Policies, 2010.

2 Preker AS, Jakab M, Schneider M. Health financing reforms in central and eastern Europe and the former Soviet Union. In: Mossialos E, Dixon A, Figueras J, Kutzin J, editors. *Funding Health Care: Options for Europe*. Buckingham: Open University Press, 2002: 80–109.

3 Rechel B, McKee M. Health reform in central and eastern Europe and the former Soviet Union. *Lancet* 2009;374:1186–95.

4 Golinowska S, Sowa A, Topór-Mądry R. *Health Status and Health Care Systems in Central and Eastern Europe Countries: Bulgaria, Estonia, Poland, Slovakia and Hungary*. Brussels: Centre for European Policy Studies, 2006.

5 Gotsadze G, Gaál P. Coverage decisions: benefit entitlements and patient cost sharing. In: Kutzin J, Cashin C, Jakab M, editors. *Implementing Health Financing Reform Lessons from Countries in Transition*. Copenhagen: World Health Organization Regional Office for Europe, on behalf of the European Observatory on Health Systems and Policies, 2010.

6 Teutsch S, Rechel B. Ethics of resource allocation and rationing medical care in a time of fiscal restraint US and Europe. *Public Health Rev* 2012: 34.

7 Robinson R. User charges for health care. In: Mossialos E, Dixon A, Figueras J, Kutzin J, editors. *Funding Health Care: Options for Europe*. Buckingham: Open University Press, 2002.

8 Stepurko T, Pavlova M, Gryga I, Groot W. Empirical studies on informal patient payments for health care services: a systematic and critical review of research methods and instruments. *BMC Health Serv Res* 2010;10:273.

9 Lewis M. Informal health payments in Central and Eastern Europe and the former soviet union: issues, trends, and policy implications. In: Mossialos E, Dixon A, Figueras J, Kutzin J, editors. *Funding Health Care: Options for Europe*. Buckingham: Open University Press, 2002: 184–205.

10 Gaál P, Jakab M, Shishkin S. Strategies to address informal payments for health care. In: Kutzin J, Cashin C, Jakab M, editors. *Implementing Health Financing Reform Lessons from Countries in Transition*. Copenhagen: World Health Organization Regional Office for Europe, on behalf of the European Observatory on Health Systems and Policies, 2010: 327–360.

11 WHO. *European Health for all Database (offline version)*, August 2012 edn. Copenhagen: World Health Organization Regional Office for Europe, 2012.

12 Shakarishvili G. *Poverty and Equity in Healthcare Finance: Analyzing Post-Soviet Healthcare Reform*. Budapest: Local Government and Public Service Reform Initiative Open Society Institute, 2006.

13 Balabanova D, McKee M, Pomerleau J, et al. Health service utilization in the former Soviet Union: evidence from eight countries. *Health Serv Res* 2004;39: 1927–49.

14 Xu K, Evans DB, Kawabata K, et al. Household catastrophic health expenditure: a multicountry analysis. *Lancet* 2003;362:111–17.

15 Sauerborn R, Adams A, Hien M. Household strategies to cope with the economic costs of illness. *Soc Sci Med* 1996;43:291–301.

16 Russel S. The economic burden of illness for households in developing countries: a review of studies focusing on malaria, tuberculosis, and human immunodeficiency virus/acquired immunodeficiency syndrome. *Am J Trop Med Hyg* 2004; 71(Suppl. 2):147–55.

17 Chuma J, Gilson L, Molyneux C. Treatment-seeking behaviour, cost burdens and coping strategies among rural and urban households in Coastal Kenya: an equity analysis. *Trop Med Int Health* 2007;12:673–86.

18 McIntyre D, Thiede M, Dahlgren G, Whitehead M. What are the economic consequences for households of illness and of paying for health care in low- and middle-income country contexts? *Soc Sci Med* 2006;62:858–65.

19 Blažek J, Netrdová P. Regional unemployment impacts of the global financial crisis in the new member states of the EU in Central and Eastern Europe. *Eur Urban Reg Stud* 2012;19:42–61.

20 De Beer P. *The Impact of the Crisis on Earnings and Income Distribution in the EU*. Brussels: European Trade Union Institute, 2012.

21 Holt E. Romania's health system lurches into new crisis. *Lancet* 2010;376:1211–12.

22 Buis ML. *SEQLOGIT: Stata Module to Fit a Sequential Logit Model*. Statistical Software Components, 2013. Available at: http://ideas.repec.org/c/boc/bocode/s456843.html (15 June 2013, date last accessed).

23 Hagenaars AJM, De Vos K, Zaidi MA. *Poverty Statistics in the Late 1980s: Research Based on Micro-Data*. Luxembourg: Office for Official Publications of the European Communities, 1994.

24 Kabir MA, Rahman A, Salway S, Pryer J. Sickness among the urban poor: a barrier to livelihood security. *J Int Dev* 2000;12:707–22.

25 Baji P, Pavlova M, Gulácsi L, Groot W. User fees for public health care services in Hungary: expectations, experience, and acceptability from the perspectives of different stakeholders. *Health Policy* 2011;102:255–62.

26 Tambor M, Pavlova M, Woch P, Groot W. Diversity and dynamics of patient cost-sharing for physicians' and hospital services in the 27 European Union countries. *Eur J Public Health* 2011;21:585–90.

27 Golinowska S, Tambor M. Out-of-pocket payments on health in Poland: size, tendency and willingness to pay. *Soc Econ Central East Europe* 2012;34:293–312.

28 Sagan A, Panteli D, Borkowski W, et al. Poland: health system review. *Health Syst Transit* 2011;13:1–193.

29 Golinowska S. Opłaty nieformalne w ochronie zdrowia. Perspektywa i doświadczenia polskie (Informal payments in health care. Polish perspective and experiences). *Zesz Nauk Ochr Zdr Zdr Publ Zarz* 2010;VIII:12–28.

30 Stepurko T, Pavlova M, Gryga I, Groot W. Informal patient payments and public attitudes towards these payments: evidence from six CEE countries. *Scr Sci Med* 2011;43:143–6.

31 Atanasova E, Pavlova M, Velickovski R, et al. What have 10 years of health insurance reforms brought about in Bulgaria? Re-appraising the Health Insurance Act of 1998. *Health Policy* 2011;102:263–9.

32 Danyliv A, Stepurko T, Gryga I, et al. Is there a place for the patient in the Ukrainian health care system? Patient payment policies and investment priorities in health care in Ukraine. *Soc Econ Central East Europe* 2012;34:293–312.

33 Murauskiene L, Pavlova M, Veniute M, Groot W. Towards a more comprehensive view on patient payments in Lithuania: new findings from a population survey. *Soc Econ Central East Europe* 2012;34:293–312.

34 Libanova E, Cherenko L, Sarioglo V. *Poverty and Social Impact Analysis of the Economic Crisis in Ukraine*. Kiev: United Nations Development Programme, 2009.

35 Eurostat. *Combating Poverty and Social Exclusion A Statistical Portrait of the European Union 2010*. Luxembourg: European Commission, 2010.

36 Wilkes A, Yu H, Bloom G, Gu X. *Coping with the Costs of Severe Illness in Rural China*. Brighton: Institute of Development Studies, 1997.

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37 Gilson L, Russell S, Buse K. The political economy of user fees with targeting: developing equitable health financing policy. *J Int Dev* 1995;7:369–401.

38 Russell S, Gilson L. User fee policy to promote health service access for the poor: a wolf in sheep's clothing? *Int J Health Serv* 1997;27:359–379.

39 Baji P, Pavlova M, Gulácsi L, et al. Informal payments for healthcare services and short-term effects of the introduction of visit fee on these payments in Hungary. *Int J Health Plann Manage* 2012;27:63–79.

40 Belli P, Gotsadze G, Shahriari H. Out-of-pocket and informal payments in health sector: evidence from Georgia. *Health Policy* 2004;70:109–123.

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Blood pressure among rural Montenegrin children in relation to poverty and gender

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Background: Health inequalities may begin during childhood. The aim of this study was to investigate the main effect of poverty and its interactive effect with gender on children's blood pressure. **Methods**: The study was performed in two elementary schools from a rural region near Podgorica, the capital of Montenegro. A questionnaire including questions on family monthly income, children's physical activity and the consumption of junk food was self-administered by parents of 434 children (223 boys and 211 girls) aged 6–13 years. Children's poverty level was assessed using the recommendations from the National Study on Poverty in Montenegro. Children's body weight and height were measured and body mass index-for-gender-and-age percentile was calculated. An oscillometric monitor was used for measurement of children's resting blood pressure in school. **Results**: A two-factorial analysis of variance with body mass index percentile, physical activity and junk food as covariates showed an interaction of gender and poverty on children's blood pressure, pointing to synergy between poverty and female gender, with statistical significance for raised diastolic pressure ($F = 5.462$; $P = 0.021$). Neither physical activity nor the consumption of junk food explained the interactive effect of poverty and gender on blood pressure. **Conclusion**: We show that poverty is linked to elevated blood pressure for girls but not boys, and this effect is statistically significant for diastolic pressure. The results are discussed in the light of gender differences in stress and coping that are endemic to poverty.

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Introduction

High blood pressure is less frequently found among children compared with adults, possibly due to fewer environmental stressors, higher physical activity levels, lower prevalence of obesity, healthier lifestyle and infrequent paediatric screening.[1] However, according to prevalence, essential hypertension should be considered a common chronic disease in children and adolescents.[2]

We briefly review data on the prevalence of hypertension among children and adolescents from large studies in different countries. Hansen *et al.*[3] performed a study on more than 14,000 American children and adolescents (aged 3–18 years) and determined the prevalence of hypertension to be 3.6%. In another study with repeated measurements of blood pressure in 6790 adolescents (11–17 years) from the USA, prevalence of hypertension was 3.2%.[4] Monyeki *et al.*[5] disaggregated his data on hypertension by gender in 1884 rural children aged 6–13 years from South Africa, noting that 1.0–5.8% of the boys and 3.1–11.4% of the girls had hypertension. He also noted that obesity was intercorrelated with socioeconomic status (SES) and hypertension. Pavicevic *et al.*[6] examined 3000 Serbian children (aged 7–16 years) during regular school days. Prevalence of arterial hypertension for all children was 0.93% and was the lowest in children aged 7–8 years (0.83%), and the highest in children aged 15–16 years (2.96%). Finally, in a study of 15 612 school children (6–14 years) from Pescara province, Italy, the prevalence of hypertension was 11.1%.[7]