

Inequalities that hurt: demographic, socio-economic and health status inequalities in the utilization of health services in Serbia

Janko Janković¹, Snežana Simić¹, Jelena Marinković²

Background: The aim of this study was to analyse demographic, socio-economic and health status inequalities by gender in the utilization of health services in Serbia. **Methods:** Data from 2006 National Health Survey for Serbia were used. A total of 14 522 persons from six geographical regions of Serbia aged ≥ 20 years were completely interviewed. Logistic regression analyses were used to study the effects of demographic (age, gender, marital status and type of settlement), socio-economic (education and Wealth Index) and health status (self-perceived health) variables on the utilization of health services [visits to general practitioner (GP), private doctor, dentist and hospitalization]. All analyses were carried out separately for males and females. **Results:** As compared with women (reference category), a lower percentage of men visited a GP [odds ratio (OR) = 0.61; 95% confidence interval (95% CI) = 0.57–0.65], private doctor (OR = 0.62; 95% CI = 0.57–0.67) and dentist (OR = 0.81; 95% CI = 0.76–0.87), but there were no gender differences in hospitalization. Both males and females who belong to disadvantaged classes were less likely to have visited a GP, a private doctor or a dentist in 12 months before the interview, regardless of their health status. No inequalities by social class were observed for the hospitalization among persons with poor self-perceived health status, i.e. those in most need. **Conclusions:** This study has shown that demographic, socio-economic and health status inequalities in the utilization of health services exist in Serbia. Wise health policy with equitable utilization of health services, regardless these inequalities should be a priority in shaping Serbian health care system reform.

Keywords: health service utilization, health survey, inequalities in health, Serbia, social class.

Introduction

Researchers, politicians and the general public leave no doubt about the importance of health inequalities and this issue cannot be ignored by anyone, since health is considered to be a fundamental contributor to welfare in every country.^{1,2} Health inequalities are differences in health that are avoidable, unjust and unfair; and the greatest contribution to them both within and between countries is attributable to the circumstances in which people grow, live, work and age.^{3–5} They are mainly related to demographic and socio-economic determinants, including age, gender, income, education and rural/urban settlement.^{2,6–10} Self-perceived health is also a very important determinant of utilization of health services and consequently of health status of the population.¹¹ Health inequalities systematically put groups of people who already belong to disadvantaged social classes at further disadvantage with respect to their health, and there are many barriers that limit the equitable utilization of health services by those in lower social classes.^{12,13} The pattern of inequalities in the utilization of health services is pronounced in low- and middle-income countries but inequalities are prevalent in high-income settings too.²

The issue of health inequalities is of great interest for countries in transition, including Republic of Serbia, which

has been undergoing major demographic, socio-economic and health care system transformations, especially over the last decade of the 20th and the first decade of the 21st century. Issues that shaped Serbia's history during the 1990s, like wars, imposed economic and diplomatic sanctions, bombing, isolation, hyperinflation, emigration of professionals and young people, contributed to hard, long-lasting economic situation that significantly influences the lives and working conditions of the population and, consequently, their health status. Period after 2001 was marked by positive trend of numerous socio-economic indicators like increase of gross domestic product per capita (\$5476 in 2007),¹⁴ increase of average net salary (\$477 in 2007)¹⁵ and public health spending per capita (\$336 in 2007).¹⁵ Human Development Index value of 0.810 in 2005 ranks Serbia on the fifth place among southeastern European countries.¹⁵ Although some surveys were carried out in the past years,^{16–18} health inequalities between different socio-economic classes or gender have not been investigated enough. Mainly we dispose of mortality data, whereas little is known about morbidity inequalities related to socio-economic status and inequalities in the utilization of health services, because the data are lacking from routine health statistics.

The Republic of Serbia has a tradition of a publicly funded health sector based on a system of compulsory social health insurance, financed by salary contributions paid by employees and operated by the Health Insurance Fund (HIF). The budget transfers to the HIF guarantee that, in principle, health insurance coverage is also provided to unemployed, internally displaced people and refugees, as well as to people who belong to the vulnerable categories. Owing to the absence of private health care insurance, private funding is more or less completely based on out-of-pocket payments.

Health infrastructure is characterized by well-developed network of health care institutions mainly organized in three levels—primary (health care centres), secondary

¹Institute of Social Medicine, School of Medicine, University of Belgrade, Belgrade, Serbia

²Institute of Medical Statistics and Informatics, School of Medicine, University of Belgrade, Belgrade, Serbia

Correspondence: Janko Janković, Institute of Social Medicine, School of Medicine, University of Belgrade, Dr Subotića 15, 11000 Belgrade, Serbia, tel: +381 11 2643 830, fax: +381 11 2659 533, e-mail: drjankojankovic@yahoo.com

(general and specialized hospitals) and tertiary (teaching hospitals).

The past decade has seen the beginnings of wide-ranging reforms in the health care systems of Serbia. Reforms cover the scope, financing, costing, organization and management of health services. Citizens with sufficient financial resources can access a burgeoning but largely unregulated private sector, focused mainly on outpatient and ambulatory care including private pharmacies. Although the public health care system is generally well documented, the opposite holds true for the private health care providers.

Dental care is in private realm and is partially covered by the health insurances (only for children up to 18 years of age, pregnant women and urgent interventions).

The aim of this study was to analyse demographic, socio-economic and health status inequalities by gender in the utilization of health services in Serbia, based on 2006 National Health Survey data. In addition, we attempted to assess if there are social class differences when health status is taken into account.

Methods

Study population and sample

This study is a part of the 2006 National Health Survey for the population of Serbia (without data on Kosovo and Metohia), which was carried out by the Ministry of Health of the Republic of Serbia with financial and professional support of the World Bank, the World Health Organization Regional Office for Europe (country office Serbia) and the Institute of Public Health of Serbia 'Dr Milan Jovanovic Batut'.¹⁹

A stratified two-stage representative sample of the population of Serbia was used for this study. The sample was selected to provide statistically reliable estimates at the national level and at the levels of six geographical regions of Serbia (Vojvodina, Belgrade, West, Central, East and South-East Serbia).

The sample size encompassed all registered households in 2002 Serbia population Census. Out of 7673 households randomly selected for the sample in Republic of Serbia, 6156 were interviewed during September and October 2006.

The household response rate was 86.5%. In the interviewed households 15 563 adults older than 20 years were identified, of which 14 522 were completely interviewed (6858 males and 7664 females) and included in this study with the response rate of 93.2%. All respondents were informed about the purpose of the study and agreed to participate. The necessary approval for carrying out the study has been provided by the Review Board of the Ministry of Health of Serbia and the Institute of Public Health of Serbia.

Instruments

Information on demographic, socio-economic characteristics, self-reported health and utilization of health services of respondents was obtained through a face-to-face interview carried out at home, while information at the level of the household was obtained by means of a household questionnaire. The questions were validated instruments based on the standard questionnaires from similar types of surveys (WHO Health Survey 2002, SF-36).^{20,21} The questionnaires were administered by trained interviewers who completed their training in the form of workshops before the survey. A total of nine workshops were organized and they included the lectures about the interview techniques, contents of the questionnaires and practice of interviewing skills. Each of

67 interview teams consisted of 2 interviewers and 1 health professional. Detailed instructions about the procedure of the interview and contents of the questionnaires were given to the interviewers in the form of procedure manuals. To insure the quality of the data and to apply the unique methodology, the process of collecting the data was standardized. For example, in the case that the household member was not at home during the first visit, the interview team was obliged to do minimum three additional visits to cover all respondents.

Variables

The following four dependent variables were included and represented by the visits to general practitioner (GP), dentist, private doctor and by admissions to hospital during the past 12 months. They were dichotomized to 0–1 values (0—non-use and 1—use).

Based on literature review, the following independent variables were selected from the database: age (categorized into 10 year age groups: 20–29, 30–39 years, etc.), gender (1—females and 2—males), type of settlement (1—urban and 2—rural) and marital status (categorized as 1—married or living with the partner and 2—not married, divorced or widowed). The variables reflecting socio-economic position were education level of the respondent (categorized as 1—low, 2—middle and 3—high) and the Demographic and Health Survey Wealth Index²² (hereafter Wealth Index) of the reference person, which was categorized for the purpose of analysis as follows: 1—poorest and poorer class, 2—middle class and 3—richer and richest class. Variables included in Wealth Index calculation were related to examinees' assets. Generally, every item that could give a picture of socio-economic status was used: number of bedrooms per household member, main material used for floor, roof and walls of house, main source of drinking water and sanitation, source of energy used for heating, possession of colour TV, mobile phone, refrigerator, computer, washing machine, dishwasher, air conditioning, central heating, car and access to the Internet. Statistical procedure principal components analysis was used to assign the weights or factor scores to each variable. This procedure first standardizes the indicator variables in relation to a standard normal distribution with a mean of 0 and a standard deviation of 1 (calculating z-scores); then the factor scores (factor loadings) are calculated; and finally for each household, the indicator values are multiplied by the loadings and summed to produce the household's index value (Wealth Index). Varimax orthogonal rotation was used. Only the first of the factors produced is used to represent the Wealth Index. The resulting sum is itself a standardized score. According to the Wealth Index, respondents were classified into five socio-economic groups or quintiles with the same number of individuals in each: 1—poorest, 2—poorer, 3—middle class, 4—richer and 5—richest class. The Wealth Index cut-off points that define the quintiles were calculated by obtaining a weighted frequency distribution of households, the weight being the product of the number of *de jure* members of the household and the sampling weight of the household. Thus, the distribution represents the national household population, where each member was given the Wealth Index score of his or her household. The persons were then ordered by the score and the distribution was divided at the points that form the five 20% sections. Then, the household score was recoded into the quintile variable, so that each member of a household also received that household's quintile category.²²

The variable selected to represent the need for health care was self-perceived health (grouped into three categories: 1—poor, 2—average and 3—good).

$P < 0.05$, was taken as the minimum level of significance. The analyses were done by using the statistical software package SPSS 15.

Statistical analysis

Data were analysed by methods of descriptive statistics, bivariate and multivariate logistic regressions. Categorical variables were examined by gender using chi-square analyses. The unadjusted odds ratios (ORs) with their corresponding 95% confidence intervals (CIs) were also obtained. Finally, in order to determine predictors of health service utilization, multivariate logistic regression models were implemented, one model for each type of service. All selected independent variables were included in the final models. Stratified analysis by self-perceived health was also performed. All analyses were carried out separately for males and females. The probability,

Results

There were more females (52.8%) than males (47.2%) in the sample (table 1). The highest percentage of males and females was found in the age group of 50–59 years. More than three-quarters of male (70.4%) and 64.7% of the female respondents were married. The highest percentages of males (54.0%) had a middle education, while the highest proportion of females (46.2%) had a low education. The percentage of the poorest class was the highest in both genders and there was a gradient across social classes in males and females alike. Significant differences were observed between gender and

Table 1 Distribution of males and females and their differences according to demographic, socio-economic and health status characteristics and utilization of health services

	Males	Females	Males vs. Females	
	n (%)	n (%)	P-value ^a	OR (95% CI)
Total	6858 (47.2)	7664 (52.8)		
Age (years)			<0.001	
20–29	1054 (15.4)	1126 (14.7)		1 ^b
30–39	1131 (16.5)	1176 (15.3)		1.03 (0.91–1.16)
40–49	1240 (18.1)	1273 (16.6)		1.04 (0.93–1.17)
50–59	1389 (20.3)	1488 (19.4)		1.00 (0.89–1.12)
60–69	1015 (14.8)	1195 (15.6)		0.91 (0.81–1.02)
70+	1029 (15.0)	1406 (18.3)		0.78 (0.70–0.88)
Marital status			<0.001	
Married	4814 (70.2)	4937 (64.4)		1 ^b
Living with a partner	80 (1.2)	83 (1.1)		0.99 (0.73–1.35)
Not married	1280 (18.7)	833 (10.9)		1.58 (1.43–1.73)
Divorced	220 (3.2)	331 (4.3)		0.68 (0.57–0.81)
Widowed	441 (6.4)	1448 (18.9)		0.31 (0.28–0.35)
Type of settlement			0.001	
Urban	3454 (50.4)	4074 (53.2)		1 ^b
Rural	3404 (49.6)	3590 (46.8)		1.12 (1.05–1.19)
Education			<0.001	
Low	2209 (32.2)	3543 (46.2)		1 ^b
Middle	3706 (54.0)	3229 (42.1)		1.84 (1.72–1.98)
High	943 (13.8)	892 (11.6)		1.70 (1.53–1.89)
Wealth Index			0.046	
Poorest class	1589 (23.2)	1646 (21.5)		1 ^b
Poorer class	1492 (21.8)	1620 (21.1)		0.95 (0.87–1.05)
Middle class	1410 (20.6)	1600 (20.9)		0.91 (0.83–1.01)
Richer class	1233 (18.0)	1441 (18.8)		0.89 (0.80–0.98)
Richest class	1134 (16.5)	1357 (17.7)		0.87 (0.70–0.96)
Self-perceived health			<0.001	
Poor	914 (13.3)	1563 (20.4)		1 ^b
Average	2398 (35.0)	3121 (40.7)		1.31 (1.19–1.45)
Good	3527 (51.4)	2965 (38.7)		2.03 (1.85–2.24)
Visit to a GP			<0.001	
No	3539 (51.6)	3008 (39.2)		1 ^b
Yes	3302 (48.1)	4638 (60.5)		0.61 (0.57–0.65)
Hospitalization			0.071	
No	6390 (93.2)	7067 (92.2)		1 ^b
Yes	432 (6.3)	539 (7.0)		0.89 (0.78–1.01)
Visit to a private doctor			<0.001	
No	5837 (85.1)	5977 (78.0)		1 ^b
Yes	1007 (14.7)	1669 (21.8)		0.62 (0.57–0.67)
Visit to a dentist			<0.001	
No	5005 (73.0)	5263 (68.7)		1 ^b
Yes	1833 (26.7)	2376 (31.0)		0.81 (0.76–0.87)

a: Chi-square test.

b: Reference category

Table 2 Associations of health care services utilization in males during past 12 months with demographic, socio-economic and health status variables

Variable	Visit to a GP OR (95% CI)	Hospitalization OR (95% CI)	Visit to a private doctor OR (95% CI)	Visit to a dentist OR (95% CI)
Age	1.03 (1.03–1.03) ^a	1.03 (1.03–1.04) ^a	0.99 (0.99–1.00) ^a	0.97 (0.97–0.97) ^a
	1.02 (1.01–1.02) ^b	1.02 (1.01–1.02) ^b	0.99 (0.99–1.00) ^b	0.97 (0.97–0.98) ^b
Marital status ^c	0.72 (0.65–0.80) ^a	0.86 (0.68–1.07) ^a	0.96 (0.83–1.12) ^a	1.44 (1.28–1.61) ^a
	0.99 (0.88–1.12) ^b	1.14 (0.91–1.45) ^b	0.98 (0.84–1.16) ^b	1.11 (0.97–1.27) ^b
Type of settlement ^d	0.87 (0.79–0.95) ^a	0.90 (0.74–1.10) ^a	0.64 (0.56–0.73) ^a	0.60 (0.53–0.66) ^a
	0.95 (0.84–1.07) ^b	0.81 (0.64–1.02) ^b	1.13 (0.96–1.33) ^b	0.97 (0.85–1.11) ^b
Education ^e	1.05 (0.97–1.13) ^a	0.81 (0.70–0.94) ^a	1.82 (1.64–2.01) ^a	2.06 (1.89–2.24) ^a
	1.27 (1.16–1.39) ^b	1.12 (0.93–1.33) ^b	1.41 (1.25–1.60) ^b	1.55 (1.40–1.72) ^b
Wealth Index ^f	1.05 (1.01–1.08) ^a	0.93 (0.87–1.00) ^a	1.43 (1.36–1.50) ^a	1.40 (1.35–1.46) ^a
	1.09 (1.04–1.14) ^b	1.01 (0.92–1.10) ^b	1.37 (1.29–1.46) ^b	1.24 (1.18–1.31) ^b
Self-perceived health ^g	0.39 (0.37–0.42) ^a	0.31 (0.27–0.36) ^a	0.95 (0.86–1.04) ^a	1.48 (1.36–1.60) ^a
	0.43 (0.39–0.46) ^b	0.34 (0.29–0.40) ^b	0.74 (0.66–0.83) ^b	0.98 (0.89–1.07) ^b

a: OR and 95% CI from bivariate logistic regression analysis

b: OR and 95% CI from multivariate logistic regression analysis

c: Reference values for married or living with the partner

d: Reference values for urban

e: Reference values for low education

f: Reference values for poorest and poorer class

g: Reference values for poor self-perceived health

Table 3 Associations of health care services utilization in females during past 12 months with demographic, socio-economic and health status variables

Variable	Visit to a GP OR (95% CI)	Hospitalization OR (95% CI)	Visit to a private doctor OR (95% CI)	Visit to a dentist OR (95% CI)
Age	1.02 (1.02–1.03) ^a	1.02 (1.02–1.03) ^a	0.98 (0.97–0.98) ^a	0.96 (0.95–0.96) ^a
	1.01 (1.01–1.01) ^b	1.00 (1.00–1.01) ^b	0.98 (0.98–0.98) ^b	0.96 (0.96–0.97) ^b
Marital status ^c	1.14 (1.04–1.26) ^a	1.17 (0.98–1.41) ^a	0.82 (0.73–0.92) ^a	0.85 (0.77–0.94) ^a
	1.00 (0.90–1.12) ^b	1.01 (0.83–1.22) ^b	0.85 (0.75–0.97) ^b	0.94 (0.84–1.06) ^b
Type of settlement ^d	0.90 (0.82–0.99) ^a	0.99 (0.83–1.18) ^a	0.64 (0.57–0.71) ^a	0.54 (0.49–0.60) ^a
	0.98 (0.88–1.10) ^b	0.90 (0.73–1.10) ^b	1.19 (1.04–1.36) ^b	0.86 (0.76–0.97) ^b
Education ^e	0.79 (0.74–0.84) ^a	0.61 (0.53–0.70) ^a	2.23 (2.06–2.42) ^a	2.89 (2.67–3.12) ^a
	1.03 (0.94–1.13) ^b	0.77 (0.64–0.92) ^b	1.59 (1.44–1.76) ^b	1.67 (1.52–1.84) ^b
Wealth Index ^f	1.03 (1.00–1.07) ^a	0.95 (0.89–1.01) ^a	1.48 (1.42–1.54) ^a	1.47 (1.41–1.52) ^a
	1.15 (1.10–1.20) ^b	1.09 (1.01–1.19) ^b	1.37 (1.30–1.44) ^b	1.22 (1.16–1.28) ^b
Self-perceived health ^g	0.40 (0.38–0.43) ^a	0.45 (0.40–0.50) ^a	1.24 (1.15–1.34) ^a	1.90 (1.78–2.04) ^a
	0.41 (0.38–0.45) ^b	0.48 (0.41–0.55) ^b	0.75 (0.68–0.82) ^b	1.02 (0.93–1.11) ^b

a: OR and 95% CI from bivariate logistic regression analysis

b: OR and 95% CI from multivariate logistic regression analysis

c: Reference values for married or living with the partner

d: Reference values for urban

e: Reference values for low education

f: Reference values for poorest and poorer class

g: Reference values for poor self-perceived health

all independent variables. Compared with women (reference category), men reported significantly lower utilization in all types of health services except hospitalization (table 1).

The results of bivariate and multivariate logistic regression analyses of health services utilization during the past 12 months are presented separately for males (table 2) and females (table 3).

Visit to GP

The proportion of males and females that visited a GP during the past year was higher among older (OR = 1.02 for males; OR = 1.01 for females), those of advantage classes (OR = 1.09 for males; OR = 1.15 for females) and persons who perceived

their health as poor (tables 2 and 3). Males who had higher education were more likely to have visited a GP (OR = 1.27).

There was no significant association between marital status, type of settlement, female education and number of visits to GP.

Hospitalization

An independent statistically significant positive association was found between age and hospitalization in males and between Wealth Index and hospitalization in females (OR = 1.09). In contrast, hospitalization was inversely associated with a person's self-perceived health (OR = 0.34 for males; OR = 0.48 for females) and education in females (OR = 0.77).

Visit to private doctor

Multivariate analysis showed that respondents who were richer (OR=1.37 for both genders), more educated (OR=1.41 for males; OR=1.59 for females), those who perceived their health as poor (OR=0.74 for males; OR=0.75 for females) and those who were younger (OR=0.99 for males; OR=0.98 for females) were more likely to have visited a private doctor in 12 months before the survey (tables 2 and 3).

Visit to dentist

The richest and richer respondents (OR=1.24 for males; OR=1.22 for females) and those who are more educated (OR=1.55 for males; OR=1.67 for females) more frequently reported visit to a dentist, while the opposite pattern was observed for age (OR=0.97 for males; OR=0.96 for females). There was no statistically significant independent association between marital status and self-perceived health and visit to a dentist.

Stratification by health status

Since self-perceived health has shown validity across a number of studies as a strong predictor of health service utilization,^{11,13} we considered this measure of 'utilization/need' in the analysis of social class inequalities (table 4). Social inequalities were evident in the utilization of health services provided by GPs, private doctors and dentists when the analysis was stratified by health status. Both males and females who belonged to poorer and poorest class were less likely to have visited a GP in 12 months before the interview, regardless of their health status (statistically significant association was not found only for males who perceived their health as a poor). The same pattern was observed for visiting a private doctor or a dentist. It is also noticed that people from middle class less often visited a private doctor and a dentist (although patterns were less apparent).

No inequalities by social class were observed for the hospitalization in the past 12 months among persons with poor self-perceived health status.

Discussion

Overall, our study showed significant differences in almost all aspects of health services utilization among different socio-economic groups, different levels of educational attainment and different gender.

We observed that the utilization of non-preventive health services in Serbia was more frequent in advantaged social classes (visits to GP in both males and females, and hospitalization in females). However, no inequalities by social class were found for the hospitalization among persons with poor self-perceived health status, i.e. those in most need; while social inequalities still remain for the use of GP services by females. Women who belong to the disadvantaged classes were less likely to have visited a GP in 12 months before the interview, regardless of their health status.

Respondents of advantaged classes and more educated had a privileged position concerning visits to a dentist and private doctor, which is probably related to their possibility of paying.

Studies on health care inequalities have shown different results. In the famous UK study (the Black report),²³ which investigated health inequalities, it was found that visits to the GP were more frequent among people in disadvantaged social classes. However when measures of utilization/need were taken into account, the gradient between social classes reversed. Some other studies conducted in Denmark²⁴ and Germany²⁵ confirmed that the rate of usage of GP services increases with declining social class. As Gwatkin *et al.*²⁶ noticed, it is typical for high-income countries that worse-off consume health services more often as a result of their lower health status and so greater need for health care. On the contrary, in low-income countries, the lack of health insurance and purchasing power among the worse-off mean that their utilization of health services is less than that of the better-off.²⁶

Two Spanish studies^{13,27} have not found social class inequalities in the utilization of primary health services or hospitalization when the level of need was taken into account, whereas some other studies reported pro-poor distribution of GP and hospital utilization.^{28–30}

In a recently published study, Or *et al.*³¹ reported that the pattern of the GP utilization is considerably heterogeneous across the European countries that they studied. For example, in France and Portugal those having a university degree have

Table 4 ORs (95% CIs)^a of health care services utilization in the past 12 months according to gender, Wealth Index and self-perceived health

	Males Self-perceived health			Females Self-perceived health		
	Poor	Average	Good	Poor	Average	Good
Visit to a GP						
Richer and richest class	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Middle class	1.54 (0.86–2.77)	0.93 (0.73–1.19)	1.02 (0.84–1.25)	1.00 (0.62–1.61)	1.17 (0.94–1.47)	0.88 (0.72–1.09)
Poorer and poorest class	0.94 (0.57–1.55)	0.79 (0.63–1.00)	0.78 (0.65–0.95)	0.55 (0.37–0.83)	0.76 (0.61–0.93)	0.68 (0.56–0.83)
Hospitalization						
Richer and richest class	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Middle class	1.33 (0.79–2.23)	1.18 (0.74–1.87)	1.07 (0.60–1.93)	0.99 (0.62–1.56)	0.78 (0.53–1.15)	0.52 (0.28–0.97)
Poorer and poorest class	0.97 (0.59–1.59)	1.15 (0.73–1.82)	0.75 (0.41–1.37)	0.82 (0.54–1.24)	0.60 (0.40–0.89)	0.65 (0.38–1.10)
Visit to a private doctor						
Richer and richest class	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Middle class	0.71 (0.42–1.21)	0.73 (0.53–1.00)	0.46 (0.34–0.61)	0.65 (0.42–1.00)	0.70 (0.55–0.88)	0.44 (0.34–0.58)
Poorer and poorest class	0.38 (0.23–0.64)	0.52 (0.38–0.72)	0.39 (0.29–0.51)	0.53 (0.35–0.79)	0.38 (0.30–0.49)	0.45 (0.35–0.57)
Visit to a dentist						
Richer and richest class	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Middle class	0.80 (0.47–1.37)	0.94 (0.72–1.22)	0.59 (0.48–0.73)	0.80 (0.51–1.25)	0.81 (0.64–1.01)	0.72 (0.58–0.90)
Poorer and poorest class	0.44 (0.26–0.74)	0.62 (0.47–0.81)	0.57 (0.46–0.69)	0.57 (0.37–0.87)	0.66 (0.52–0.82)	0.57 (0.46–0.70)

a: OR (95% CI) adjusted for age, marital status, type of settlement and education

the odds of visiting a GP significantly higher compared with those having a primary education, while the opposite was found in England and Germany. In some countries, like Belgium and Denmark, the significant educational difference in care utilization was not observed. Owing to our results that more educated male respondents visited GP more often than less educated ones, Serbia would fit into the first group of countries. Since the significant association between female education and GP visits was not found in our study, the same pattern like the one in Belgium and Denmark would fit best for Serbian females. Apparently, the type of health system does not influence significantly the association between the use of GP services and socio-economic status. The observed cross-country socio-economic differences in the utilization of health care could be explained by two major characteristics of health care systems, such as organization and modes of financing health care.³¹ In countries with a social insurance system and well-established gate keeping, like Estonia and Netherlands, neither one of the two previously mentioned characteristics influence the social inequalities in GP use.³¹

According to our results, there is no significant correlation between education and hospitalization in males, but it was observed that less-educated females more often have been hospitalized. Study conducted in broader Athens area³² did not find statistically significant relationship between socio-economic determinants like education and health services utilization, while data from Brazilian National Household Sample Survey³³ showed that individuals with higher incomes and more educated persons have more chances of using health services. In Spain,¹¹ people with higher educational attainment consulted a doctor or got hospitalized more often than those in the lower educational groups. The same was found in the study of services utilization in Curacao, Netherlands Antilles.³⁴ It is well known that education may indicate a more proactive attitude in seeking care. The more educated persons may be better able to articulate their needs and insist on referral when they think it is necessary.³¹

While the number of studies report that the utilization of GP and hospital services, after adjusting for health care need, is equitable or pro-poor, the specialist or dentist care tend to favour the better-off.^{13,29,35,36}

In our study, respondents of advantaged classes and more educated, regardless of their self-perceived health, and women were more likely to have visited a private doctor or a dentist. These findings of ours regarding the utilization of dental care services are consistent with the results of a number of studies^{13,35} and could be partly explained by the fact that people in lower social classes are less likely to undertake preventive practices such as visit to the dentist or go for cancer screening.³⁷ Waddington³⁸ suggested that the greatest inequalities are to be found in the use of preventive services. Less than a third (26.7% males and 31.0% females) of the population of Serbia had visited a dentist in the previous year as reported in 2006. These data placed Serbia among countries with the lowest dental attendance rate in Europe, together with Greece and Portugal.³⁹ The present dental health care system in Serbia, although the private sector was put under law in 2005 on equal basis with public sector, does not yet seem to have established mechanisms to address social inequalities in the consumption of dental services.

The self-perceived health status as a measure of need is a very important contributor to the utilization of health services. Pappa and Niakas³² showed that people with worse physical health were more likely to use GP's services. The results of the

Canadian study indicate that the use of hospital care is largely explained by self-perceived health.⁴⁰ In our study, both males and females who perceived their health as poor were more likely to have visited a GP, hospital and private doctor. Similar results were shown in a Spanish study,¹¹ i.e. the probability of health services utilization increases progressively as self-perceived health status became poorer. In a recently published study conducted in 13 European countries, Borrell *et al.*⁴¹ showed that educational level inequalities in self-perceived health exist in all countries and all political traditions, among both genders.

Our findings regarding the impact of demographic factors on the health services utilization are consistent with studies that reported higher levels of primary health care utilization among the elderly and women.^{32,42} This could be explained by the well-known facts that age is a factor inversely linked to health and that women reported higher utilization due to their increased awareness of health problems and symptoms when assessing their health status.^{32,42} No association between gender and hospitalization was found in our study, while in Catalonian study,⁴³ the proportion of hospitalization was lower in women than in men.

While we think that the results obtained in this study are useful for better understanding of existing inequalities in utilization of health services, several limitations should be briefly stressed. First is concerning the fact that measures of the utilization of health services were dichotomized variables (0–1), thus the study was based only on the number of visits and admissions, rather than on their nature. The quality of services in health care inequalities research should be emphasized. This limitation was also reported in the study of Borrell *et al.*,¹³ Pappa and Niakas³² and Morris *et al.*²⁹ The second limitation is the possibility of differential recall bias of health services utilization according to social class. Third, due to the limited number of people who use private services and unreliable data, we were not able to analyse social inequalities that could emerge as a consequence of private health sector use. Fourth, the measure of health status is based on self-reported health and may be measured with errors. Besides, the time frames associated with the recall of services use differ from the recall period of the assessed health status.

Nevertheless, this study has shown that demographic, socio-economic and health status inequalities in the utilization of health services exist in Serbia. Wise health policy with equitable utilization of health services, regardless of socio-economic, demographic and health status determinants should be a priority in shaping Serbian health care system reform. Especially position of the poorest must be concerned. For sure it would be long term and venous 'Don Quixote fight versus the windmills'.

Acknowledgements

The study is a part of the 2006 National Health Survey for the population of Serbia (without data on Kosovo and Metohia) that was carried out by the Ministry of Health of the Republic of Serbia with financial and professional support of the World Bank, the World Health Organization Regional Office for Europe (country office Serbia) and the Institute of Public Health of Serbia 'Dr Milan Jovanovic Batut'.

Funding

World Bank; World Health Organization Regional Office for Europe (country office Serbia); Institute of Public Health of Serbia 'Dr Milan Jovanovic Batut'; Ministry of Science and

Technological Development, Serbia, through contract No. 145084 (2006–10).

Conflicts of interest: None declared.

Key points

- This study has shown that demographic, socio-economic and health status inequalities in the utilization of health services exist in Serbia.
- No inequalities by social class were observed for the utilization of non-preventive health care services (visit to a GP by males and hospitalization for both genders in the past 12 months) among persons with poor self-perceived health status, i.e. those in most need.
- Wise health policy with equitable utilization of health services, regardless of socio-economic, demographic and health status determinants should be a priority in shaping Serbian health care system reform.

References

- Marmot M, Wilkinson R, editors. *Social determinants of health*, 2nd edn. Oxford: Oxford University Press, 2006.
- World Health Organization. Closing the gap in a generation: health equity through action on the social determinants of health. World Health Organization, Commission on Social Determinants of Health FINAL REPORT, 2008. http://whqlibdoc.who.int/publications/2008/9789241563703_eng.pdf. (October 2009, date accessed).
- Whitehead M. The concepts and principles of equity in health. Copenhagen: WHO, Reg. Off. Eur. (EUR/ICP/RPD 414 7734r), 1990, 29.
- Marmot M. Social determinants of health inequalities. *Lancet* 2005;365:1099–104.
- Marmot M. Commission on Social Determinants of Health. Achieving health equity: from root causes to fair outcomes. *Lancet* 2007;370:1153–63.
- Mackenbach JP, Stirbu I, Roskam AJ, et al. European Union Working Group on socioeconomic inequalities in health. Socioeconomic inequalities in health in 22 European countries. *N Engl J Med* 2008;358:2509–10.
- Pascall G. Health inequalities. In: Fitzpatrick T, Kwon HJ, Manning N, et al, editors. *International encyclopedia of social policy*. London and New York: Routledge, 2006, 583–4.
- Chou KL, Chi I. Factors associated with use of publicly funded services by Hong Kong Chinese older adults. *Soc Sci Med* 2004;58:1025–35.
- Šućur Z, Zrinščak S. Differences that hurt: self-perceived health inequalities in Croatia and European Union. *Croat Med J* 2007;48:653–66.
- Travassos C, Viacava F, Pinheiro R, et al. Utilization of health care services in Brazil: gender, family characteristics, and social status. *Rev Panam Salud Publica* 2002;11:365–73.
- Fernández de la Hoz K, Leon DA. Self-perceived health status and inequalities in use of health services in Spain. *Int J Epidemiol* 1996;25:593–603.
- Braveman P, Gruskin S. Defining equity in health. *J Epidemiol Community Health* 2003;57:254–8.
- Borrell C, Fernandez E, Schiaffino A, et al. Social class inequalities in the use of and access to health services in Catalonia, Spain: what is the influence of supplemental private health insurance? *Int J Qual Health Care* 2001;13:117–25.
- Statistical Office of the Republic of Serbia. Gross domestic product of Republic of Serbia 1997–2007. <http://webzrzs.statserb.sr.gov.yu/axd/en/drugastrana.php?Sifra=0001&izbor=odel&tab=30> (October 2009, date accessed).
- Health of Serbia Population. Analytic study 1997–2007. Belgrade: Institute of Public Health of Serbia, 2008.
- Oliver Petrovic UNICEF Belgrade. *Serbia Multiple Indicator Cluster Survey 2005. Monitoring the situation of children and women*. Belgrade: UNICEF Belgrade, 2007.
- Institute of Public Health of Serbia ‘Dr Milan Jovanovic Batut’. Health status, health needs and utilisation of health services in 2000 in Republic of Serbia. Report on the analysis for adult population. Belgrade, 2002.
- Group of Researches, Statistical Office of the Republic of Serbia. *Living Standards Measurement Survey: Serbia 2002–2007*. Belgrade: Statistical Office of the Republic of Serbia, 2008.
- Ministry of Health of the Republic of Serbia. *Health Survey of the Population of Serbia 2006: Final Report*. Belgrade: Ministry of Health of the Republic of Serbia, 2007 [in Serbian]. <http://download.moh1.googlepages.com/Finalnilzvestaj-IstrazivanjeZdravlja.pdf> (October 2009, date accessed).
- World Health Organization. *Health statistics and health information systems*. World Health Survey. <http://www.who.int/healthinfo/survey/en>. (October 2009, date accessed).
- SF-36.org. *A community for measuring health outcomes using SF tools*. SF Surveys. <http://www.sf-36.org> (October 2009, date accessed).
- Rutstein SO, Johnson K. *The DHS Wealth Index. DHS Comparative Reports No. 6*. Calverton, Maryland: ORC Macro, 2004. http://www.measuredhs.com/pubs/pub_details.cfm?ID=470 (October 2009, date accessed).
- Townsend P, Davidson N, Whitehead M. *Inequalities in health: the black report and the health divide*. London: Penguin Books, 1988.
- Osler M, Klebak S. Social differences in an affluent Danish country. *Scand J Soc Med* 1998;26:289–92.
- Luschen G, Niemann S, Apelt P. The integration of two health systems: social stratification work and health in East and West Germany. *Soc Sci Med* 1997;44:883–9.
- Gwatkin DR, Rustein S, Johnson K, et al. *Initial country-level information about socio-economic differentials in health, nutrition and population*, Vols. I and II. Washington DC: World Bank, Health, Population and Nutrition, 2003.
- Borrell C, Rohlfs I, Ferrando J, et al. Social inequalities in perceived health and the use of health services in a southern European urban area. *Int J Health Serv* 1999;29:743–64.
- Katz SJ, Hofer TP, Manning WG. Hospital utilization in Ontario and the United States: the impact of socioeconomic status and health status. *Can J Public Health* 1996;87:253–6.
- Morris S, Sutton M, Gravelle H. Inequity and inequality in the use of health care in England: an empirical investigation. *Soc Sci Med* 2005;60:1251–66.
- Regidor E, Martinez D, Calle ME, et al. Socioeconomic patterns in the use of public and private health services and equity in health care. *BMC Health Serv Res* 2008;8:183.
- Or Z, Jusot F, Yilmaz E. Impact of health care system on socioeconomic inequalities in doctor use. Working Paper DT no. 17. IRDES, Paris, 2008.
- Pappa E, Niakas D. Assessment of health care needs and utilization in a mixed public-private system: the case of the Athens area. *BMC Health Serv Res* 2006;6:146.
- National Commission on Social Determinants of Health. *The social causes of health inequalities in Brazil*. Rio de Janeiro: Editora Fiocruz, 2008.
- Alberts JF, Sanderman R, Eimers JM, et al. Socioeconomic inequity in health care: a study of services utilization in Curaçao. *Soc Sci Med* 1997;45:213–20.
- Van der Heyden JH, Demarest S, Tafforeau J, et al. Socio-economic differences in the utilisation of health services in Belgium. *Health Policy* 2003;65:153–65.
- Dunlop S, Coyte PC, McIsaac W. Socio-economic status and the utilisation of physicians’ services: results from the Canadian National Population Health Survey. *Soc Sci Med* 2000;51:123–33.
- Breen NA, Parsons PE, Milcarek B, et al. Social inequalities in access to preventive services. *AHSR FHSR Annu Meet Abstr Book* 1996;13:150.
- Waddington I. The relationship between social class and the use of health services in Britain. *J Adv Nurs* 1977;2:609–19.

- 39 European Commission. *Health in Europe, Results from 1997–2000 surveys. Theme 3, population and social conditions*. Luxembourg: Office for Official Publications of the European Communities, 2003.
- 40 Manga P, Broyles RW, Angus DE. The determinants of hospital utilization under a universal public insurance program in Canada. *Med Care* 1987;25:658–70.
- 41 Borrell C, Espelt A, Rodriguez-Sanz M, et al. Analyzing differences in the magnitude of socioeconomic inequalities in self-perceived health by countries of different political tradition in Europe. *Int J Health Serv* 2009;39:321–41.
- 42 Hulka B, Wheat J. Patterns of utilization. The patient perspective. *Med Care* 1985;23:438–60.
- 43 Fernandez E, Schiaffino A, Rajmil L, et al. Gender inequalities in health and health care services use in Catalonia (Spain). *J Epidemiol Community Health* 1999;53:218–22.

Received 7 May 2009, accepted 19 October 2009