SOCIOECONOMIC DETERMINANTS OF GENDER DIFFERENCES IN SELF-REPORTED HEALTH STATUS AMONG OLDER POPULATION

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Abstract: **Introduction:** Self-reported health status is considered one of the highly significant indicators of general health and overall quality of life.

Aim: to examine whether there are gender differences in self-reported health status among the older population depending on the socioeconomic determinants.

Methods: The analysis was carried out based on the data collected from the fourth National Health Survey of the population of Serbia, which was designed as a cross-sectional study. The research was conducted in accordance with the methodological guidelines and research instruments of the European Health Interview Survey.

Results: A statistically significant correlation was observed between gender and the self-reported health status of the respondents. Women were significantly more likely to report poor self-rated health (27.8%), whereas men reported better self-rated health (21.3%). The results of the multivariate logistic regression analysis showed that poor self-rated health status among women was more likely to be affected by age, educational level, and region, whereas age and economic status were significant factors associated with poor self-rated health status among men.

Conclusion: Taking into consideration the fact that the advantages of increased life expectancy will achieved only if these extra years of life gained through increased longevity are spent in good health, the importance of conducting additional research on gender differences is more than evident, particularly in terms of providing meaningful insight into the de-velopment of action plans devised to deal with gender differences in health status, simultaneously promoting healthy and active aging for both men and women.

Keywords: self-reported health status, elderly, gender, national health survey.

INTRODUCTION

The world's older population continues to grow at an unprecedented rate. The part of the global population older than 65 is expected to increase from 9.3% in 2020 to 16 % in 2050 (1). The rapid growth of the older population has far-reaching implications across all spheres of society due to their various needs. Aging is associated with an increase in the number of dependent old people in terms of their economic, health, and social dependency, along with increasing demand for the relocation of resources to a long-term care facility (2). All the above-mentioned facts have a significant negative impact on the economic stability of the health care system and therefore on society as a whole (3). Accordingly, simple but valid health status measures need to be implemented to assess and predict health outcomes in the elderly so that it could be easier to deal with the financial burden of aging populations, posing a challenge to both social and health services (4).

Self-reported health status (SRHS) is considered one of the highly significant indicators of general health and the overall quality of life. Subjective measurement, that is, self-reported health status, is a multi-dimensional concept including an individual evaluation of various health dimensions such as phys-

ical, emotional, and social functioning, not only the assessment of current health conditions in its narrow meaning (5, 6). This particular indicator has been used in national health surveys ever since the 1950s and has been recommended by the WHO and European Commission as a highly reliable and valid indicator of residents' health status (7). Numerous research has shown that despite its simplicity – this indicator, in particular, is one of the more significant predictors of population mortality or morbidity rates, functional limitations, and use of health protection (6, 8).

The nature of inequalities between men and women based on their gender and age indicates that age is considered a more cultural and socio-historical category, being less perceived as a biological and natural process by itself. Gender is regarded as a significant health determinant which additionally shapes the patterns of developing diseases, approach to health protection, and medical treatment availability as well (4). The roots of inequalities in health related to gender are numerous, mutually intertwined, and complex. Biological and genetic factors partly contribute to differences in health status later in life. However, social variables a significant source of health inequalities (9).

Poor availability of published evidence on gender-specific characteristics of health in old age and the impacts of aging on health status is reported in our country. Actual information on the manners in which sex and gender differences between men and women play a role in influencing their health status in advanced age is not sufficiently known. The key factor is related to researching gender differences in health status among older people, considering some of the relevant factors of population aging, such as premature mortality rates among men, along with the feminization of advanced age.

Our research aims to examine whether there are gender differences in self-reported health status among the older population depending on socioeconomic determinants such as the following: age, marital status, educational level, and economic status.

MATERIAL AND METHOD
Data source and type of study

The analysis of gender differences in self-reported health status among the population aged 65 or over was carried out based on the data collected from the fourth National Health Survey (NHS) of the population of Serbia which was designed as a cross-sectional study and conducted on the territory of the Republic of Serbia in 2019. The population living on the territory of the Autonomous Province of Kosovo and Metohija along with persons living in collective households

and institutions were not included in the abovementioned survey. The research was conducted in accordance with the methodological guidelines and research instruments of the European Health Interview Survey third wave (EHIS wave 3) (10).

Sampling

In the study, we used a two-stage stratified random sample. The sample comprised all the households included in the 2011 population census results. The mechanism used for obtaining a random household sample and respondents resulted from a combination of two sampling techniques: stratified random sampling and multistage sampling. Primary sampling units comprised census circles selected based on the probability proportional to their size. In the first stage, 600 census circles were selected in total. The second stage units were households. Ten household addresses to be surveyed (+ 3 reserved addresses) were selected within each of the census circles.

The health survey included 5.114 households in total (out of 6.335 contacted households, the response rate of households was 80.7%), with a total number of 15.621 persons recorded, out of which there were 13.589 persons aged 15 and over along with 1.493 children aged from 5 to 14 years. The number of surveyed persons aged 65 or more was 3743.

Research instrument

The European Health Interview Survey third wave (EHIS wave 3) was used as a research instrument. Data were collected using three kinds of a questionnaire: a household questionnaire, a questionnaire for adults at the age of 20 or more, and a questionnaire that adults completed on their own.

The dependent variable in this study was self-reported health. Demographic characteristics (age, gender, marital status, region) and socioeconomic characteristics (educational level, economic characteristics of households) were used as independent variables.

Ethical standards in health surveys were harmonized with the international (the Declaration of Helsinki) and legislative country-specific norms and standards. The researchers were obliged to issue a printed document on the health survey and the Ethical Committee's approval of its conducting. In addition, each one of the respondents provided their informative consent through which they accepted to be part of the research in question.

Statistical data analysis

All the data of interest were presented and analyzed by adequate statistical methods. The Chi-square

test was used to compare proportions between groups. The bivariate and multivariate logistic regression analyses were used to examine the association between self-reported health status and a series of independent variables. Statistically significant results were considered to be the ones with a probability of less than 5% (p < 0.05). All the statistical calculations were performed using the Statistical Package for Social Sciences software (SPSS Inc, version 18.0, Chicago, IL)
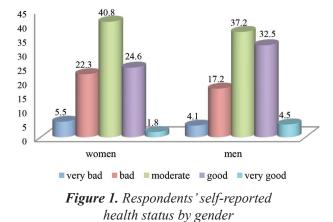
RESULTS

Out of 3743 respondents at the age of 65 or more, 932 respondents (24.9%) reported poor self-rated health (20.0% bad and 4.9% very bad), whereas 1167 (31.2%) respondents reported good self-rated health (28.2% good and 3.0% very good).

There was a statistically significant association between genders and the self-reported health status of the respondents themselves ($\chi^2 = 63.231$, p < 0.001). Women were more likely to assess their health as bad (27.8%) (5.5% very bad and 22.3% bad), whereas men tended to assess their health from a more positive perspective (21.3%) (4.1% very bad and 17,2% bad) (Figure 1).

Analysis of variance (an ANOVA test) demonstrated that there were statistically significant differences in the mean values of age and self-reported health status (p < 0,001). The mean age in years of respondents with poor self-reported health was 75.2 ± 6.9, whereas the mean age in years of respondents with good self-reported health was 70.1 ± 5.2.

Respondents' self-reported health status by gender and demographic and socioeconomic characteristics are summarized in Table 1. The age of respondents is inversely proportional to good health, which means that the percentage of men and women reporting poor health increases with age. A significantly higher proportion of women among older age groups report poor self-rated health (SRH) compared to men. For instance, every second woman in the 85-89 age group reported

poor self-rated health (42.5%), whereas 25.3% of men in the same age group rated their health as poor. On the other hand, men among younger age groups were more likely to report good self-rated health. There were statistically significant differences in self-reported health status among different age groups between both genders.

The analysis of self-reported health status of older respondents by marital status revealed statistically significant associations between marital status and health status in both men and women.

The analysis of the self-reported health status of respondents by educational attainment showed a significant inverse correlation, meaning the lower the level of education was, the worse the respondents' self-reported health status was, with the more emphasized differences observed in the female population. Therefore, 47.4% of older women with no education reported having poor self-rated health, whereas the percentage of men with the same characteristics was significantly lower (32.6%). As regards the highest level of educational attainment (a magister degree/Ph.D.), even 63.3% of men who had completed this educational level rated their health as good, compared to 53.3% of women.

As regards the well-being index, the respondents belonging to the lower social classes more frequently reported poor self-rated health, with more emphasized gender differences. Women belonging to the lowest social class reported having poor self-rated health (39.1%) compared to 35% of men. On the other hand, men and women belonging to the highest social class reported having good self-rated health (47% of men and 43.2% of women).

The citizens of Šumadija and Central Serbia reported to have the worst self-rated health status. One-third of older women (30%) and 22,9% of men in this particular region rated their health as poor.

The results of bivariate logistic regression analyses of poor self-reported health by gender indicated that the association between demographic and socioeconomic determinants and poor health was more expressed in women for the majority of determinants (Table 2). With the population aging, every year of age increased the risk of poor health by 5,1% among women and 3.2% among men. Widows had a 20.4% higher risk of rating their health as poor when compared to men who revealed no statistically significant association between marital status and self-reported health status. The higher the level of education was, the less risk of poor self-rated health was (52.2% among women, 38.8% among men). Women living in the south had a 47.4% higher risk of poor health when compared to women living in the north (OR = 1.474), whereas men

Figure 1. Respondents' self-reported health status by gender

Table 1. *Respondents' self-reported health status by gender and demographic*
and socio-economic characteristics

Variables	Self-reported health status (%)									
	very good		good		moderate		bad		very bad	
	men	women	men	women	men	women	men	women	men	women
Age (years)										
65-69	6.4	2.2	37.7	32.4	36.6	41.0	14.2	18.1	2.7	4.4
70-74	4.3	1.9	33.6	26.9	37.4	44.4	16.8	19.8	4.9	4.1
75-79	4.3	2.2	27.6	18.8	39.8	40.9	16.5	26.5	5.0	6.4
80-84	1.4	0.7	26.8	17.6	33.8	38.1	27.2	27.0	5.2	8.6
85-89	1.3	0.7	22.5	10.6	39.8	31.2	21.7	33.3	3.6	9.2
90+	0.0	0.0	12.5	7.1	37.5	40.5	12.5	21.4	8.3	0.0
men: χ^2 = 108.084, p = < 0.001; women: χ^2 = 199.144, p < 0.001										
Marital status										
single	8.1	2.3	21,6	37.2	48.6	30.2	10.8	7.0	2.7	9.3
married	5.1	1.8	34.0	29.6	36.5	39.6	16.8	20.9	3.9	5.2
widowed	2.2	1.7	25.8	19.7	39.1	42.2	16.6	24.4	5.9	5.5
separated/divorced	0.0	2.6	43.6	26.3	34.5	40.8	18.2	18.4	3.6	6.6
men: χ^2 = 88.145, p < 0.001; women: χ^2 = 54.399, p < 0.001										
Level of education										
no education	0.0	1.2	6.5	8.7	41.3	27.2	23.9	35.3	8.7	12.1
incomplete elementary school	1.2	0.8	25.7	15.2	32.7	39.5	24.0	30.1	7.6	7.3
elementary school	1.1	1.2	25.1	21.4	41.7	42.3	21.5	25.2	5.5	5.8
middle school	6.5	2.7	35.2	32.2	36.6	44.0	15.0	15.0	3.4	3.3
high school/college	5.5	3.0	40.5	37.9	35.8	40.9	13.5	12.9	1.8	2.6
magister degree/PhD	10.0	0.0	53.3	53.8	30.0	23.1	6.7	15.4	0.0	7.7
men: χ^2 = 131.368, p < 001; women: χ^2 = 221.711, p < 001										
Wellbeing Index										
I (the poorest)	0.7	1.1	21.8	14.4	36.6	41.1	26.1	29.9	8.9	9.2
II	2.5	1.1	30.2	21.4	37.2	38.5	19.8	26.9	5.0	6.1
III	6.5	2.0	34.0	25.1	39.1	43.4	15.9	20.3	1.9	5.0
IV	5.6	3.1	36.2	26.2	35.6	42.9	14.7	17.0	2.8	4.1
V (the richest)	7.1	1.9	39.9	41.3	37.2	36.9	9.8	1.6	2.4	1.6
men: χ^2 = 101.141, p = 0.001; women: χ^2 = 122.675, p < 0.001										
Region										
Vojvodina	5.5	1.8	32.5	24.7	35.9	39.9	16.4	20.0	4.5	6.7
Belgrade	7.7	2.3	35.7	32.7	35.7	3.3	13.5	19.2	3.4	4.6
South and Eastern Serbia	3.0	1.6	34.1	24.3	36.5	40.8	19.5	23.9	3.4	6.1
Sumadija and Western Serbia	2.6	1.8	27.5	24.6	40.4	40.8	18.7	22.3	5.3	5.5
men: χ^2 = 35.067, p = 0,009; women: χ^2 = 50.340, p < 0.001										

Table 2. Odds ratios (OR) and their 95% confidence intervals (CI) of poor self-rated health were estimated according to demographic and socioeconomic characteristics by gender

Variables	Gender	Univariate model		Multivariate model	
		OR (95%CI)	p	OR (95%CI)	p
age	women	1,051 (1,031 -1,063)	< 0,001	1,037 (1,019 -1,057)	< 0,001
	men	1,032 (1,013 -1,054)	0,001	1,029 (1,007 -1,0468)	0,009
widow /widower	women	1,204 (1,010 – 1,441)	0,039		
	men	1,189 (0,927 – 1,543)	0,171		
education	women	0,488 (0,417 – 0,569)	< 0,001	0,7623 (0,519 -0,738)	< 0,001
	men	0,612 (0,519 – 0,712)	< 0,001		
wellbeing index	women	0,804 (0,749 – 0,857)	< 0,001		
	men	0,753 (0,691 – 0,818)	< 0,001	0,873 (0,759 – 0,925)	< 0,001
region	women	1,474 (1,228 – 1,751)	< 0,001	1,227 (1,004 – 1,498)	0,047
	men	1,368 (1,124 – 1,741)	0,004		

had a 36.8% higher risk of poor health (OR = 1.368). As regards men, their economic status was the only determinant revealing a greater association with poor health when compared to women.

The results of multivariate logistic regression analyses indicated that the following factors influenced poor self-rated health status in women: age, educational attainment, and region, whereas the factors influencing men were primarily: age and economic status (Table 2).

DISCUSSION

Previous studies have shown that self-reported health among older men and women is a valid measure of the objective health status of respondents, a significant predictor of survival in advanced age along with being a powerful predictor of healthy longevity (4,6). The perception of health status varies in different cultures and countries. The results of this particular survey showed that older people widely assessed their health status as poor and very poor (40%), whereas 22.3% of the respondents reported having good health. The survey conducted in Spain showed that approximately 25% of the older population considered themselves healthy (11). In Russia, this figure is only 10%, while in Finland, 39% of the elderly population rate their health as good (12). Women were more likely to report poor health status than men (45.9% to 32.2%). The abovementioned results were in accordance with the findings of the majority of other authors who confirmed that there was a larger percentage of older women who reported having poorer health status when compared to the health status of men (13, 14).

Such findings in the health literature could be explained by the fact that women, due to the higher level of awareness of health issues and disease symptoms, were more likely to report poorer self-rated health when compared to men. In addition, women showed a tendency to be prone to providing socially more desirable responses compared to men. Case and Paxson indicated that gender differences in self-rated health could be explained by the differences observed in the distribution of chronic conditions faced by both men and women, respectively, that is, by the fact that women genuinely showed poorer health status compared to men (15). As was expected with aging, years of life represented a key factor that was inversely proportional to health status, which meant that the prevalence of chronic diseases turned out to rise sharply with age, along with the increase in the share of adults reporting poor self-rated health.

Josefsson et al. established that among the respondents aged from 65 to 79, one out of three reported having a long-standing illness or health problems having lasted for more than six months. This proportion rose sharply with age, among women in particular, whereas half of the women respondents at an advanced age (the 80-84age group) suffered from chronic diseases (13).

Goldman et al. showed that women who became widowed early in life had poorer self-rated health status than those who were married. On the other hand, never-married women had better health outcomes than those who were married (16). Interestingly, single women living alone reported having better self-rated health status when compared to other married women, which could partially reflect the severe burden associated with taking care of their families which were more likely to be experienced by the majority of married women.

The respondents with middle and low educational levels had a higher prevalence of chronic diseases,

and they more often had poorer self-rated health status compared to those with higher education levels, which was in accordance with the data obtained from the available literature indicating that higher educational attainment correlated with good health status (17). These inequalities in self-reported health status observed according to education level may be explained by the fact that persons with higher educational attainment were more likely to be given adequate employment opportunities and become high-paid employees (18). Persons with higher educational attainment revealed a higher level of health literacy, had a healthier lifestyle and were able to make better use of available information while facing everyday problems which could harm their health (19).

Numerous studies indicated that populations with lower socioeconomic status had higher mortality rates along with a higher prevalence of the majority of illnesses. This regularity occurred in both genders and all age groups regardless of whether the research was focused on the association between mortality and morbidity and education level, income, or social status (20, 21).

Borg and Kristensen emphasized that lower socioeconomic status, measured based on the level of educational attainment and occupation, was associated with poorer self-rated health status among both men and women (22), given that women experienced a lot of cumulative adversities in their lifetime. In patriarchal societies, women often have inferior or secondary status compared to men. Older women have lower chances of receiving an education, particularly in developing countries, which results in lower incomes. Accordingly, women find themselves in a typically less favorable socioeconomic position compared to their male colleagues, and these problems in particular can explain their worse self-rated health status at an advanced age. This places a socioeconomic obstacle before them when it comes to approaching and making use of healthcare services and preventive healthcare measures in their lifetime, which may result in worse health status at an advanced age. In this manner, socioeconomic status determines the level of exposure to agents causing health deterioration, simultaneously defining individual resources for health promotion (23).

The current scientific literature on gender inequalities in health emphasizes the fact that education plays a more significant role in health status among women compared to men (23), whereas marital status has a more significant role in the mortality of men compared to the mortality of women (24). Accordingly, it was demonstrated that lower socioeconomic status had a significantly larger impact on the health status and mortality outcomes of men when compared to women (25).

Several studies (26, 27) demonstrated that statistically significant gender differences in self-reported health status were observed even after adjusting for all SES variables, whereas other studies showed that gender differences in self-reported health status were more in favor of women after adjusting for the role of socioeconomic factors (28). It was revealed not only that women tended to report worse self-rated health than men, particularly ones belonging to groups with privileged socioeconomic status (27), but the fact that socioeconomic status significantly contributed to expanding the above-mentioned disparity (28).

CONCLUSION

Taking into consideration the fact that the advantages of increased life expectancy will be entirely achieved only if these extra years of life gained through increased longevity are spent in good health, the importance of conducting additional research on gender differences is more than evident, particularly in terms of providing meaningful insight into the development of action plans devised to deal with gender differences in health status, simultaneously promoting healthy and active aging for both men and women.

From the point of view of health inequalities, the values of this indicator, in particular, may point out the need to create sound policy measures to minimize the existing differences observed among the groups of the population characterized by different gender, age, educational levels, economic status, place of residence along with other social and demographic characteristics.

Conflict of Interests: The authors declare no conflicts of interest related to this article.

Licensing

AUTHOR CONTRIBUTIONS

SI, SR, and KJ developed research questions, designed the study, and prepared the manuscript. DA, MI, AM, and MP participated in the presentation and interpretation of the results and reviewing of the manuscript.

Sažetak

SOCIJALNO-EKONOMSKE DETERMINANTE RODNIH RAZLIKA U SAMOPROCENI ZDRAVLJA KOD STARIJE POPULACIJE

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Uvod: Procena sopstvenog zdravlja je jedan od veoma značajnih pokazatelja ukupnog zdravstvenog stanja i kvaliteta života.

Cilj: Ispitati postojanje rodnih razlika u samoproceni zdravlja kod starih osoba u zavisnosti od društveno-ekonomskih faktora.

Metode: Kao osnov za analizu korišćeni su podaci iz četvrtog nacionalnog Istraživanja zdravlja stanovništva Srbije urađenog po tipu studije preseka. Istraživanje je sprovedeno u skladu sa metodologijom i instrumentima Evropskog istraživanja zdravlja.

Rezultati: Postoji statistički značajna povezanost između pola i samoprocene zdravlja ispitanika. Žene su značajno češće procenjivale svoje zdravlje kao loše (27,8%), dok su muškarci pozitivnije ocenjivali svoje zdravlje (21,3%). Rezultati multivarijantne logističke regresije pokazuju da na lošiju samoprocenu zdravlja kod žena utiču godine starosti, stepen obrazovanja, regija, dok kod muškaraca utiču godine starosti i materijalno stanje.

Zaključak: Obzirom na to da su prednosti dužeg očekivanog životnog veka u potpunosti postignute samo u slučaju da se ove dodatne godine prožive u dobrom zdravlju, jasno je da su potrebna dodatna istraživanja rodnih razlika da bi se obezbedio smisleni uvid u razvoj akcionih planova koji rešavaju rodne razlike u zdravstvenom statusu i koji promovišu zdravo, aktivno starenje i za muškarce i za žene.

Ključne reči: procena sopstvenog zdravlja, stare osobe, rod, nacionalno istraživanje zdravlja.

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