



Quality of life of the elderly in urban and rural areas in Serbia

Kvalitet života starih u urbanoj i ruralnoj sredini u Srbiji

Jadranka Urošević*, Gordana Odović†, Dragan Rapaić†, Mladen Davidović‡,
Sanja Trgovčević§, Verica Milovanović||

*College of Health Studies, Čuprija, Serbia; †Faculty for Special Education and Rehabilitation, University of Belgrade, Serbia; ‡Faculty of Medicine, University of Belgrade, Belgrade, Serbia; §Faculty of Political Sciences, University of Belgrade, Belgrade, Serbia; ||Military Medical Academy, Belgrade, Serbia

Abstract

Background/Aim. The number of elderly people in the world is growing, in Serbia as well. Serbia is already among the top ten countries with the oldest population, it is the fact. Aging influences the quality of life in different ways. The aim of this study was to assess the health-related quality of life of the elderly in urban and rural areas in Serbia. **Methods.** The study included 100 elderly people aged 65 years and above in urban and rural areas in Serbia. The next questionnaires were used: a socio-demographic questionnaire and a Serbian version of standardized European Euro-QoL questionnaire (EQ-5D-3L), as a basic index for the assessment and description of the quality of life. **Results.** In the structure of the respondents, according to the achieved social contacts ($p = 0.012$), the life of those with family members ($p = 0.009$), and health status ($p = 0.000$), in relation to the place of residence there was a statistically significant difference. There was a significant difference ($p = 0.040$), predominantly poor score for anxiety/depression within the rural population. The average value of quality of life in urban and rural areas was not statistically significant ($p = 0.720$). For those living in rural areas there was a statistically significant positive correlation between anxiety/depression and age, wealth status, marital status, living with family members and achieving social contacts, while a negative correlation was observed between anxiety/depression and education. **Conclusion.** On the basis of the data of our study, we can say that the presence of anxiety/depression among older people is greater in rural than in urban areas. The results of this study show that the perception of anxiety/depression among older in rural areas is bigger with the age and poverty increasing, the loss of a spouse, life without family members, lack of achievement of social contacts and lower education.

Key words:
quality of life; aged; residence characteristics;
questionnaires; risk factors.

Apstrakt

Uvod/Cilj. Broj starih osoba u svetu i Srbiji raste, a činjenica je i da se Srbija već nalazi među deset zemalja sveta sa najstarijim stanovništvom. Proces starenja na različite načine utiče na kvalitet života. Cilj rada bio je da se proceni kvalitet života u vezi sa zdravljem starih u urbanoj i ruralnoj sredini u Srbiji. **Metode.** Istraživanje je obuhvatilo 100 starih osoba od 65 godina i više, u urbanoj i ruralnoj sredini. Korišćeni upitnici bili su sociodemografski upitnik i srpska verzija standardizovanog evropskog upitnika Euro-QoL (EQ-5D-3L), kao bazični indeks za procenu i opis kvaliteta života. **Rezultati.** U strukturi ispitanika prema ostvarivanju socijalnih kontakata ($p = 0,012$), životu ispitanika sa članovima porodice ($p = 0,009$) i zdravstvenom stanju ($p = 0,000$), u odnosu na mesto stanovanja, utvrđena je statistički značajna razlika. Nađena je značajna razlika ($p = 0,040$), sa dominacijom loših ocena, za usamljenost unutar ruralne populacije. Kod ispitanika koji žive u ruralnoj sredini utvrđena je statistički značajna pozitivna povezanost između usamljenosti i godina života, materijalnog stanja, bračnog statusa, života sa članovima domaćinstva i ostvarivanja socijalnih kontakata, dok je negativna povezanost uočena između usamljenosti i obrazovanja. **Zaključak.** Na osnovu podataka ove studije možemo reći da su usamljenije stare osobe u ruralnoj sredini. Rezultati ovog istraživanja pokazuju da se percepcija anksioznosti/depresije kod starih u ruralnoj sredini povećava porastom godina starosti i siromaštva, gubitkom bračnog druga, životom bez članova porodice, neostvarivanjem socijalnih kontakata i nižim stepenom obrazovanja.

Ključne reči:
kvalitet života; stare osobe; stanovanje; upitnici; faktori rizika.

Introduction

The World Health Organization (WHO) defines quality of life as the perception to individuals about their own position in life in the context of culture and value systems in which they live, and according to their goals, expectations, standards and interests. It is a broad concept which consists of an individual's physical health, psychological status, material independence, social relationships and their relationships with important external characteristics¹.

When the concept of quality of life relates to health, i.e. to monitor certain medical interventions, often uses the term "health-related quality of life" (HRQoL). From the perspective of health (or disease), quality of life refers to the social, emotional and physical well-being of individuals. Areas that contribute to the overall quality of life are natural and work ability, psychological status, social contact and somatic feeling².

Basically the person, regardless of the ages, status, education, religion or race, lies a unique desire to live out the life in satisfaction. Terms related to pleasure, prosperity, fulfillment, and happiness are closely related to the notion of quality of life (QL)³. Health is one of the most important prerequisites for quality of life, but not the only one. Information on quality of life can only be obtained from a person who only has access to their feelings and thoughts⁴.

Demographic research in the world and in our country points the rapid growth in the number of elderly in the total population. In addition to the increase in the elderly population this period is characterized by the extension of life expectancy, which indicates the need to develop a comprehensive and well-organized social care for the elderly. Old people meet their needs, both within their families and nearest community, and in the institutions of health and social care. Behavior of family members and the community has an important role in adaptation to aging⁵.

Most researchers agree with the statement that in old age there is no major change in personality traits, those that were present in the younger years are reflected, becoming strengthened and more prominent. When we talk about the personality traits of the elderly, it is an interesting question whether there are personality traits that allow the elderly a better adaptation to the aging process and old age than others. In addition, old age is characterized by the presence of one or more diseases. The old are often alienated, lonely, abandoned by their primary group. Lack of social support, change of residence, the loss of a close person, the process of retirement and so on occur as the crisis events⁶.

In the definition of the health of the WHO is also mental health^{6,7}. Anxiety/depression is a disease of modern times. Anxiety is a feeling of restlessness, uneasiness, fear, and depression is a mood disorder in which the dominant feelings are low mood, sadness, apathy, indifference, social withdrawal, anxiety, and feelings of guilt and lower values, as well.

Contemporary arguments suggest that aging is not just a series of life crises, but growing through new lifetime opportunities and challenges. Successful and active aging involves harmonizing its capabilities with the capabilities satisfaction with life. Life satisfaction refers to the evaluation of their

own lives, and is the cognitive component of subjective well-being. By self-esteeming, an individual maintains (non) acceptance of her/himself, which indicates the level of an individual's belief in his own abilities, importance, performance, and value⁸.

The tendency of society should be focused on non-institutional care of the elderly because they feel most comfortably in their surroundings and their home, so that they could be more active. Unlike depressed people who are dissatisfied with themselves, lonely people are unhappy with relationships which they do (not) have with others. The increased care for the elderly in the local community can be provided in the clubs for their socializing, with a tendency that these clubs will grow into day care centers for the elderly. Prevention and mitigation of social isolation and loneliness among older people is important for practice, and for planning social interventions^{9,10}.

The aim of this study was to assess the health-related quality of life of the elderly in urban and rural areas.

Methods

The study was conducted at the Health Center Jagodina in the period from September 15, 2013 to February 2, 2014 year on a sample of 100 respondents, 45 men and 55 women, where 50 patients were from urban and 50 from rural areas. Age of the patients ranged from 65 to 87 years (average age 71 ± 5 years).

The next socioeconomic characteristics were obtained by a questionnaire and were analyzed: gender, age, education, financial status, marital status, living with family members, the achievement of social contacts and health status.

As an instrument for assessing quality of life, the Serbian version of the standardized European EuroQoL questionnaire (EQ-5D-3L)^{11,12} was applied, as a generic instrument for the assessment and description of the quality of life of the elderly. The EQ-5D-3L descriptive system comprises the following 5 dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each dimension has 3 levels (no problems, some problems, extreme problems) as a categorical answer, based on personal health assessments, and responses were used to calculate the index. The results were analyzed by using the SPSS statistical software (SPSS version 21 IBM). All variables were analyzed by using the basic parameters of descriptive statistics.

Results

Table 1 shows the frequency of the socio-demographic characteristics of respondents (50 respondents from urban and 50 respondents from rural areas). The results showed that there was no statistically significant difference in sex in relation to place of residence ($p = 0.841$). The average age of respondents in urban areas was 77.44 ± 7.21 years. The respondents in rural areas were a little bit younger; their average age was 76.78 ± 6.74 years. The average age of respondents by place of residence was not statistically significant ($p = 0.636$). The respondents from urban and rural area did not differ in the level of education ($p = 0.266$), wealth status

Table 1

The frequency of socio-demographic characteristics of the studied elderly				
Socio-demographic characteristics	Total, n (%)	Urban, n (%)	Rural, n (%)	p (χ^2 -test)
Sex	100 (100)	50 (100)	50 (100)	0.841
male	45 (45)	22 (44)	23 (46)	
female	55 (55)	28 (56)	27 (54)	
Age (years), mean $\pm$ SD		77.44 $\pm$ 7.21	76.78 $\pm$ 6.74	
Age (years)	100 (100)	50 (100)	50 (100)	0.636
65–74	39 (39)	18 (36)	21 (42)	
75–84	45 (45)	23 (46)	22 (44)	
> 84	16 (16)	9 (18)	7 (14)	
Education	100 (100)	50 (100)	50 (100)	0.266
without education	34 (34)	15 (30)	19 (38)	
elementary	41 (41)	19 (38)	22 (44)	
secondary and university	25 (25)	16 (32)	9 (18)	
Wealth status	100 (100)	50 (100)	50 (100)	0.194
the poorest	18 (18)	7 (14)	11 (22)	
poor	31 (31)	13 (26)	18 (36)	
average and rich	51 (51)	30 (60)	21 (42)	
Marital status	100 (100)	50 (100)	50 (100)	0.578
married	37 (37)	21 (42)	16 (32)	
never married	18 (36)	8 (16)	10 (20)	
divorced/widowed	45 (45)	21 (42)	24 (48)	
Family members	100 (100)	50 (100)	50 (100)	0.009*
living with	53 (53)	33 (66)	20 (40)	
living without	47 (47)	17 (34)	30 (60)	
Achievement of social contacts	100 (100)	50 (100)	50 (100)	0.012*
realized	64 (64)	38 (76)	26 (52)	
unrealized	36 (36)	12 (24)	24 (48)	
Health status	100 (100)	50 (100)	50 (100)	0.000*
1 disease	35 (35)	24 (48)	11 (22)	
2 diseases	43 (43)	26 (52)	17 (34)	
3 or more diseases	22 (22)	0 (0)	22 (44)	

* statistically significant difference.

($p = 0.194$) and marital status ($p = 0.578$). There was statistically significant difference in the life of those with family members ($p = 0.009$), achieving social contacts ($p = 0.012$) and health status ($p = 0.000$) in relation to place of residence.

Table 2 shows the distribution of respondents according to the predictors of subjective assessment of quality of life (mobility, self-care, usual activities, pain/discomfort and anxiety/depression) in relation to place of residence. The results indicate that there was a statistically significant difference in anxiety/depression in relation to place of residence ($p = 0.04$), predominantly poor score of anxiety/depression within the rural population.

In order to determine the influence of socio-demographic characteristics of respondents on anxiety /depression, as one of

Table 2

Distribution of respondents according to the predictors of subjective assessment of quality of life in relation to place of residence

EQ-5D-3L dimensions	Total, n (%)	Urban, n (%)	Rural, n (%)	p (χ^2 -test)
Mobility	100 (100)	50 (100)	50 (100)	0.194
1.00	51 (51)	30 (60)	21 (42)	
2.00	31 (31)	13 (26)	18 (36)	
3.00	18 (36)	7 (14)	11 (22)	
Self care	100 (100)	50 (100)	50 (100)	0.266
1.00	25 (25)	16 (32)	9 (18)	
2.00	41 (41)	19 (38)	22 (44)	
3.00	34 (34)	15 (30)	19 (38)	
Usual Activities	100 (100)	50 (100)	50 (100)	0.474
1.00	41 (41)	21 (42)	20 (40)	
2.00	34 (34)	19 (38)	15 (30)	
3.00	25 (25)	10 (20)	15 (30)	
Pain/Discomfort	100 (100)	50 (100)	50 (100)	0.079
1.00	16 (16)	12 (24)	4 (8)	
2.00	37 (37)	18 (36)	19 (38)	
3.00	47 (47)	20 (40)	27 (54)	
Anxiety/Depression	100 (100)	50 (100)	50 (100)	0.004*
1.00	50 (50)	33 (66)	17 (34)	
2.00	28 (28)	8 (16)	20 (40)	
3.00	22 (22)	9 (18)	13 (26)	

* a statistically significant difference; EQ-5D-3L – European Quality of Life Questionnaire – Serbian version.

the predictors of subjective assessment of quality of life, the correlation analysis was done. The values of Pearson's correlation coefficient (r) for all subjects together and separately by place of residence are shown in Table 3. There was a statistically significant positive correlation between anxiety/depression and the following socio-demographic characteristics: place of residence, age, marital status, living with family members and achievement of social contacts while statistically significant negative correlation was observed for the level of education and financial status of participants. When it comes to those living in urban areas a statistically significant positive correlation was observed between anxiety/depression and age and marital status, and there was negative correlation between anxiety/depression and financial situation. For those living in rural areas there was a statistically significant positive correlation between anxiety/depression and age, marital status, living with family members and achieving social contacts, while negative correlation was observed between anxiety/depression and education (Table 4).

group of people will decrease by 2.565 if moving from the group with moderate depression to the group with no depression. The relative log odds of being in a group of living with family members vs the group not living with family members will decrease by 2.565 if moving from the group with moderate depression to the group with no depression. The relative log odds of being in the group of living with family members vs the group not living with family members will decrease by 2.383 if moving from the group with extreme depression to the group with no depression. The relative log odds of being in a group not achieving social contacts vs the group not achieves social contacts will decrease by 2.383 if moving from the group with extreme depression to the group with no depression.

Discussion

The aim of this study was to assess the health-related quality of life of the elderly in urban and rural areas. The

Table 3

Correlation of socio-demographic characteristics with anxiety/depression showed by Pearson's correlation coefficient (r)

Socio-demographic characteristics	Anxiety/depression					
	total		urban		rural	
	r	p	r	p	r	p
Place of residence	0.250*	0.012				
Sex	0.110	0.274	0.178	0.217	0.060	0.677
Age (years)	0.600**	0.000	0.548**	0.000	0.725**	0.000
Education	-0.352**	0.000	-0.277	0.051	-0.389**	0.005
Wealth status	-0.406**	0.000	-0.598**	0.000	-0.174	0.226
Marital status	0.640**	0.000	0.615**	0.000	0.668**	0.000
Living with family members	0.354**	0.000	0.171	0.235	0.445**	0.001
Achievement of social contacts	0.366**	0.000	0.226	0.115	0.412**	0.003
Health status	0.140	0.164	0.076	0.600	-0.004	0.978

r – Pearson's correlation coefficient; p – statistical significance: * $p < 0.05$, ** $p < 0.01$.

The results of multinomial logistic regression analysis showed that the following socio-demographic characteristics of respondents were associated with anxiety /depression of elderly in rural area: age, education, wealth status, marital status, living with family members and achievement of social contacts. A one-unit increase in the variable age was associated with 0.242 increases in the relative log odds of being in moderate depression vs no depression. A one-unit increase in the variable age was associated with 0.566 increases in the relative log odds of being in extreme depression vs no depression. The relative log odds of being in a group with elementary school vs a group with secondary school and university will increase by 3.450 if moving from the group with moderate depression to the group with no depression. The relative log odds of being in a group without education vs a group with secondary school and university will increase by 20.922 if moving from a group with extreme depression to the group with no depression. The relative log odds of being in a group of poor people vs the average wealth people will increase by 2.457 if moving from the group with moderate depression to the group with no depression. The relative log odds of being in a group of married people vs divorced/widowed

analysis of respondent's subjective perception of mobility, self-care, usual activities, pain/discomfort and anxiety/ depression, was conducted. In this study, respondents mostly estimated to have some problems with walking about or are confined to bed; to have some problems with self-care and performing usual activities and with not to be able to take care of themselves, to perform daily activities; they told to feel moderate and extreme pain and to be moderately or extremely anxious/depressed. Apart from the frequency of bad scores in the total sample, there was a significant statistical difference in anxiety/depression in relation to place of residence. Specifically, the older people in rural areas showed the anxiety/depression to a greater extent. The studies on the differences in people's depression in urban and rural areas are contradictory. One study confirms a higher prevalence of depression among patients in rural environment¹³. The increased prevalence of depressing mood of older people in rural areas may be influenced by socio-demographic characteristics of the population, the decline of psychophysical capacities as the result of ageing, the loss of a beloved person, the drain of young people in the cities, inadequate networks of social support; all this results in an un

Table 4

Socio-demographic characteristics	Moderately anxious/depressed				Extremely anxious/depressed			
	B	p	Exp(B)	95% CI	B	p	Exp(B)	95% CI
Sex								
male	-1.204	0.083	0.3	0.077–1.168	-0.203	0.785	0.817	0.19–3.505
female	-	-	-	-	-	-	-	-
Age								
age (years)	0.242	0.005*	1.274	1.078–1.506	0.566	0.000*	1.762	1.319–2.352
Education								
without education	-18.27	0.998	1.16E-08	0.000	20.922	0.000*	1.22E+09	1.4E+08–1.06E+10
elementary	3.45	0.002*	31.5	3.685–269.24	20.603	-	8.87E+08	9E+08–8.87E+08
secondary and university	-	-	-	-	-	-	-	-
Wealth status								
the poorest	-20.04	-	1.99E-09	1.99E-09–1.99E-09	0.875	0.284	2.400	0.484–11.891
poor	2.457	0.007*	11.667	1.94–70.178	0.693	0.543	2.000	0.214–18.687
average and rich	-	-	-	-	-	-	-	-
Marital status								
married	-2.565	0.006*	0.077	0.013–0.471	-23.1	-	9.34E-11	9.34E-11–9.34E-11
never married	0.981	0.434	2.667	0.229–31.069	-1.386	0.373	0.250	0.012–5.262
divorced/widowed	-	-	-	-	-	-	-	-
Family members								
living with	-2.565	0.001*	0.077	0.016–0.369	-2.383	0.006*	0.092	0.017–0.510
living without	-	-	-	-	-	-	-	-
Achievement of social contacts								
realized	-1.179	0.104	0.308	0.074–1.276	-2.383	0.006*	0.092	0.017–0.510
unrealized	-	-	-	-	-	-	-	-
Health status								
1 disease	0.644	0.472	1.905	0.33–11.009	0.134	0.89	1.143	0.172–7.601
2 diseases	0.421	0.573	1.524	0.352–6.601	-0.56	0.523	0.571	0.103–3.183
3 or more diseases	-	-	-	-	-	-	-	-

^{||} Reference category; B – coefficient of regression; Exp (B) – odds ratio; 95% CI – confidence interval; * – Statistically significant difference.

favourable social situation for older people in rural areas and they express feelings of loneliness, uncertainty and concern^{4,6}.

Numerous studies have confirmed a connection between depressing mood of older people and socio-demographic characteristics¹⁴. The overall results of this analysis conducted among the respondents in rural areas, indicate a statistically significant positive correlation between anxiety/depression and age, marital status, living with family members and achieving social contacts, while a negative correlation was observed between anxiety/depression and education.

Our findings showed that older respondents had a greater sense of anxiety and depression. Some of the earlier studies have shown that depression increases more frequently among the oldest old than among younger old people¹⁵; depression is related to ageing and it is one of the most common mental disorders among older people¹⁶. This study indicate that older married people have the slightest feeling of depression, while divorced people, and widowed people expressed major depressing moods. In fact, the absence of a spouse makes the quality of life significantly worse. It's likely that older people will often experience the death of a spouse or a family member dealing with grief and mourning after his/her death. The loss of a spouse or beloved one can cause pathological responses of older people, as an introduction to a depressing mood. In old age, loss of a spouse is one of the biggest stresses in life. It is obvious that the results of this study suggest that old people living in single households have greater feelings of depression than old people living with family members. The lack of the usual family support makes the feeling of depression, loneliness and abandonment bigger¹⁷. The survey conducted by Buber and Engelhardt¹⁸ confirms that the proximity of children and frequency of contacts between older parents and children are positively associated with depressing mood of older people because people without children expressed more symptoms of depression. According to a Coward's and Cutler's research, there has been a reduction in the number of older people living with their children worldwide. This decrease is found in all countries where there is a migration from rural to urban areas¹⁹. In our environment, life in rural areas is based on traditional resources – self-help and family support²⁰. Migration from the countryside to the cities led to the gradual disappearance of traditional support for older people from their neighbours and relatives¹⁰. According to this study, the respondents who achieve social contacts feel less depressed

than the respondents who do not achieve social contacts. Results of previous studies show that poor social support and under-developed network of social contacts can lead a person to social isolation. Facing the unfulfilled life activities and the decline of self-esteem, and not putting enough effort into life renovation and reorganization, lead the individual to a higher or lower degree of social isolation^{10, 21}. Feelings of social isolation, abandonment and loneliness may also be the signs of depression²². Taking into account that the achievement of social contacts (more visible in urban areas according to the results of the experiment) carries less risk of depression increase, it is not surprising that the rate of depression in rural areas is significantly higher than in urban ones. The results showed that respondents with no formal education feel more depressed than those with primary education, while respondents with secondary and higher education level feel least depressed. Several previous studies show that respondents with lower education have a weaker sense of mental and physical health, and that certain psychosocial interventions have a greater effect on individuals who have less psychosocial resources, less optimism, or a lower level of education⁷. A "Study of Living Standards", implemented by the Republic Institute for Statistics of Serbia²³ and a study conducted by Sataric et al.²⁴, present the results that older people without school, with incomplete primary education or with primary school in a rural area have the highest poverty rate and negative feelings such as abandonment, helplessness, loneliness. Our research show that poor people feel more depressed than average wealth people. Other studies confirm that worrying about money is a significant predictor of depression of elderly people²⁵.

Conclusion

On the basis of the results of our study, we can conclude that the presence of anxiety/depression among older people is greater in rural than in urban areas. The perception of anxiety/depression among older people in rural areas increases with increasing of age and poorness, lossing of a spouse, living without family members, lacking of achievement of social contacts and lower education. Anxiety/depression influences the quality of life of older people, so early detection of depression, and the assessment of correlation with socio-demographic characteristics are very important for improving the quality of life of older people in urban, and especially, in rural areas.

R E F E R E N C E S

1. *World Health Organization*. Global status report on non communicable diseases 2010. Geneva: World Health Organization; 2011.
2. *The New European Policy for Health*. Health 2020: vision, values, main directions and approaches. Provisional agenda item 6(a)r. Sixty-first session of the Regional Committee for Europe; Baku, Azerbaijan; 2011 September 12–15. Copenhagen: WHO Regional Office for Europe; 2011.
3. *Trgovčević S, Nedović G, Kljajić D, Eminović F, Urošević J*. Quality of life persons with medulla spinalis lesions - pilot study. *Health Med* 2012; 6(8): 2902–8.
4. *Stewart M, Craig D, MacPherson K, Alexander S*. Promoting positive affect and diminishing loneliness of widowed seniors through a support intervention. *Public Health Nurs* 2001; 18(1): 54–63.
5. *White H, McConnell E, Clipp E, Branch LG, Sloane R, Pieper C, et al*. A randomized controlled trial of the psychosocial impact of providing internet training and access to older adults. *Aging Ment Health* 2002; 6(3): 213–21.
6. *Findlay R.A*. Interventions to reduce social isolation amongst older people: where is the evidence. *Ageing Soc* 2003; 23(5): 647–58.

7. *Ministry of Health Republic of Serbia*. Nacional Health Survey for the population of Republic of Serbia (without data on Kosovo and Metohija). Basic rezultats. Belgrade: Ministry of Health Republic of Serbia; 2006. (Serbian)
8. *Urošević J, Odović G, Rapaić D, Davidović M, Arsić S*. Life contentment and self-esteem as basics of active ageing. In: *Davidović M, Milović Lj, Simović T, Urošević J*, editors. Proceedings of the First International Conference of Health Orientated Higher Institutions and Faculties with topic: Education for active ageing. Čuprija: Book of abstracts and certain articles as a whole; 2013. (Serbian)
9. *Andrews GR*. Promoting health and function in an ageing population. *Br Med J* 2001; 322(7288): 728–9.
10. *Cattan M, White M, Bond J, Learmouth A*. Preventing social isolation and loneliness among older people: a systematic review of health promotion interventions. *Ageing Soc* 2005; 25: 41–67.
11. *EuroQol Group*. EuroQol-a new facility for the measurement of health-related quality of life. *Health Policy* 1990; 16(3): 199–208.
12. *Tadić I*. The application of factor analysis in studies of psychometric properties of osteoporosis knowledge assessment questionnaire and quality of life questionnaire for patients with osteoporosis [dissertation]. Belgrade: Faculty of Pharmacy; 2012. (Serbian)
13. *Probst JC, Laditka SB, Moore CG, Harun N, Powell MP, Baxley EG*. Rural-urban differences in depression prevalence: implications for family medicine. *Fam Med* 2006; 38(9): 653–60.
14. *Chong MY, Tsang HY, Chen CS, Tang TC, Chen CC, Yeh TL*, et al. Community study of depression in old age in Taiwan: prevalence, life events and socio-demographic correlates. *Br J Psychiatry* 2001; 178(1): 29–35.
15. *Demura S, Sato S*. Relationships between depression, lifestyle and quality of life in the community dwelling elderly: a comparison between gender and age groups. *J Physiol Anthropol Appl Human Sci* 2003; 22(3): 159–66.
16. *Seligman ME, Walker EF, Rosenhan DL*. Abnormal psychology. 4th ed. New York: Norton; 2001.
17. *Chi I, Chou KL*. Social support and depression among elderly Chinese people in Hong Kong. *Int J Aging Hum Dev* 2001; 52(3): 231–52.
18. *Buber I, Engelhardt H*. Children's impact on the mental health of their older mothers and fathers: findings from the Survey of Health, Ageing and Retirement in Europe. *Eur J Ageing* 2008; 1(5): 31–45.
19. *Coward RT, Cutler SJ*. The composition of multigenerational households that include elders. *Res Aging* 1991; 13(1): 55–73.
20. *Urošević J, Odović G, Rapaić D, Davidović M, Miljković S*. The functional independence of older adults after stroke. *PONS Med J* 2011; 8(4): 115–20. (Serbian)
21. *Nakao M, Yano E*. Somatic symptoms for predicting depression: one-year follow-up study in annual health examinations. *Psychiatry Clin Neurosci* 2006; 60(2): 219–25.
22. *Janssen J, Beekman AT, Comijs HC, Deeg DJ, Heeren TJ*. Late-life depression: the differences between early- and late-onset illness in a community-based sample. *Int J Geriatr Psychiatry* 2006; 21(1): 86–93.
23. *Krstić G*. Poverty profile in Serbia in the period 2002–2007. In: *Vukmirović D, Smith GR*, editors. Study of Living Standards - Serbia 2002–2007. Belgrade: Statistical Office of the Republic of Serbia; 2008. p. 9–29. (Serbian)
24. *Satarić N*. Poverty of the elderly and implementation of the poverty reduction strategy paper. *Gerontologija* 2010; 37(2): 184–200. (Serbian)
25. *Choi NG, Jun J*. Life regrets and pride among low-income older adults: relationships with depressive symptoms, current life stressors and coping resources. *Aging Ment Health* 2009; 13(2): 213–25.

Received on August 31, 2014.

Revised on September 25, 2014.

Accepted on October 10, 2014.

Online First September, 2015.