

ORIGINAL PAPER

DETERMINANTS OF QUALITY OF LIFE IN THE ELDERLY

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Abstract

Aim: To assess the impact of selected demographic (age, sex), socio-economic (marital status, education, income) and health factors (functional status, anxiety, depression) on quality of life (QOL) of seniors in the Košice region. *Design:* Cross-sectional study. *Methods:* QOL was assessed by the WHOQOL-BREF and WHOQOL-OLD questionnaires, functional status was assessed by the Barthel test Activities of Daily Living (ADLs), anxiety by the Beck Anxiety Inventory, and depression by the Zung Self-Rating Depression Scale. Relations between variables were assessed by Pearson correlation coefficients. Linear regression analysis was used to evaluate QOL predictors. *Results:* In a sample of a hundred and two elderly people, the best QOL was found in the domain of social relationships, death and dying, and intimacy. The worst QOL was found in physical health, social participation, and past, present and future activities. QOL was reduced particularly by depression, poly-morbidity, and life without a partner. The maintenance of independence in ADLs had a positive impact on most QOL domains. *Conclusion:* The results indicate the necessity of creating opportunities for the development and maintenance of social contacts, the involvement of seniors in various leisure activities and in different programs or voluntary activities. The screening for and treatment of depression and anxiety is very important in improving quality of life in older adults, as is maintaining and improving self-care in ADLs.

Keywords: quality of life, elderly, anxiety, depression, functional status, WHOQOL-BREF, WHOQOL-OLD.

Introduction

An increase in the population aged 60 and above is a characteristic of the 21st century, all over the world, including Slovakia. The World Health Organization (WHO, 2002) refers to a demographic revolution and assumes that by 2025 the world population aged 60 and above will have reached 1.2 billion people, and by 2050 there will be two billion seniors. To make aging a positive experience, it must be accompanied by continuous opportunities for good health, participation, and security (WHO, 2002). In this context, the WHO talks of “active aging” (2002), which is characterized as “the process of optimizing opportunities for health, participation and security in order to enhance the quality of life in older age.” The word “active” refers not only to continuing with physical activity or work, but also the participation of the elderly in various areas – social, economic, cultural, spiritual and civic. The key objective of active aging is to maintain autonomy and independence, promoting physical and mental health,

social inclusion, and quality of life of all aging people, including the disabled and those in need of care. In order to enable individuals to age healthily, to lead an active and meaningful life in the period of old age, the aim of caring for the elderly should be to create conditions for comprehensive and multidisciplinary care, taking account of the environment they find themselves in (Zamboriová, Simočková, Potočková, 2007).

Quality of life (QOL) ranks in geriatrics, gerontology and nursing in gerontology as one of the most important indicators. Achieving the maximum possible quality of life is one of the most important objectives in care for the elderly and, to some extent, an indicator of the quality of nursing care (Farský, Ondrejka, Žiaková, 2007). The WHO defines quality of life as “the individual’s perception of their position in life in the context of cultural and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad term encompassing comprehensive physical health, psychological state, level of independence, social relationships, personal beliefs and relationship to the main features of the environment” (WHOQOL Group, 1995). Gurková (2011) defines QOL in nursing as a subjective perception and evaluation

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of individual living conditions, which is based on an internal standard (values, expectations, aspirations, etc.); QOL is considered to be a multidimensional, subjective, value-driven construct. In the elderly, the most significant aspects of QOL assessment are autonomy, self-sufficiency, decision-making, absence of pain and suffering, the preservation of sensory abilities, the maintenance of a system of social support, a certain financial level, a sense of usefulness to others, and a certain degree of happiness (Gurková, 2011). In the elderly, QOL is affected by the many demanding situations and factors that are associated with older age – ranging from changes in health status to coping with new restrictions in life, and identifying new roles, opportunities, and available social support (Gurková, 2011). Demographic variables (age, gender, ethnicity), socio-economic characteristics (education, social status, income, social support...), cultural influences and values, health factors (health/medical condition, disease, functional status, health care services), and personal characteristics (e.g., coping mechanisms, self-efficacy...) can be considered to be predictors of QOL (Dragomirecká, Prajsová, 2009; Gurková, 2011; Bryła, Burzyńska, Maniecki-Bryła, 2013; Layte, Sexton, Savva, 2013; Bilgili, Arpacı, 2014; Chin, Lee, Lee, 2014; Forjaz et al., 2015).

Aim

The aim of this study is to assess the impact of selected demographic (age, sex), socio-economic (marital status, education, income), and health factors (functional status, anxiety, depression, poly-morbidity) on the quality of life of seniors living in the Košice region in Slovakia.

Methods

Design

The study is cross-sectional in nature.

Sample

The criteria for inclusion in the group of respondents were: age of at least 60 years, residence in the Košice region, willingness to cooperate, and signed informed consent. The exclusion criterion was any cognitive deficiency. Respondents were approached from October to November 2012 at the Department of Geriatrics and Gerontology at the Vojenská Letecká nemocnica, a. s. in Košice with the consent of the hospital administration. We also asked hospitalized seniors for their cooperation in distributing a questionnaire to their peers, whether family members or friends, who had not been admitted to hospital in the city of Košice and the

surrounding area, and who felt subjectively healthy. We issued 150 questionnaires; the response rate was 102 questionnaires (68%).

Data collection

We distributed a set of questionnaires to seniors to assess quality of life, functional status, probable anxiety, depression, and the assessment of selected demographic, socio-economic, and health characteristics.

The WHOQOL-BREF and WHOQOL-OLD questionnaires (Czech version, Dragomirecká, Prajsová, 2009) were used to assess quality of life. The WHOQOL-BREF consists of 26 questions, 24 of which are divided into four domains: physical health, mental health, social relationships, and environment. The WHOQOL-OLD questionnaire, which is designed for those aged over 60, is currently one of the best known and most frequently used tools for assessing the quality of life of seniors (Gurková, 2011). The questionnaire consists of 24 items, which are divided into six domains: sensory abilities, autonomy, past, present and future activities, social participation, death and dying, and intimacy. After conversion, the standardized scores in these domains are in a range from 0 to 100, whereby 0 refers to worst quality of life, and 100 to best quality of life.

Functional status was assessed by the Barthel index of Activities of Daily Living (ADLs), which measures the ability to perform daily living activities – eating, dressing, personal hygiene, bathing, bowel and urine continence, toileting, walking up stairs and along a plane, and transfer from bed to chair. Evaluation of the results of the questionnaire are interpreted according to points gained, whereby 0–40 points is considered high dependency, 45–60 points is considered moderate dependency, 65 to 95 points is considered mild dependency, and 100 points represents independence, and, thus, a person fully independent and self-sufficient in ADLs (Mahoney, Barthel, 1965).

Possible depression was assessed by the Zung Self-Rating Depression Scale – SDS (Zung, 1965). A raw score is obtained by the sum of the values of the answer. The raw score is then converted to a 100-point scale, i.e., SDS index (gross score of 1.25 times). Results (SDS Index score) are interpreted as follows: under 50: normal, no sign of depression; 50–59: signs of minimal or mild depression; 60–69: moderate to expressed depression; 70 and over: severe or extremely severe depression.

Possible anxiety was assessed by the Beck Anxiety Inventory (BAI) (Beck, Steer, 1993). The total score ranges from 0 to 63 and is interpreted as follows:

0–7: no signs of anxiety; 8–15: mild anxiety; 16–25: moderate anxiety; 26–63: severe anxiety.

A further questionnaire was aimed at evaluation of selected demographic, socioeconomic, and health characteristics; specifically, we assessed age, sex, education, marital status, income, and the presence of diseases (type and number).

Data analysis

The results were processed in the Statistical Package for Social Sciences (SPSS), version 20.0. Descriptive analysis of the data involved the calculation of absolute (n) and frequency values (%), arithmetic mean, standard deviation (\pm SD), and minimum (min) and maximum value (max). Data distribution was tested by skewness. Its value ranged from -0.056 to -0.671 (except for the Barthel index of ADLs = -2.596), confirming an even distribution of data. Thus, for further analysis, parametric statistical methods were selected. Relationships between variables were tested by the Pearson correlation coefficient (r). Linear regression analysis was used to determine the predictors of quality of life of the elderly. Before the actual analysis, diagnostic assessment of multicollinearity was performed by correlation analysis (r) and variance inflation factor (VIF) between variables included in linear regression analysis. According to conservative estimates, the risk of high multicollinearity is a correlation between the variables $r \geq 0.7$ and $VIF > 5$ (Yu Jiang, Land, 2015).

Results

Table 1 lists the socio-demographic and clinical characteristics of the seniors. The group consisted of 102 seniors from the Košice region with an average age of 74.47 ± 6.60 years. The youngest senior was 64, and the oldest was 91 years old. Women made up the majority of the group (65.7%). The majority of seniors lived without a partner (54.9%) and had completed secondary education (67.6%). The income of half the respondents was between 301 to 450 euros per month. The average number of diseases was 3.52 ± 1.63 per senior with each having had at least one disease, and at most eight diseases. The most frequent diseases were musculoskeletal (79.4%), and cardiovascular diseases (76.5%). The average score for the Barthel Index of ADLs was 98.44 ± 17.15 (minimum score 15.00, maximum score 110.00), which shows mild dependency in ADLs in our sample. 77 seniors were totally independent, 22 seniors were mildly dependent in ADLs, and only three seniors were totally dependent. The average score for depression in our sample of elderly was

56.19 ± 10.74 (minimum score was 32.50, maximum 83.75), indicating mild depression. 28.4% were without signs of depression, 37.3% suffered from mild depression, 20.6% from moderate depression, and 13.6% of seniors suffered from severe depression. The average anxiety scores assessed by the BAI was 13.88 ± 8.90 , indicating mild anxiety in the elderly. 25.5% of the elderly were without signs of anxiety, mild anxiety was recorded in 41.2%, moderate in 18.6% and severe anxiety in 14.7% of seniors.

Table 1 Socio-demographic and clinical characteristics of seniors

Variable	value
Age; mean (SD)	74.47 (6.60)
Gender n (%)	
male	35 (34.3)
female	67 (65.7)
Marital status n (%)	
living with partner	46 (45.1)
living without partner	56 (54.9)
Education n (%)	
primary	21 (20.6)
secondary	69 (67.6)
university	12 (11.8)
Income n (%)	
till 300 euro	38 (37.3)
301–450 euro	51 (50.0)
over 450 euro	13 (12.7)
Poly-morbidity; mean (SD)	3.52 (1.63)
Diseases n (%)	
heart diseases, arterial hypertension	78 (76.5)
musculoskeletal diseases	81 (79.4)
diabetes mellitus	26 (25.2)
gastrointestinal diseases	28 (27.5)
respiratory diseases	36 (35.3)
neurological diseases	20 (19.6)
oncological diseases	3 (2.9)
mental disorders	8 (7.8)
visual disorders	52 (51.0)
hearing disorders	36 (35.3)
skin diseases	10 (9.8)
any	9 (8.8)
Barthel Index of ADLs; mean (SD)	98.44 (17.15)
Beck Anxiety Inventory; mean (SD)	13.88 (8.90)
Zung Self-Rating Depression Scale; mean (SD)	56.19 (10.74)

SD – standard deviation

The quality of life of seniors in WHOQOL domains

When evaluating the quality of life by the WHOQOL-BREF questionnaire (table 2), it can be seen that the best QOL is in the domain of social relations and the worst QOL in physical health. By the WHOQOL-OLD questionnaire, the best QOL was discovered in the domain of death and dying, and

intimacy, while the worst QOL was discovered in social participation.

Correlations between variables

Table 3 shows the majority of statistically significant positive moderate to strong correlations between the domains of the WHOQOL-BREF and WHOQOL-OLD. Only the domain of death and dying has non-significant correlations with the domains of the WHOQOL-OLD. The WHOQOL domains positively correlate with independence in self-care in ADLs. We identified negative correlations between anxiety, depression and QOL domains. Increasing age, and

life without a partner are associated with impaired quality of life in seniors. No significant relationships were identified between education and domains of QOL. Only in two cases was higher education associated with higher QOL in the domain of independence. However, lower QOL was indicated only in the domain of death and dying. Income mostly had a weak negative relationship with the domains of QOL, but without statistical significance. The presence of a large number of diseases was associated with a statistically significant lower QOL.

Table 2 Quality of life of seniors in WHOQOL domains

WHOQOL domains	n	min	max	mean	SD
WHOQOL-BREF (scale 0–100)					
physical health	102	7.14	92.86	51.61	20.09
mental health	102	16.67	95.83	59.65	16.11
social relations	102	16.67	91.67	62.25	16.32
environment	102	18.75	93.75	60.05	14.77
WHOQOL-OLD (scale 0–100)					
sensory abilities	102	6.25	100.00	57.97	21.26
autonomy	102	0.00	100.00	55.82	21.76
past, present and future activities	102	6.25	100.00	49.63	20.09
social participation	102	0.00	100.00	46.69	25.06
death and dying	102	12.50	100.00	69.55	23.40
intimacy	102	6.25	100.00	62.99	20.51

n – absolute values; *SD* – standard deviation; *min* – minimum; *max* – maximum

Linear regression analysis

Within the multiple linear regression analysis, we assessed domains of the WHOQOL-BREF and WHOQOL-OLD as dependent variables (Tables 4 and 5). Before the analysis we tested the occurrence of multicollinearity between variables. High risk of multicollinearity is represented by a correlation between the variables $r \geq 0.7$ and variance inflation factor $VIF > 5$ (Yu Jiang and Land, 2015). The correlations between variables (tab. 3) were less than 0.7 and VIF ranged from 1.097 to 2.187, which excludes multicollinearity between variables. Therefore variables ADLs, anxiety, depression, age, sex, marital status, education, income, and morbidity were included in the regression analysis of each domain of the WHOQOL-BREF and WHOQOL-OLD as independent variables. Tables 4 and 5 show only variables that were significant predictors of the WHOQOL domains (standardized beta coefficient was at the level of statistical significance $p \leq 0.05$, respectively on the borderline of statistical significance).

Standardized Beta coefficients (Table 4) indicate that the domain of physical health was significantly negatively affected, mainly by severity of depression, and also by life without a partner. Maintaining

independence in ADLs had a statistically significant positive impact on the perception of QOL in the given domain. The adjusted regression coefficient R^2 indicates that these variables explain 49.2% of the variance in quality of life in the Physical health domain. The remaining part (50.8%) is unexplained variance, e.g., influence of others, non-specific effects or the impact of random factors. As indicated by the results, depression was observed as the only independent variable factor that significantly influenced QOL in the domain of mental health, social relationships, and environment. Depression explained 53.6% of variance in the domain of mental health, 21.1% of variance in the domain of social relations, and 24.4% of variance in the domain of environment. Maintaining independence in ADLs, anxiety, age, sex, marital status, education, income, and sickness did not affect the variance of the above-mentioned domains. The residual variance of these domains of QOL might be influenced by factors that we have not followed in this study (i.e., personal characteristics, coping mechanisms and others) or other random factors.

Table 5 shows the results of regression analysis in the WHOQOL-OLD domains. The adjusted regression coefficient R^2 shows that depression, independence in

Table 3 Correlations between quality of life domains and selected socio-demographic and clinical characteristics

	physical health	mental health	social relations	environment	sensory abilities	autonomy	past, present and future activities	social participation	death and dying	intimacy
mental health	0.643***									
social relations	0.574***	0.545***								
environment	0.637***	0.610***	0.509***							
sensory abilities	0.444***	0.403***	0.168	0.413***						
autonomy	0.597***	0.649***	0.385***	0.572***	0.587***					
past, present and future activities	0.531***	0.607***	0.429***	0.486***	0.507***	0.740***				
social participation	0.676***	0.713***	0.434***	0.518***	0.558***	0.770***	0.797***			
death and dying	0.276**	0.303**	0.370***	0.242*	0.157	0.017	0.088	0.059		
intimacy	0.414***	0.585***	0.463***	0.411***	0.412**	0.602***	0.565***	0.598***	0.127	
ADLs	0.544***	0.421***	0.196*	0.369***	0.459***	0.548***	0.428***	0.563***	0.147	0.283**
BAI	-0.460***	-0.462***	-0.352***	-0.319***	-0.222*	-0.269**	-0.201*	-0.232*	-0.384***	-0.330***
SDS	-0.644***	-0.739***	-0.451***	-0.503***	-0.423***	-0.576***	-0.472***	-0.592***	-0.310***	-0.436***
age	-0.264**	-0.209*	-0.110	-0.162	-0.262	-0.344***	-0.230*	-0.398***	0.176	-0.183
gender	0.062	-0.025	-0.016	-0.033	0.138	0.015	0.013	0.096	0.030	0.024
marital status	-0.297**	-0.233*	-0.266**	-0.260**	-0.305**	-0.297**	-0.300**	-0.303**	-0.085	-0.346***
education	0.041	0.007	-0.078	0.018	0.039	0.244*	0.139	0.084	-0.234*	-0.007
income	-0.108	-0.083	-0.108	0.020	-0.184	-0.140	0.002	-0.105	-0.106	-0.145
poly-morbidity	-0.442***	-0.308**	-0.269**	-0.243*	-0.356***	-0.464***	-0.471***	-0.440***	0.018	-0.370***

*significance value $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$; ADLs – the Barthel Index of Activities of Daily Living; BAI – the Back Anxiety Inventory; SDS – the Zung Self-Rating Depression Scale

ADLs, sex, and marital status explain 32.1% of variance in the domain of sensory abilities. Standardized beta coefficients indicate that depression and living without a partner are statistically significant factors which negatively affect this domain, while maintaining independence in ADLs and female gender have a positive influence. Depression, independence in ADLs, anxiety, and poly-morbidity explained a high percentage (49.8%) of variation in the domain of autonomy. Depression

and poly-morbidity acted as negative factors, whereas maintaining independence in ADLs, and anxiety acted as positive factors. Depression, independence in ADLs, anxiety, poly-morbidity, and marital status explained 35.1% of variance in the domain past, present and future activities. Also in this domain, depression, poly-morbidity, and life without a partner had a negative impact. Maintaining independence in ADLs, and anxiety had a positive effect.

Table 4 Results of linear regression analyses of WHOQOL-BREF domains

WHOQOL-BREF domains	predictor	Beta coefficient	p	Adjusted regression coefficient R ²	F
physical health	SDS	-0.465	0.000	0.492	11.853***
	ADLs	0.257	0.004		
	marital status (living without partner)	-0.165	0.063		
mental health	SDS	-0.758	0.000	0.536	13.966***
social relations	SDS	-0.439	0.001	0.211	3.994***
environment	SDS	-0.442	0.001	0.241	4.571***

***significance value $p \leq 0.001$; ADLs – the Barthel Index of Activities of Daily Living; SDS – the Zung Self-Rating Depression Scale

Table 5 Results of linear regression analyses of WHOQOL-OLD domains

WHOQOL-OLD domains	predictor	Beta coefficient	p	Adjusted regression coefficient R ²	F
sensory abilities	SDS	-0.319	0.010	0.321	6.311***
	ADLs	0.288	0.005		
	gender (female)	0.208	0.031		
	marital status (living without partner)	-0.276	0.008		
autonomy	SDS	-0.452	0.000	0.498	12.111***
	ADLs	0.300	0.001		
	BAI	0.230	0.026		
	poly-morbidity	-0.178	0.048		
past, present and future activities	SDS	-0.432	0.000	0.351	7.070***
	ADLs	0.204	0.041		
	BAI	0.318	0.007		
	poly-morbidity	-0.310	0.003		
social participation	marital status (living without partner)	-0.185	0.062	0.557	15.102***
	SDS	-0.560	0.000		
	ADLs	0.322	0.000		
	BAI	0.366	0.000		
death and dying	poly-morbidity	-0.176	0.042	0.229	4.328***
	marital status (living without partner)	-0.172	0.034		
	SDS	-0.288	0.028		
	BAI	-0.244	0.056		
intimacy	age	0.236	0.020	0.238	4.511***
	poly-morbidity	0.238	0.033		
	SDS	-0.335	0.011		
	marital status (living without partner)	-0.260	0.017		

***significance value $p \leq 0.001$; ADLs – the Barthel Index of Activities of Daily Living; BAI – the Back Anxiety Inventory; SDS – the Zung Self-Rating Depression Scale

Up to 55.7% of variance in social participation can be explained by the observed variables. Depression, morbidity, and life without a partner negatively affect social participation, whereas the maintenance of independence in ADLs, and anxiety act as positive factors. The degree of depression and anxiety negatively affect the domain of death and dying, while increasing age, and sickness have a positive impact on this domain. Together, these factors explain 22.9% of variance in perception of QOL in the domain of death and dying. 23.8% of variance in the domain of intimacy is explained in particular by the rate of depression, and life without a partner, which act as negative predictors in this domain. Other factors that we have not followed in this study, unexplained or accidental factors may contribute to the remainder of variance in the WHOQOL-OLD domains.

Discussion

With the continuing increase in the elderly population, the debate about maintaining their physical and mental health, independence, and, last but not least, quality of life and its determinants is also intensifying.

In this study we aimed to assess functional status, anxiety, depression, poly-morbidity, and selected socio-demographic characteristics (age, sex, marital status, education, income), and their impact on quality of life of seniors. Three-quarters of the seniors from our group were completely independent in ADLs. Only a quarter of seniors were completely free of anxiety and depression. 13.6% of seniors suffered from severe depression, and severe anxiety was present in 14.7%, which is consistent with the hypothesis that the prevalence of anxiety and depression is higher in the elderly (Jiráček 2004). When evaluating the WHOQOL-BREF quality of life questionnaire, we found the highest levels of QOL in the domain of social relations and the lowest in the domain of physical health. In the WHOQOL-OLD questionnaire, we discovered best QOL in the domain of death and dying, and intimacy, whereas worst QOL was found in social participation, and past, present and future activities. Dimunová, Dankulincová Veselská and Stropkaiová (2013) also noted similar results in QOL in the elderly in the Košice region using the WHOQOL-OLD questionnaire. Our results were compared with intervals of population norms for seniors in Prague (Dragomirecká, Prajsová, 2009). Seniors living in Prague reported higher QOL in the area of physical health. However, QOL in mental health, social relationships, and environment were comparable with

our sample. In the WHOQOL-OLD domains of sensory abilities and autonomy, QOL of seniors in our group approached the lower limit of the norms for Prague seniors. In past, present and future activities, and social participation, we observed slightly reduced quality of life in the domain of death and dying, close to the upper limits of the norms for Prague seniors, while in the domain of intimacy, results matched the average level for Prague. Similarly to our study, Bilgili and Arpacı (2014) found best QOL in the death and dying domain in Turkish seniors. In contrast, however, they found better QOL in the domains of autonomy, and past, present and future activities, and worse QOL in the sensory abilities, and intimacy domains.

Correlation analysis showed a statistically significant positive relationship between the different domains of the WHOQOL-BREF and WHOQOL-OLD, with the exception of the domain of death and dying, which correlated with the domains of the WHOQOL-BREF, but not with the WHOQOL-OLD. In the study by Dimunová, Dankulincová Veselská and Stropkaiová (2013), the domain of attitudes to death and dying only failed to show a significant relationship with the domain of social participation. The domain of death and dying correlated with all domains of the WHOQOL-BREF and WHOQOL-OLD in the study by Dragomirecká and Prajsová (2009). Our study did not identify any relationship between gender and domains of quality of life in the elderly. Female gender was a better predictor of QOL only in the domain of sensory abilities. Results of other studies are inconsistent. Dragomirecká and Prajsová (2009) did not identify differences in the domains of the WHOQOL-BREF and WHOQOL-OLD based on gender, excepting the domain of physical health, where they recorded lower average scores in women. In their Turkish study, Bilgili and Arpacı (2014) found higher scores in QOL in the domain of autonomy, and past, present and future activities in men; while in the intimacy domain scores were higher for women. Significant gender differences in QOL were revealed in the study by Zaninotto, Falaschetti and Sacker (2009) in seniors living in England, where the men had significantly lower QOL than women.

In connection with increasing age, QOL became significantly worse in the domains of physical and mental health, autonomy, past, present and future activities, and social participation in our group of seniors. Similar results were found in a study by Dragecká and Prajsová (2009), who discovered poorer QOL in the elderly aged over 80 in the domain of physical health, sensory abilities, and social participation. In their Turkish study, Bilgili and

Arpaci (2014) identified a positive relation between age and the domain of sensory abilities, and a negative relation with the domain of social participation, and intimacy. In this study, within the linear regression analysis, age was not a significant predictor of the WHOQOL domains, which is consistent with the study by Brown and Roos (2011), and the results of a Polish study by Bryła, Burzyńska and Maniecki-Bryła (2013). Increasing age was identified in our study as a positive predictor in the domain of death and dying, which is probably related to awareness of the finiteness of life, possible perceptions of death as meaning a reunion with deceased loved ones or friends, or a desire for an end to suffering. Older age as a factor negatively affecting QOL has also been found in studies by Zaninotto, Falaschetti and Sacker (2009), and Layte, Sexton and Savva (2013).

Living without a partner negatively influenced the subjective perception of quality of life in our sample of seniors. Linear regression analysis confirmed that living with a partner has a protective effect on quality of life in the domain of physical health, sensory abilities, past, present and future activities, social participation, and intimacy. Approximately half of our sample of seniors lived without a partner. The loss of a partner is a traumatic experience at any age. Children and strong social networks can play an important role both in helping to cope with the loss of a life partner, and in preventing isolation and social and emotional loneliness (Dahlberg, McKee, 2014). Similarly, worse quality of life in seniors living alone in Prague is observed in the study by Dragomirecká and Prajsová (2009). In seniors living in England, Zaninotto, Falaschetti and Sacker (2009) found better quality of life, especially among men living in a partnership. In their Turkish study, Bilgili and Arpaci (2014) found a similar higher QOL score in the domain of past, present and future activities, social participation, and death and dying in those elderly living in a marital relationship. However, a study conducted by Alexandre, Cordeiro and Ramos (2009) among Brazilian seniors identified better quality of life in those seniors who were not living in a marital relationship in the domain of social relations, and better quality of life in the domain of environment in those living alone, without family.

Seniors with higher education had better QOL in the autonomy domain. In our study we observed significantly worse experience of death, dying and suffering in seniors with higher education. Dragomirecká and Prajsová (2009), and Dimunová, Dankulinová Veselská, and Stropkaiová (2013) arrived at similar results, giving support to the view

that seniors with higher education are more likely to have problems related to attitudes to death during their lifetimes. The idea of death and dying might be a weight on their minds, and might thus, indirectly, negatively affect their perception of quality of life. In Turkish seniors with higher education, Bilgili and Arpaci (2014) found higher quality of life in the domain of autonomy, past, present and future activities, social participation, and death and dying, while lower quality of life was found in the sensory abilities domain. In the intimacy domain they did not detect statistically significant differences as a result of education.

Financial resources are considered to be critical elements determining life satisfaction of seniors. In our sample, however, income had no effect on the perception of QOL. This may be influenced by the study design and also by the social network of the elderly. Some may have lived in a household with children, which could have a positive influence on their financial situation. However, this was not evident in our study. In a Turkish study, statistically significant differences in QOL were confirmed in seniors who had financial difficulties compared to seniors with moderately to extremely serious financial difficulties in all QOL domains, except for sensory abilities (Bilgili, Arpaci, 2014). Similar results were reported in a study carried out on Brazilian seniors (Alexandre Cordeiro, Ramos, 2009). Socio-economic status and direct basic income played a significant role in the quality of life of seniors living in Ireland (Layte, Sexton, Savva, 2013).

Health status is a key factor affecting quality of life. In this study, the occurrence of multiple diseases was in negative relation to all domains of QOL, except for the death and dying domain. A positive relation between poly-morbidity and the domain of death and dying may be associated with fear of prolonging disease, pain and suffering. In this sense, death can be viewed as liberation. The negative effect of chronic conditions in the elderly on various aspects of QOL, and on maintenance of self-care in activities of daily living can be found in other studies (Chin, Lee, Lee, 2014; Forjaz et al., 2015), as can the negative effect of poly-morbidity on mobility, occurrence of pain, anxiety and depression

Like Kabátová et al. (2014), we recorded a high prevalence of depression and anxiety in seniors in this study. The presence of anxiety and depression led to a deterioration in the quality of life in seniors in all domains of the WHOQOL-OLD and WHOQOL-BREF. Anxiety and depression were the most significant factors that negatively affected QOL

of seniors. Depression was a major negative predictor in all domains of QOL. Anxiety as a negative factor dominated in the domain of death and dying, as might be expected. Conversely, anxiety was a positive motivating factor in the domain of autonomy and past, present and future activities. Mental health, particularly the presence of symptoms of depression, was the most important factor that negatively affected QOL of seniors in several international studies (Zaninotto, Falaschett, Sacker, 2009; Brown, Roose, 2011; Bryła, Burzyńska, Maniecki-Bryła, 2013; Layte, Sexton, Savva, 2013; Forjaz et al., 2015). Negative affective symptoms, especially depression, are becoming a very serious problem in the period of old age and aging, contributing significantly to a reduction in QOL. Davidson et al. (2010) state that mental health disorders in primary care often remain unrecognized and untreated, and this may lead to a deterioration in condition and an accumulation of other problems.

Maintaining as much independence as possible in ADLs was positively associated with QOL of seniors, i.e., the higher the independence in ADLs seniors maintained, the better the quality of life the sample had in almost all domains. Functional ability, and independence in ADLs in our study proved to be a significant predictor of better QOL in the domain of physical health, sensory abilities, autonomy, past, present and future activities, and social participation. Similar results have been documented in other studies. Bryła, Burzyńska and Maniecki-Bryła (2013) found that QOL was twice as low in the elderly with functional disability than it was in seniors who were independent in ADLs. An English longitudinal study by Zaninotto, Falaschetti and Sacker (2009) found that increasing lack of independence in activities of daily living was a negative predictor of QOL in seniors. Similar results were recorded in a Spanish study by Forjaz et al. (2015), in which the presence of functional disability was proportionally related to worse quality of life in seniors.

Interpretation of the results of this study is limited by several factors. One of the limitations is the pilot and cross-sectional nature of the study. The study monitors the current perception of quality of life of seniors, but does not allow us to capture long term changes. The convenient sampling method weakens the effect of research results and limits the formulation of conclusions, which cannot be extrapolated to the population of all seniors living in Slovakia. The results are therefore valid only in the sample of seniors from the Kosice region. A possible limitation could be the type of self-evaluation questionnaires used that assess the incidence

of probable anxiety and depression, as the questionnaires may not evaluate levels of anxiety and depression in the same way.

Conclusion

The issue of elderly QOL and its determinants is becoming important in order to clarify the problems of the aging generation. Their identification could be helpful in the implementation of initiatives to improve QOL. In seniors, we identified worst QOL in the domains of past, present and future activities, and social participation. Negative predictors of QOL in this study were depression, anxiety, functional disability, poly-morbidity, and living without a partner. Nurses have a role especially in the early detection of depression and anxiety by means of screening tools in cooperation with physicians in the field of pharmacological and non-pharmacological treatment, and in the prevention of anxiety and depression in the elderly. Another important intervention should be the encouragement and maintenance of independence in seniors, and the creation of community-based programs aimed at improving or maintaining physical activity in the aging population. The study results also indicate the need to create opportunities for the formation and maintenance of social contacts, the implementation of various leisure activities, and the involvement of seniors in different programs or voluntary activities.

Ethical aspects and conflict of interest

The respondents were familiar with the objectives of the research, they were instructed that there were no significant risks associated with participation in this study and they were informed that at any time during the research they could leave the study without providing any explanation. All participants gave their informed consent to the study, the anonymity and privacy of the respondents were maintained. This research received no specific grant from any financial agencies of public, commercial, or non-profit sector. The author declares that there is no potential conflict of interest.

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Author contributions

Conception, design, data analysis and interpretation, manuscript draft and critical review, final approval of the manuscript (MSS).

References

- Alexandre Tda S, Cordeiro RC, Ramos LR. Factors associated to quality of life in active elderly. *Revista de Saúde Pública*. 2009;43(4):613–621.
- Beck AT, Steer RA. *Beck Anxiety Inventory Manual*. San Antonio: The Psychological Corporation Harcourt Brace and Company; 1993.
- Bilgili N, Arpacı F. Quality of life in older adults in Turkey. *Archives of Gerontology and Geriatrics*. 2014;59(2):415–421.
- Brown PJ, Roose SP. Age and anxiety and depressive symptoms: the effect on domains of quality of life. *International Journal of Geriatric Psychiatry*. 2011;26(12):1260–1266.
- Bryła M, Burzyńska M, Maniecka-Bryła I. Self-rated quality of life of city-dwelling elderly people benefitting from social help: results of a cross-sectional study. *Health and Quality of Lifes Outcomes*. 2013;11:181.
- Chin YR, Lee IS, Lee HY. Effects of hypertension, diabetes, and/or cardiovascular disease on health-related quality of life in elderly Korean individuals: a population-based cross-sectional survey. *Asian Nursing Research*. 2014;8(4):267–273.
- Dahlberg L, McKee KJ. Correlates of social and emotional loneliness in older people: evidence from an English community study. *Aging and Mental Health*. 2014;18(4):504–514.
- Davidson JR, Feltner DE, Dugar A. Management of generalised anxiety disorder in primary care: identifying the challenges and unmet needs. *Primary Care Companion to The Journal of Clinical Psychiatry*. 2010;12(2):PCC.09r00772.
- Dimunová L, Dankulincová Veselská Z, Stropkaiová S. Vybrané parametre pri posudzovaní kvality života seniorov v domácej a inštitucionalizovanej starostlivosti. *Ošetrovateľstvo: teória, výskum, vzdelávanie*. 2013;3(1):19–24. (in Slovak)
- Dragomirecká E, Prajsová J. *WHOQoL-OLD*. Praha: Psychiatrické centrum Praha; 2009. (in Czech)
- Farský I, Ondrejka I, Žiaková K. *Problematika kvality života v senu*. Martin: Profa; 2007. (in Slovak)
- Forjaz MJ, Rodriguez-Blazquez C, Ayala A, Rodriguez-Rodriguez V, de Pedro-Cuesta J, Garcia-Gutierrez S, Prados-Torres A. Chronic conditions, disability, and quality of life in older adults with multimorbidity in Spain. *European Journal of Internal Medicine*. 2015;26(3):176–181.
- Gurková E. *Hodnocení kvality života. Pro klinickou praxi a ošetrovateľský výskum*. Praha: Grada Publishing; 2011. (in Czech)
- Jiráček R. Poruchy afektivity ve stáří. In: Kalvach Z, Zadák Z, Jiráček R, Závázalová H, Sucharda P et al., editors. *Geriatric a gerontologie*. Praha: Grada Publishing; 2004. p. 554–570. (in Czech)
- Kabátová O, Uričková A, Botíková A. Factors affecting the incidence of depression in the elderly. *Central European Journal of Nursing and Midwifery*. 2014;5(3):105–111.
- Layte R, Sexton E, Savva G. Quality of life in older age: evidence from an Irish cohort study. *Journal of the American Geriatrics Society*. 2013;61(Suppl 2):S299–305.
- Mahoney FI, Barthel DW. Functional evaluation: the Barthel Index. *Maryland State Medical Journal*. 1965;14:61–65.
- The World Health Organization quality of life assessment (WHOQOL): Position paper from the World Health Organization. *Social Science & Medicine*. 1995;41(10):1403–1409.
- World Health Organisation. *Active ageing: a policy framework*. Geneva: WHO; 2002 [cited 2014 Mar 19]. Available from: http://www.who.int/ageing/publications/active_ageing/en/
- Yu H., Jiang S, Land KC. Multicollinearity in hierarchical linear models. *Social Science Research*. 2015;53:118–136.
- Zamboriová M, Simočkova V, Potočková D. Komplexné hodnotenie kvality seniorov v domácej ošetrovateľskej starostlivosti s hľadiska funkčného stavu. In: Čáp J, Žiaková K, editors. *Teória, výskum a vzdelávanie v ošetrovateľstve a v pôrodnej asistencii*. Martin: Jesseniova lekárska fakulta v Martine, Univerzita Komenského v Bratislave; 2007. p. 676–692. (in Slovak)
- Zaninotto P, Falaschetti E, Sacker A. Age trajectories of quality of life among older adults: results from the English Longitudinal Study of Ageing. *Quality of Life Research*. 2009;18(10):1301–1309.
- Zung WW. A Self-rating Depression Scale. *Archives of General Psychiatry*. 1965;12:63–70.