

Original article / Izvirni znanstveni članek

## SELF-PERCEPTION OF THE QUALITY OF LIFE OF THE ELDERLY

SAMOPERCEPCIJA KAKOVOSTI ŽIVLJENJA STAROSTNIKOV

Nada Prlić, Jadranka Plužarić, Katica Đeri

KEY WORDS: *quality of life, health, the elderly, Osijek, Croatia*

KLJUČNE BESEDE: *kakovost življenja, zdravje, stari ljudje, Osijek, Hrvaška*

### ABSTRACT

**Introduction:** *The subjective evaluation of the quality of life of the elderly is a significant indicator of their functional abilities and health care needs. According to the United Nations classification, the Croatian population is a »very old population« and, as a result of a 15.63 % share of 65-year-olds belongs in the fourth category. According to the 2001 census, 14.75 % of Osijek's inhabitants are over 65.*

*The aim of this study was to determine the quality of life of elderly Osijek inhabitants regarding their physical and mental health.*

**Methods:** *The research included 100 subjects: members of a 60+ club in Osijek (n = 50) and Osijek citizens (n = 50) as a control group.*

*The research instrument was a questionnaire containing questions about social and demographic data, and SF-36-v2™, containing 36 closed-ended questions, plus a question: »How satisfied are you with your life in general?« The research was carried out in July 2007.*

**Results and discussion:** *The average value of physical health among members of the 60+ club was 67 % scale maximum, and in the control group, 55.13 % scale maximum. The average value of mental health among members of the 60+ club was 60 % scale maximum, and in the control group, 59.69 % scale maximum. The Mann Whitney test showed significant differences between the two groups concerning physical health (physical activity  $p < 0.001$ ) and mental health (vitality  $p < 0.001$ ). The Spearman test showed a positive correlation between age and activity range limits due to physical health and emotional problems ( $p = 0.561$ ,  $p = 0.001$ ) and negative correlations between age, physical activity and bodily pain ( $p = -0.439$ ,  $p < 0.001$ ) in members of the 60+ club. In the control group there is correlation between age and almost all areas of health. It is highest between age and activity range limits due to physical health and activity range limits due to emotional problems ( $p = 0.874$ ,  $p < 0.001$ ). Correlations between age and physical activity, and age and bodily pain, were negative ( $p = -0.716$ ,  $p < 0.001$ ).*

### IZVLEČEK

**Izhodišča:** *Subjektivna ocena kakovosti življenja starih ljudi je pomemben pokazatelj funkcijskih sposobnosti in zdravstvenih problemov starostnikov. Hrvaško prebivalstvo kot »zelo stara populacija« sodi po klasifikaciji Organizacije združenih narodov v četrto skupino, saj ima 15,63 % prebivalcev, starejših od 65 let. Po popisu prebivalcev iz leta 2001 je v Osijeku 14,75 % prebivalcev, starejših od 65 let.*

*Cilj raziskave je bil ugotoviti kakovost življenja starostnikov glede na fizično in psihično zdravje.*

**Metode:** *V raziskavi je sodelovalo 100 oseb: 50 članov kluba 60+ in 50 oseb, ki so sestavljali kontrolno skupino. Raziskovalni instrument je bil vprašalnik, ki je vseboval vprašanja o socialnodemografskem stanju, 36 vprašanj zaprtega tipa vprašalnika SF-36-v2™ ter vprašanje »Koliko ste zadovoljni s svojim življenjem v celoti?« Raziskovanje je potekalo v juliju 2007.*

**Rezultati in razprava:** *Povprečna vrednost telesnega zdravja opazovane skupine je bila 67 % maksimalne vrednosti na lestvici, kontrolne skupine 55,13 % maksimalne vrednosti na lestvici. Povprečna vrednost mentalnega zdravja članov kluba je bila 60 % maksimalne vrednosti na lestvici, kontrolne skupine 59,69 % maksimalne vrednosti na lestvici. Mann-Whitneyev test je pokazal pomembno razliko med opazovano in kontrolno skupino v oceni telesnega zdravja (telesna dejavnost:  $p < 0,001$ ) in duševnega zdravja (vitalnost:  $p < 0,001$ ). S Spearmanovim testom je bila pri članih kluba ugotovljena pozitivna korelacija pri omejitvi aktivnosti zaradi telesnega zdravja in emocionalnih problemov (Spearman  $p = 0,561$ ,  $p < 0,001$ ) in negativna pri telesni dejavnosti in telesnih bolečinah (Spearman  $p = -0,439$ ,  $p < 0,001$ ). Pri kontrolni skupini je korelacija v skoraj vseh vidikih zdravja; največja korelacija je v omejitvi aktivnosti zaradi telesnega zdravja in zaradi emocionalnih problemov (Spearman  $p = 0,874$ ,  $p < 0,001$ ), negativna korelacija je pri telesni dejavnosti v povezavi s telesno bolečino (Spearman  $p = -0,716$ ,  $p < 0,001$ ).*

## Introduction

Quality of life has been the main interest of many researchers and scientists. There have been various definitions and measurement tools for this and they have changed over the years. Krizmanić and Kolesarić (1989) define quality of life as the subjective perception of one's own life as determined by the objective circumstances of living, personality type that influences perception of reality and person's specific life experience.

Quality of life today means general well-being (physical, material, social and emotional, personal development and purposeful activity) influenced by objective parameters, but also including subjective perception and evaluation influenced by individual values (Martinis, 2005).

Subjective well-being has been originally studied within psychology. There has been a great deal of research on defining the quality of life to the general population. The questions asked to obtain this information were mainly variations on the question »How satisfied are you with your life in general?« Cummins showed in his research that average quality of life in western countries is  $75 \pm 2.5$  % of the scale maximum (SM). In non-western countries the results vary from 60 % to 80 % SM.

The international well-being index (Cummins, 2002) is used in many countries to determine and monitor national levels of well-being. In 2003 European Foundation for the Improvement of Living and Working Conditions carried out a project monitoring the quality of life in Europe, which included the following countries: EU-15, EU-10 and CC-3 (Bohnke, 2005 In: Kaliterna Lipovčan, Prizmić-Larsen, 2007).

Croatian research on subjective well-being (economic circumstances, health, life achievements, family and friends, physical security, being accepted in the community, happiness, life satisfaction) was conducted on a representative group of Croatian citizens in November 2003 and June 2005 (Kaliterna Lipovčan, Prizmić-Larsen, 2007). The values obtained regarding quality of life are roughly equivalent to those obtained in western countries, with a tendency to decline in quality with age. Quality of life was also analysed in ill people (diabetes, gastroenterologic diseases, etc.).

Cummins et al. (2003) noticed that people usually describe subjective satisfaction with life using positive part of the scale in the range from dissatisfied to satisfied so they conclude that life quality maintains homeostasis. Interaction between the environment and every individual's psychological characteristics determine the subjective evaluation of quality of life. Should any changes in the environment occur or any psychological variables change, the subjective perception of quality of life is disturbed. However,

people tend to find balance and reinstate homeostasis.

It is uncertain whether the quality of life changes with age or if people of different ages are equally satisfied with their lives (Cummins, 2003). Recent researches has shown that subjective life quality in regard to age can be improved, can remain at the same level or deteriorate (Maher, 1999 In: Martinis, 2005). Elderly people may maintain their subjective life quality by lowering their expectations. In this way they increase their self-esteem and consequently their satisfaction with life. Martinis (2005) studied the influence of age on life quality, and showed that quality of life deteriorates with age.

Public interest in aging has increased with the increase in life expectancy in the 20<sup>th</sup> century, as well as with the increased number of elderly people in the population.

According to United Nations (UN) classification, the Croatian population is as a »very old population« and, as a result of a 15.63 % share of 65-year-olds belongs in the fourth category. According to the 2001 census, 14.75 % of Osijek's inhabitants are over 65 (Državni zavod za statistiku Republike Hrvatske, 2001).

## Self-evaluation of health

Health, and the outcomes of illness which are influenced by biological and non-biological factors: a person's character, motivation, continuing therapy, socio-economic background, availability of health care, social support network, individual and cultural beliefs and behaviour. These non-biological factors are reflected in the parameters of so-called subjective health (Bowling, 1991, In: Despot Lučanin, 2003).

The concept of health-dependent life quality is multi-dimensional. It includes physical, mental, social and emotional aspects and describes patient's experience and satisfaction with the current level of their functions in comparison with the level considered possible or ideal (Ćulig, 2005).

In most research using questionnaires as well as in wider clinical studies, health status is defined as the self-evaluation of one's own health or as functional ability. A general self-evaluation of health is a subjective measurement of feelings that cannot be observed, confirmed or tested (Despot Lučanin, 2003). A correlation between medical health and level of subjective life quality is not without ambiguity. Although illness influences of the quality of life level, a person's character will determine the magnitude of the change. Illness causes physical symptoms and thus limits functioning, but it also has indirect effects, such as changes in working abilities and greater dependence on others.

A person can become aware of illness without the help of medical science. On the other hand, a person

can feel well despite being ill (Čulig, 2005). Elderly people often expect to suffer from a chronic illness as a result of their age and do not consider it essential to their life quality unless it causes severe incapacity. Their self-evaluation of health is therefore more positive. In life quality evaluation, standardised SF-36 questionnaire is recommended to determine health status in the health care of the elderly (Walters, Munro, Brazier, 2001; Cooper et al., 2001; Parker et al., 2006) as well as in scientific research on the elderly (Parker et al., 1998).

People with lower educational levels rate their health as poorer at every level in comparison to objective health scale. Single people, people with lower incomes, elderly people and men more often rate their health as poorer and show higher risk of mortality (Idler, 1992 In: Despot Lučanin, 2003).

Idler (1993) conducted research on people over 65 to see if the difference between health status and self-evaluation of health increased with aging. The results showed that the oldest persons have the most positive self-evaluation of health. Similar data were obtained in a Bonn longitudinal study, where 53 % of subjects aged 70–75 evaluated their health as better than their physician did, unlike 415 subjects aged 60–65 (Despot Lučanin, 2003).

Idler and Kasl (1995 In: Despot Lučanin, 2003) determined that self-evaluation of health as poor is a significant long-term indicator of not only mortality, but also of decline in functional abilities. This indicated that self-evaluation of health correlates not only with mortality, but also with morbidity in elderly people. Rakowski and Hickey (1992 In: Despot Lučanin, 2003) in research on the consequences of aging and health problems and determined that mortality risk is higher in elderly people who attribute their health problems to aging.

### **Add life to years, not just years to life**

Old age is not an illness; it is a part of life that depends on the quality of life in general. »We do not grow old because we have lived a certain number of years, we grow old because we fail to pursue our ideals. Years make the skin wrinkle; giving up ideals makes the soul wrinkle...« (Tournier, 1998).

Over the last few decades the life quality of the elderly has become an important part of epidemiological and gerontological research. Research on life quality in Croatia has included the general population and mentally and physically ill people. This problem has already been described in numerous studies elsewhere, but in Croatia there are very few studies in this field.

In view of insufficient data on life quality of the elderly and with special regard to aging in our country, as well as in our town, the following questions were

asked in the hope that this research would provide answers: How do the elderly evaluate life quality? Is the life quality of the elderly regarding their physical and mental health at a satisfactory level? Is non-institutional care available for the elderly in their local community? What activities do they take up in 60+ club?

### *The aim of the research*

The main aim of this research was to determine the quality of life of the elderly in Osijek. Specific goals were:

- To study the subjective life quality of the elderly regarding their physical and mental health.
- To study whether there are differences in the evaluation of one's own life quality and life quality of other people.
- To study whether age influences life quality.
- To study whether there is a difference in the life quality of elderly people who participate in non-institutional activities and those who do not.
- To study whether the level of education influences the life quality of the elderly.
- To give recommendations on how to improve the life quality of the elderly in our region based on the data obtained.

### *Hypotheses*

1. The subjective life quality of the elderly is different in different areas of life quality, which confirms the theory that one area is compensated for by some others.
2. Healthy people evaluate their life quality in relation to their perception of the life quality of other people.
3. Age influences the life quality of the elderly.
4. The life quality of the elderly who participate in non-institutional activities is higher than that of the elderly who do not participate in any activities.
5. The level of education of the elderly influences their life quality, especially regarding their mental functioning.

### **Research subjects and methods**

The research included 100 subjects of average age  $M = 67$  (range 60–82 years of age). A stratified sample was used. 50 members of the 60+ club in Osijek who participated in club activities in July 2007 and 50 people from Osijek of the same age, chosen at random, were the subjects of the research. Their socio-demographic characteristics are presented in Tables 1, 2, 3 and 4. Average membership in the club was 17 months. The activities of club members are presented in Table 5.

Table 1. *Distribution of subjects according to age.*Razpr. 1. *Razporeditev anketiranih po starosti.*

	60 + club		Control group	
	N	%	N	%
60–64	17	34.0	12	24.0
65–69	14	28.0	15	30.0
70–74	10	20.0	12	24.0
75–79	8	16.0	7	14.0
80 or more	1	2.0	4	8.0
Total	50	100.0	50	100.0

Table 2. *Distribution of subjects according to marital status.*Razpr. 2. *Razporeditev anketiranih po zakonskem stanu.*

Marital status	60+ club		Control group	
	N	%	N	%
Marriage/common-law marriage	25	50.0	23	46.0
Single	2	4.0	4	8.0
Divorced	7	14.0	3	6.0
Widow/widower	16	32.0	20	40.0
Total	50	100.0	50	100.0

Table 3. *Distribution of subjects according to occupation.*Razpr. 3. *Razporeditev anketiranih po poklicu.*

Profession	60+ club		Control group	
	N	%	N	%
Members of legislative and state bodies, executives	2	4.0	1	2.0
Experts and scientists	5	10.0	1	2.0
Engineers, technicians and related professions	12	24.0	8	16.0
Clerks	15	30.0	6	12.0
Service and trade sector	9	18.0	5	10.0
Workers in agriculture, forestry, fishery	0	0.0	2	4.0
Craft and individual production	1	2.0	2	4.0
Simple occupations	4	8.0	22	44.0
Unknown occupations	1	2.0	0	0.0
Unknown	1	2.0	3	6.0
Total	50	100.0	50	100.0

The research instrument was a questionnaire containing questions on social and demographic data: age, sex, marital status, occupation before retirement, educational level and SF-36-v2™ containing 36 closed-ended questions, plus a question: »How satisfied are you with your life in general?«. The questionnaire for the club members included questions on how long they have been members and what activities they have been participating in.

Table 4. *Distribution of subjects according to their level of education.*Razpr. 4. *Razporeditev anketiranih po šolski izobrazbi.*

Level of education	60+ club		Control group	
	No	%	No	%
Not completed primary school	0	0.0	17	34.0
Primary school	5	10.0	13	26.0
Secondary school (three- and four-year)	27	54.0	9	18.0
Higher education	10	20.0	7	14.0
University education	8	16.0	4	8.0
Total	50	100.0	50	100.0

Table 5. *Distribution of subjects according to their activity in 60+ club.*Razpr. 5. *Razporeditev anketiranih po vrsti aktivnosti v klubu 60+.*

Activity	N	%	On subject
Exercises for the elderly	35	31	0.7
Exercises to prevent osteoporosis	4	4	0.1
Tai-chi	14	13	0.3
English	24	22	0.5
German	16	14	0.3
Creative workshop	8	7	0.2
Cultural-artistic	8	7	0.2
Other	2	2	0.0
Total	111	100	2.3

In this research, questionnaire SF-36-v2™ was applied (Ware, 1993; Ware, 2000). SF-36-v2™ is a multifunctional questionnaire for the short-term evaluation of health status containing only 36 items. The data obtained by SF-36-v2™ result in a life quality profile based on eight areas of health considered important for life quality: physical activity, activity range limiting due to physical health, bodily pain, general health, vitality, social functioning, activity range limiting due to emotional problems and mental health. The results for each area were obtained by applying a combination of the 35 items. The result for each area is expressed as an average answer for a single item. The result for the first four areas expresses an evaluation of physical health, while the result for the other four areas express an evaluation of mental health. The responses to each item (except for the areas of physical health and pain) are presented on a 5-item Likert scale, where 1 expresses the least agreement and 5 the best agreement with the answer. Responses to items concerning physical health are given on a 3-item scale. Responses to items concerning pain are given on a 6-item scale. The results were converted into a standard scale ranging from 0–100. One more question was included in the research regarding the quality of

life in general. Answers were offered on a 10-item Likert scale, where 0 meant »not satisfied at all« and 10 »extremely satisfied«.

The participants were informed of the aims of the research and they all agreed to participate. The data were obtained individually for each participant applying a structured interview (according to the questionnaire). The interviews were conducted by the authors. The research was conducted in July 2007.

## Statistical analysis

In order to compare the data obtained on variety of grading scales, it is necessary to convert results on a common scale. This was done by converting the Likert scales into standard values from 0 to 100 using the formula %SM (percentage of the scale maximum) = (individual result/n)\*100, and if the lowest scale result is 1, the formula is %SM = (individual result - 1)\*100/(number of scale grades - 1).

For numerical variables that do not follow normal distribution, non-parametric measures were applied to determine the mean: medium value (median), and to determine the distribution of 25<sup>th</sup> and 75<sup>th</sup> centiles. The distribution normality of numerical variables was tested by Kolmogorov-Smirnov test. Category variables are presented by absolute and relative frequencies. The differences in quantitative variables between non-dependent groups of subjects were tested by non-parametric statistical models (Mann Whitney, Kruskal Wallis test). Spearman correlation coefficient ( $\rho$ ) was used to determine correlation (Petz, 1994).

The statistical analysis was done by computer software SAS for Windows 8.2 (SAS Institute Inc, 1999). To evaluate the significance of the results the significance level  $\alpha = 0.05$  was chosen.

## Results and discussion

### *Health of the elderly*

The elderly people of Osijek are neither too satisfied nor too dissatisfied with their health. The members of the 60+ club graded satisfaction with their lives on average at 67.6, while other Osijek citizens included in this research gave it an average grade 60.0. The quality of their physical health scored 67 % SM and 55.13 % SM respectively, while their mental health scored 60 % SM and 59.69 % SM respectively. These results showed significant differences in the evaluation of physical health and minimum difference in the evaluation of the mental health of the participants. If the average is 50.0, their satisfaction with health is above average.

In 2003 the European Foundation for the Improvement of Living and Working Conditions carried out project monitoring the quality of life in Europe, which

included the following countries: EU-15, EU-10 and CC-3. The general results of the study showed that subjective well-being was not evenly distributed in 2003. The average grade expressing happiness on a scale from 1 to 10 in 28 European countries ranged from 8.3 in Denmark to 5.8 in Bulgaria. Slovenia was 16<sup>th</sup>, with the average grade 7.4, and Croatia, even if it is not a member of the EU, was 12<sup>th</sup> among EU-10 countries with the average grade 7.1. Croatian citizens consider family life and health the most important parts of their lives. Evaluating satisfaction with their health in research carried out in 2003 they graded it at 6.59 (SD 2.86), and 6.76 (SD 2.76) in research carried out in 2005 (Kaliterna Lipovčan, Prizmić-Larsen, 2007).

Quality of life depends on health (physical, mental, social, emotional) and it expresses a patient's perception of their level of functions and satisfaction with them compared to what is considered possible or ideal (Čulig, 2005).

Health is influenced by biological and non-biological factors. The non-biological factors are a person's character, motivation, continuing therapy, socio-economic background, health care availability, social support network, individual and cultural beliefs and behaviour, and are reflected in parameters of so called subjective health (Bowling, 1991, In: Despot Lučanin, 2003). Since the influence of non-biological factors was not studied, we assume that they have influence the self-evaluation of the health of the subjects of this research.

In most research using questionnaires and in wider clinical studies, health status is defined as self-evaluation of one's own health or as functional ability. A general self-evaluation of health is a subjective measurement of feelings that cannot be observed, confirmed or tested (Despot Lučanin, 2003). It is uncertain whether the quality of life changes with age, or if people of different ages are equally satisfied with their lives (Cummins, 2003).

### *Physical health*

In the part of the questionnaire concerning physical activities, there were 10 multiple choice items. The results showed that most of the subjects believe that their health does not limit their physical activities. They were most satisfied with their everyday physical activities, scoring them as follows: walking a block of streets 100 % SM; walking 1 km 84 % SM; bathing and dressing 99 % SM; climbing one floor 88 % SM; moderately intense activities 78 % SM.

As activities that were limiting them and caused most dissatisfaction they stated physically intense activities, bending and kneeling. The results showed differences between the two groups of subjects in every item (Table 6).

Table 6. Average values of self-evaluation of health in both groups of subjects according to health areas.  
Razpr. 6. Povprečne vrednosti samovrednotenja zdravja raziskovalne in kontrolne skupine po področjih zdravja.

Area	Items included in the area	60+ club Average*	Control Average*	Total
Physical activity	intensive activities	28.0	23.0	Physical health
	moderately intense activities	78.0	57.4	
	lifting and carrying	61.0	53.1	
	climbing a few floors	67.0	36.0	
	climbing the first floor	88.0	66.1	
	bending, kneeling	57.0	44.0	
	walking 1 km	84.0	43.3	
	walking a few blocks of streets	91.0	61.6	
	walking one block of streets	100.0	81.4	
	bathing or dressing	99.0	78.8	
Activity range health limiting due to physical	time reduction	71.8	54.8	60+ club = 67*
	less achievement	73.8	56.7	
	limiting doing work	77.9	57.3	control = 55.13*
	difficulties	73.3	51.8	
Bodily pain	pain intensity	46.4	55.6	
	pain influence	30.5	49.0	
General perception of health	general evaluation of health	55.0	69.5	
	susceptibility to illness	74.0	62.5	
	comparison with others	41.5	50.0	
	expecting health to deteriorate	56.5	39.5	
	health excellence	62.5	66.5	
Vitality	»full of life«	39.5	64.5	Mental health
	energy	42.0	66.5	
	feeling worn-out	69.3	59.5	
	feeling tired	56.5	47.5	
Social functions	excellence	26.2	40.7	
	time	70.5	57.0	
Activity range limiting due to emotional problems	time reduction	80.9	61.1	60+ club = 60*
	less achievement	75.4	62.0	
	lack of attention	72.9	63.8	control = 59.69*
Mental health	disturbed	77.0	61.0	
	poor	85.0	81.0	
	calm	34.5	53.0	
	disheartened	75.5	69.0	
	happy	41.0	49.0	

\* – % of the possible maximum

The results obtained by self-evaluation of the subjects in the area concerning activity range limiting due to physical health were 71.8 % and showed that the subjects reduced time for physical activities, achieved less than they wanted and experienced limitations and difficulties when doing work. The results for the subjects included in the control group showed that they experienced fewer limitations due to physical health in carrying out their activities (Table 6).

Pain intensity scored 46.4 % SM and its influence on regular activities 30.5 % SM among members of the 60+ club. However, in the control group of subjects, scores for pain intensity and its influence on regular activities were higher than the scores in the first group of subjects (Table 6).

The general perception of health was evaluated in five items. The highest score (74 % SM) was given to susceptibility to illness and the expectation of health

deteriorating (56.5 % SM) in the first group and in the control group to subjects' health (69.5 % SM). Health was considered »excellent« by 62.5 % SM in the first group of subjects and by 66.5 % SM in the control group (Table 6). The total score for physical health was 67 % SM and 55.13 % SM respectively (Table 6).

### Mental health

Mental health was evaluated in four areas with 14 items. In the area concerning vitality – how they are feeling – members of the 60+ club scored feeling worn-out at 69.3 % SM, and members of the control group being »full of life« at 64.5 % SM. Subjects in the control group feel more vitally (Table 6).

The influence of physical health or emotional problems on social activities scored 26.2 % SM in the first

group and 40.7 % SM in the control group, and the interference of physical health or emotional problems with social activities 70.5 % SM and 57.0 % SM, respectively (Table 6).

The results of self-evaluation in the area of activity range limitation due to emotional problems showed that the subjects in the first group reduced the time spent at work or doing other activities (80.9 % SM), and the subjects in the control group did their work or other activities less carefully (63.8 % SM) (Table 6).

The »How did you feel?« item within the mental health area received the answer poor 85.0 % SM, and disturbed 77 % SM of the first group of subjects. Subjects in the control group felt less poor (81 % SM) and less disturbed (61 % SM). The average result for both groups was similar for both groups of subjects (Table 6).

The average value of self-evaluation of health for different areas in both groups is presented in Figure 1.

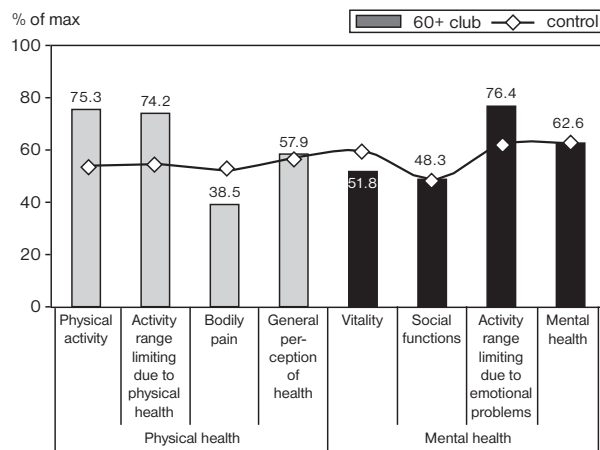


Figure 1. Average value of self-evaluation of health in both groups of subjects according to health areas.

Sl. 1. Povprečne vrednosti samovrednotenja zdravja raziskovalne in kontrolne skupine po področjih zdravja.

The question »How satisfied are you with your life?« scored 67.6 in the first group and 60.0 in the control group.

Numerous researches have been conducted to define life quality of the general population. Cummins (2000) showed in his research that average life quality in western countries is  $75 \pm 2.5$  % of the SM. In non-western countries the results vary from 60 % to 80 % SM.

### Differences in health areas and age groups

To determine whether there are differences in the quality of life in the observed areas of health between the two groups of subjects, the results were tested by

Mann Whitney test. The comparison showed the significant differences in both physical and mental health between the two groups (Table 7). The Mann Whitney test showed statistical differences between the two groups in the following areas: physical activity  $p = 0.001$ , activity range limitation due to physical health  $p = 0.001$ , bodily pain  $p = 0.014$ , vitality  $p < 0.001$  and activity range limitation due to emotional problems  $p = 0.025$  (Table 7).

Table 7. Comparison of the two groups according to observed health areas.

Razpr. 7. Primerjava obeh skupin vprašanih po opazovanih področjih zdravja.

	Observed parameter	p*
Physical health	Physical activity	< 0.001
	Activity range limiting due to physical health	0.001
	Bodily pain	0.014
	General perception of health	0.756
Mental health	Vitality	< 0.001
	Social functions	0.741
	Activity range limiting due to emotional problems	0.025
	Mental health	0.846
Total	Physical health	< 0.001
	Mental health	0.986
	General health	0.001

\* Mann Whitney test

SM values expressed in percentages showed a tendency to decline with age in the observed health areas, although there were some deviations. The results presented in Table 8 show that subjects aged 80 or more had the highest scores in the areas of general health perception (70 % SM) and vitality (62.50 % SM).

The results were similar in the research conducted by Idler (1993 In: Despot Lučanin, 2003), where the oldest subjects had the most positive self-evaluation of health. Similar data were obtained in Bonn longitudinal study, where 53 % of subjects aged 70–75 evaluated their health as better than their physician did, unlike 415 subjects aged 60–65.

Comparing the subjects according to age the results show a statistical significance in physical health in the area of activity range limitation due to physical health,  $p = 0.034$  (Table 8).

Recent research has shown that subjective life quality with regard to age can either be improved, remain at the same level or deteriorate (Maher, 1999 In: Martinis, 2005). Martinis (2005) did research on the influence of age on life quality, which showed that quality of life deteriorates with age. In the area of physical health the result was  $M 71.59$ ,  $SD 17.012$ , and in the area of mental health  $M 67.79$ ,  $SD 16.728$ . In the group of subjects aged 70 or more the evaluation

Table 8. Comparison of subjects in both groups according to age in observed health areas.

Razpr. 8. Primerjava raziskovalne inkontrolne skupine po starostnih razredih in opazovanih področjih zdravja.

Health	Health areas	Groups of subjects	Age groups					p
			60–64	65–69	70–74	75–79	80 or more	
			%SM	%SM	%SM	%SM	%SM	
Physical health	Physical activities	60+ club	75.59	79.29	79.50	65.00	55.00	0.098
		Control	68.70	61.15	42.50	50.96	28.75	0.063
	Activity range limiting due to physical health	60+ club	77.57	82.58	79.59	47.65	56.25	0.034
		Control	67.37	65.03	44.45	52.09	18.75	0.041
	Bodily pain	60+ club	40.15	32.32	31.50	52.19	55.00	0.416
		Control	38.54	50.67	54.38	61.43	77.50	0.160
General perception of health	60+ club	59.41	58.93	56.00	53.75	70.00	0.478	
	Control	56.25	57.33	60.42	54.29	60.00	0.658	
Mental health	Vitality	60+ club	53.15	49.11	51.25	53.13	62.50	0.343
		Control	58.33	57.50	62.50	57.14	65.63	0.488
	Social functions	60+ club	48.53	45.54	50.42	50.00	50.00	0.898
		Control	50.35	48.61	48.27	47.03	50.00	0.963
	Activity range limiting due to emotional problems	60+ club	74.51	90.48	81.10	51.04	66.67	0.057
		Control	75.22	72.16	56.47	57.53	12.50	0.025
Mental health	60+ club	61.76	62.14	63.00	65.00	60.00	0.872	
	Control	63.75	63.67	60.00	61.43	65.00	0.939	

\* Kruskal Wallis Test

of life quality was the lowest in comparison to all other age groups in all variables. In the area of physical health the results in the age group 60–69 were M 66.35, SD 16.206, in the age group > 70, M 53.98, SD 19.996. Post-hoc analysis ( $p < 0.1$ ) showed that the group of subjects aged 70 or more was statistically significantly less satisfied with their physical health in comparison to all other groups ( $M = 53.98$ ). The evaluation of mental health showed low results. In the age group 60–69 the result was M 60.98, SD 16.852, and in the age group > 70, M 56.65, SD 17.998. In the group of subjects aged 70 or more the satisfaction with their mental health was the lowest (Martinis, 2005).

The results of subjective evaluation of health obtained by SF – 36 (Walters, Munro, Brazier, 2001) in the research carried out on 9897 subjects older than 65 (65–104) showed that quality of life and health declines with age in all eight areas. The results in the area of physical activity were 75 % SM in the group aged 65–69, 35 % SM in the group aged 80–84 and 20.0 % SM in the > 85 group. In the area of mental health the results showed less difference: 76 % SM in the group aged 65–69, 68 % SM in the group aged 80–84 and 68.0 % SM in the > 85 group.

In the control group, the Kruskal Wallis test showed statistical significance in the area of physical health concerning activity range limitation due to physical health  $p = 0.041$ , and in the area of mental health

concerning activity range limitation due to emotional problems  $p = 0.025$ .

The correlation between physical and mental health and between individual health areas was analysed by Spearman correlation test.

In the first group of subjects, members of 60+ club, there is positive correlation between activity range limiting due to physical health and activity range limitation due to emotional problems (Spearman  $\rho = 0.561$ ,  $p < 0.001$ ). The correlation between physical activities and bodily pain is negative (Spearman  $\rho = -0.439$ ,  $p < 0.001$ ).

In the second group of subjects, used as a control, there is a strong positive correlation between physical activities and activity range limiting due to physical health (Spearman  $\rho = 0.679$ ,  $p < 0.001$ ) and between physical activities and activity range limiting due to emotional problems (Spearman  $\rho = 0.662$ ,  $p < 0.001$ ). There is also very strong correlation between activity range limitation due to physical health and activity range limitation due to emotional problems (Spearman  $\rho = 0.874$ ,  $p < 0.001$ ).

There is a very strong correlation between physical activities and bodily pain (Spearman  $\rho = -0.716$ ,  $p < 0.001$ ) and between physical activities and general health (Spearman  $\rho = -0.676$ ,  $p < 0.001$ ). There is negative correlation between activity range limitation due to physical health and bodily pain (Spearman  $\rho = -0.656$ ,  $p < 0.001$ ) as well as general health (Spear-



man  $\rho = -0.613$ ,  $p < 0.001$ ). The correlation is also negative between activity range limitation due to emotional problems and bodily pain (Spearman  $\rho = -0.661$ ,  $p < 0.001$ ) as well as general health (Spearman  $\rho = -0.589$ ,  $p < 0.001$ ).

These results are in conformity with the results of researches showing that quality of life depends on health, which is influenced by biological and non-biological factors and that it is different at different ages.

## Conclusion

The following conclusions are drawn from this research:

- the subjective quality of life of the elderly is different in different areas of physical and mental health,
- there is no difference in the general perception of health by the elderly,
- general satisfaction with personal life quality is consistent with other people's evaluation,
- age influences the quality of life,
- in some areas of physical and mental health there is a difference in the quality of life of the elderly who participate in non-institutional activities and those who do not.

Although this research included only 100 subjects, it can be assumed that similar results would be obtained from a larger sample. It is necessary to conduct research on the applicability of individual research instruments in self-evaluating the quality of life or applying the standard instrument SF – 36 to determine health status in the health care of the elderly, as well as in research on the elderly.

It is necessary to carry out self-evaluation of the quality of life of the elderly in the area of health in order to recognize their physical and mental health problems. Health protection aims for the elderly need to be defined for every single elderly person based on their self-perception of health, perception of a problem's significance, and a basic human needs hierarchy, and to be met within their families and local community.

## References

1. Bohnke P. First European quality of life survey: Life satisfaction, happiness and sense of belonging. Luxembourg: European Foundation for the Improvement of Living and Working Conditions, Office for Official Publications of the European Communities; 2005.
2. Cooper JK, Kohlmann T, Michael JA, Haffer SC, Stevic M. Health outcomes. New quality measure for medicare. *Int J Qual in Health Care*. 2001;13:9–16.
3. Cummins RA. Objective and subjective quality of life: an Interactive model. *Soc Indic Res*. 2000;52:55–72.
4. Cummins RA. International Wellbeing Index, Version 2. 2002. Dostupno na: [http://acqol.deakin.edu.au/inter\\_wellbeing/Index-CoreItemsDraft2.doc](http://acqol.deakin.edu.au/inter_wellbeing/Index-CoreItemsDraft2.doc) (18. 6. 2007).
5. Cummins RA. Normative life satisfaction: measurement issues and a homeostatic model. *Soc Indic Res*. 2003;64:225–56.
6. Cummins RA, Eckersley R, Pallant J, Van Vugt J, Misajon R. Developing a national index of subjective wellbeing: the Australian unity wellbeing index. *Social Indicators Research* 2003; 64: 159–90.
7. Čulig J. Farmakoterapija starijih bolesnika. *Hrvatski časopis za javno zdravstvo* 2005. Dostupno na: <http://www.hcjz.hr/clanak.php?id=12692> (18. 6. 2007).
8. Despot Lučanin J. Iskustvo starenja. Zagreb: Naklada Slap; 2003.
9. Državni zavod za statistiku Republike Hrvatske. Popis stanovništva 2001. Dostupno na: <http://www.dzs.hr> (18. 6. 2007).
10. Kaliterna Lipovčan LJ, Prizmić-Larsen Z. Kvaliteta življenja, životno zadovoljstvo i osjećaj sreće u Hrvatskoj i europskim zemljama. U *pridruživanje Hrvatske Europskoj uniji – izazovi sudjelovanja*. Zagreb; 2007: 181–98.
11. Krizmanic M, Kolesaric V. Pokušaj konceptualizacije pojma »kvaliteta života«. *Primijenjena psihologija*. 1989;10:179–84.
12. Martinis T. Percepcija kvalitete života u funkciji dobi. Zagreb: Filozofski fakultet Sveučilišta, Odsjek za psihologiju; 2005. Dostupno na: <http://darhiv.ffzg.hr/337/> (18. 6. 2007).
13. Parker SG, Peet SM, Jagger C, Farhan M, Castleden CM. Measuring health status in older patients. The SF-36 in practice. *Age Ageing*. 1998;27:13–8.
14. Parker SG, Bechinger-English D, Jagger C, Spiers N, Lindesay J. Factor affecting completion of the SF-36 in older people. *Age Ageing*. 2006;35:376–81.
15. Petz B. Statistika za praksu. Zagreb: Ministarstvo unutarnjih poslova Republike Hrvatske; 1994.
16. SAS Institute Inc. SAS Procedure Guide, Version 8. Cary (NC): SAS Institute Inc; 1999.
17. Tournier P. Učimo starjeti »Oko 3 ujutro«. Zagreb, 1998.
18. Walters SJ, Munro JF, Brazier JE. Using the SF-36 with older adults: a cross-sectional community-based survey. *Age Ageing*. 2001;30: 337–43.
19. Ware JE. Health survey SF-36. *SPINE*. 2000;25:3130–9.
20. Ware JE. SF-36 Health survey Update. Dostupno na: <http://www.sf-36.org/tools/sf36.shtml> (16. 3. 2007).