

Health related quality of life among the elderly: a population-based study using SF-36 survey

Qualidade de vida relacionada à saúde em idosos, avaliada com o uso do SF-36 em estudo de base populacional

Margareth Guimarães Lima ¹
 Marilisa Berti de Azevedo Barros ¹
 Chester Luiz Galvão César ²
 Moisés Goldbaum ³
 Luana Carandina ⁴
 Rozana Mesquita Ciconelli ⁵

Abstract

As life expectancy continues to rise, one of the greatest challenges of public health is to improve the quality of later years of life. The aim of this present study was to analyze the quality of life profile of the elderly across different demographic and socioeconomic factors. A cross-sectional study was carried out in two stages, involving 1,958 individuals aged 60 years or more. Health related quality of life (HRQOL) was assessed using the SF-36 questionnaire. The lowest scores were found among measures for vitality, mental health and general health and the highest among factors including social functioning and role limitations due to emotional and physical factors. HRQOL was found to be worse among women, in individuals at advanced ages, those who practiced evangelical religions and those with lower levels of income and schooling. The greatest differences in SF-36 scores between the categories were observed in functional capacity and physical factors. The results suggest that healthcare programs for the elderly should take into account the multi-dimensionality of health and social inequalities so that interventions can target the most affected elements of HRQOL as well as the most vulnerable subgroups of the population.

Aged; Quality of Life; Social Inequity; Questionnaires

Introduction

The progressive rise in life expectancy contributes to an increase in the prevalence of chronic illnesses in the elderly population ¹. Despite suffering from chronic conditions, elderly individuals can have a good level of health and remain capable of administering basic survival activities, their social lives and finances ². Therefore, one of the greatest public health challenges is to increase the number of years of a healthy and quality life.

The concept of *quality of life* encompasses satisfaction and wellbeing, containing subjective and multi-dimensional characteristics ^{3,4}. Quality of life can be addressed as general quality of life or health-related quality of life (HRQOL). The former is a broad-based term that includes the sense of wellbeing and happiness regardless of illnesses and dysfunctions. In HRQOL, a multidimensional approach is employed that takes into account physical, mental and social aspects that are more clearly related to symptoms, disabilities and limitations caused by disease ^{5,6}. Self-assessed health and health-related quality of life instruments generate a set of important health indicators for individuals and populations and are significant predictors of mortality, especially in the elderly. In a broad-based literature review, Idler & Benyamini ⁷ detected a greater risk of death in individuals who assessed their health status as regular or bad compared

¹ Faculdade de Ciências Médicas, Universidade Estadual de Campinas, Campinas, Brasil.

² Faculdade de Saúde Pública, Universidade de São Paulo, São Paulo, Brasil.

³ Faculdade de Medicina, Universidade de São Paulo, São Paulo, Brasil.

⁴ Faculdade de Medicina de Botucatu, Universidade Estadual Paulista, Botucatu, Brasil.

⁵ Departamento de Medicina, Universidade Federal de São Paulo, São Paulo, Brasil.

Correspondence

M. B. A. Barros
 Departamento de Medicina Preventiva e Social,
 Faculdade de Ciências Médicas, Universidade Estadual de Campinas,
 C. P. 6111, Campinas, SP
 13083-970, Brasil.
 marilisa@unicamp.br

to those with a more favorable self-assessment of health.

However, HRQOL measurements are not generated by the Brazilian national health information system⁸. Subjective health indicators can be obtained through health surveys that counterbalance the lack of traditional information systems and are valuable when it comes to the formulation and assessment of public health policies.

One of the most widely used instruments to assess health-related quality of life is the SF-36 (*Medical Outcomes Study 36-item Short-Form Health Survey*) that is drawn from the *Medical Outcomes Study* (MOS) questionnaire published in English in 1990. The literature on this instrument is documented by the International Quality of Life Assessment Project (IQOLA)⁹. The SF-36 contains 36 items combined in eight scales, which can also be grouped into two components: physical and mental. SF-36 has been translated and validated in several languages and cultures. There are surveys applying the SF-36 in more than 40 countries⁹. The instrument allows the measurement of various health dimensions and can assess the impact of disease as well as the benefits of treatment. It is also a good predictor of mortality. In a cohort study with elderly individuals, Tsay et al.¹⁰ found a greater risk of mortality among those who scored low on the SF-36 measures.

In Brazil, the instrument was translated and validated by Ciconelli et al.¹¹ in a study involving individuals with rheumatoid arthritis. It was considered suitable for administration under the socioeconomic and cultural conditions of the Brazilian population.

Studies developed in other countries demonstrate that some SF-36 domains, such as *vitality* and *general health*, are more compromised than others, such as *mental health* and *social functioning*^{12,13}. A number of studies have assessed the extent to which demographic and socioeconomic conditions are associated with HRQOL using the SF-36^{13,14} and have found significant differences between subpopulations, which points out the need for a differentiated approach to public health planning in order to improve equity.

However, there have been no previously published Brazilian population-based studies using the SF-36 for comparisons with international data.

The aim of the present study was to provide a profile of SF-36 scales and analyze the influence of demographic and socioeconomic factors on health-related quality of life in an elderly Brazilian population.

Material and methods

This is a cross-sectional population-based study, developed with data obtained from the *Multi-Center Health Survey in the State of São Paulo* (ISA-SP) carried out in 2001 and 2002 in four areas of the State of São Paulo, Brazil¹⁵.

A two-stage stratified cluster sample was obtained. Census tracts were grouped into three strata according to the percentage of heads of household with college education: less than 5%, 5% to 25% and over 25%. Ten census tracts were selected from each stratum totaling 120 sectors in the four areas. After the fieldwork to update maps, the selection of households was performed. In order to obtain satisfactory subpopulation sample sizes the following gender and age domains were defined: < 1 year, 1 to 11 years, 12 to 19 year-old-men, 12 to 19 year-old-women, 20 to 59 year-old-men, 20 to 59 year-old-women, men aged 60 and over and women aged 60 and over. For each domain in each study area a minimum sample size of 200 was estimated, based on a prevalence of 0.5, an error of 0.07, an alpha error of 0.05 and a design effect of 2. Considering a possible loss of 20%, 250 individuals were selected for each domain¹⁶. For the present study, only two domains were included – those with people aged 60 years or more. Data were collected by trained interviewers directly to the selected individual using a pre-codified questionnaire. The questionnaire was mostly made up of closed questions organized into 19 theme blocks.

The variables analyzed in this study were obtained from three thematic sets of questions: health related quality of life, constituted using the SF-36 and sets of socioeconomic and demographic characteristics.

The dependent variables were the scores of the SF-36 scales: *physical functioning*, *role limitations due to physical health problems* (referred to here as *role-physical*), *bodily pain*, *general health* (general health perceptions), *vitality*, *social functioning*, *role limitations due to emotional health problems* (referred to here as *role-emotional*) and *mental health*.

The scores were attributed to each item according to the proposed methodology¹¹. The total scores from each of the eight domains were then converted to a scale ranging from 0 to 100, with higher scores representing better health¹¹.

The independent variables of this study were the demographic and socioeconomic characteristics: gender; age (60 to 69, 70 to 79 and 80 years or more); skin color/ethnicity (white and black/mixed); marital status (with and without spouse); religion (Catholic, Evangelic, and others or no religion); monthly per capita family income (less

than 1 minimum wage; 1 to 4 times the minimum wage; and more than 4 times the minimum salary); and schooling (0 to 3; 4 to 8; and 9 or more years of study).

Estimates of means, standard error and confidence intervals were performed for each of the SF-36 scales. Differences in means according to demographic and socioeconomic variables were tested using simple linear regression analysis. Multiple regression models were used to control the effect of gender, age and *per capita* monthly income and schooling. All data analysis took into account the sample design considering the weights and the intra-cluster correlations. Analyses were performed with Stata 8.0 (Stata Corp., College Station, USA) application software.

The ISA-SP project was approved by the Ethics Committees of the School of Public Health at the University of São Paulo (USP), the School of Medical Science at the State University of Campinas (UNICAMP) and the School of Medicine at the State University of São Paulo-Botucatu (UNESP). All subjects signed a consent form and the confidentiality of data was assured. The present study was approved by the Research Ethics Committee of the School of Medical Science (UNICAMP) under protocol number 369/2000.

Results

A total of 1,958 elderly individuals were interviewed: 929 men and 1,029 women, with a mean age of 69.6 years. Most of the interviewees were in the 60 to 69 age group (55.8%), lived with a spouse (58.9%), were Catholic (75.5%) and referred to themselves as being white (80.2%). About 75% had a per capita monthly income less than four times the minimum salary and 42.6% had less than four years of schooling (Table 1).

Scores of quality of life were lowest in the following dimensions: *vitality* (64.4), *mental health* (69.9) and *general health* (70.1). Highest scores were obtained in the following scales: *role-emotional* (86.1), *social functioning* (85.9) and *role-physical* (81.2) (Table 2).

Women obtained lower scores than men in all domains except for *role-physical* (Table 3). The greatest difference between genders was found in the *physical functioning* scale, with a difference of 9.2 points between mean scores.

Unadjusted analysis of the difference in scores according to skin color/ethnicity revealed that white individuals obtained significantly higher mean scores in the *general health* scale. However, this difference failed to remain significant in multiple linear regression analysis (Table 3).

Table 1

Sample characteristics according to demographic and socioeconomic variables. *Multi-Center Health Survey in the State of São Paulo (ISA-SP), 2001-2002.*

Variables/Categories	n	% (95%CI)
Gender		
Male	929	42.7 (39.0-46.3)
Female	1,029	57.2 (53.6-60.9)
Total	1,958	
Age (in years)		
60-69	1,092	55.8 (51.0-60.6)
70-79	645	33.3 (29.1-37.5)
80 or more	221	10.8 (8.2-13.3)
Schooling (in years)		
0-3	844	42.6 (37.6-48.1)
4-8	759	38.2 (34.7-42.1)
9 or more	354	19.0 (14.3-22.9)
Per capita monthly income (multiple of the minimum wage)		
< 1	505	23.4 (19.6-27.1)
1-4	987	51.8 (48.4-55.2)
> 4	466	24.7 (20.6-28.8)
Skin color/Ethnicity		
White	1,510	80.2 (76.5-83.8)
Black/Mixed	394	19.8 (16.1-23.4)
Religion		
Catholic	1,427	75.5 (72.4-78.6)
Evangelical	305	14.4 (11.5-17.3)
Others/Without religion	214	10.0 (8.2-11.7)
Conjugal situation		
With spouse	1,172	58.9 (54.8-63.1)
Without spouse	775	41.0 (36.8-43.1)

Table 2

Mean scores of SF-36 scales. *Multi-Center Health Survey in the State of São Paulo (ISA-SP), 2001-2002.*

Scales	Mean	95%CI	Standard error
Physical functioning	71.4	68.9-73.9	1.26
Role-physical	81.2	77.5-84.8	1.83
Bodily pain	74.2	72.0-76.4	1.09
General health	70.1	68.3-71.8	0.86
Vitality	64.4	62.3-66.5	1.04
Role-emotional	86.1	83.8-88.4	1.16
Social functioning	85.9	83.4-88.5	1.27
Mental health	69.9	68.3-71.5	0.81

Table 3

Mean scores, mean differences and confidence intervals (95%) of SF-36 scales according to gender, skin color and conjugal situation. *Multi-Center Health Survey in the State of São Paulo (ISA-SP), 2001-2002.*

Scales	Gender		Crude differences		Adjusted differences *	
	Male	Female	Dif	p	Dif	p
Physical functioning	77.8 (75.5-80.1)	66.7 (63.5-69.9)	-11.1	0.000	-9.2	0.000
Role-physical	82.8 (79.4-86.2)	79.9 (75.3-84.5)	-2.8	0.194	-1.1	0.585
Bodily pain	77.9 (75.6-80.3)	71.4 (68.7-74.2)	-6.4	0.000	-5.7	0.000
General health	72.9 (70.9-74.9)	67.9 (65.5-70.4)	-4.9	0.001	-3.9	0.008
Vitality	68.6 (66.6-70.2)	61.2 (58.9-63.5)	-7.9	0.000	-6.3	0.000
Role-emotional	90.3 (88.3-92.4)	83.0 (79.6-86.4)	-7.3	0.000	-6.4	0.001
Social functioning	88.8 (85.7-90.2)	84.5 (81.2-87.7)	-3.5	0.027	-3.4	0.013
Mental health	73.1 (71.2-75.0)	67.5 (65.5-69.5)	-5.5	0.000	-5.2	0.000
	Skin color/ ethnicity		Crude differences		Adjusted differences *	
	White	Black/Mixed	Dif	p	Dif	p
Physical functioning	71.7 (69.1-74.4)	69.7 (65.6-73.8)	-2.0	0.344	-0.1	0.933
Role-physical	81.7 (77.9-85.4)	77.4 (71.8-83.1)	-4.2	0.125	-0.5	0.849
Bodily pain	74.7 (72.4-77.0)	71.7 (67.5-75.8)	-3.0	0.159	-0.1	0.999
General health	70.6 (68.7-72.5)	66.9 (63.6-70.2)	-3.6	0.035	-1.9	0.297
Vitality	64.6 (62.4-66.7)	63.4 (59.7-67.0)	-1.1	0.554	0.6	0.746
Role-emotional	86.7 (84.1-89.3)	82.9 (76.9-88.8)	-3.8	0.252	-2.0	0.573
Social functioning	86.4 (84.0-88.8)	83.8 (78.6-88.9)	-2.6	0.243	-0.7	0.752
Mental health	69.9 (68.2-71.6)	69.7 (67.0-72.3)	-0.2	0.848	1.9	0.226
	Conjugal situation		Crude differences		Adjusted differences *	
	With spouse	Without spouse	Dif	p	Dif	p
Physical functioning	74.6 (72.4-76.8)	67.3 (63.4-71.2)	-7.2	0.000	1.0	0.571
Role-physical	82.8 (79.6-86.1)	78.6 (73.5-83.6)	-4.2	0.039	-1.6	0.374
Bodily pain	74.7 (72.6-76.8)	73.7 (70.0-77.4)	-1.0	0.603	2.9	0.127
General health	70.3 (68.4-72.2)	69.5 (66.6-72.4)	-0.7	0.616	2.7	0.078
Vitality	65.4 (63.3-67.5)	62.8 (60.1-65.6)	-2.5	0.075	2.2	0.196
Role-emotional	87.2 (85.0-89.4)	84.5 (80.7-88.2)	-2.7	0.149	1.6	0.403
Social functioning	87.3 (85.0-89.6)	84.5 (80.9-88.1)	-2.8	0.061	-0.4	0.753
Mental health	70.5 (68.5-72.5)	69.1 (66.7-71.4)	-1.3	0.352	1.2	0.487

* Differences adjusted by gender, age, per capita income and schooling using multiple linear regression model.

Regarding the mean scores by marital status, differences between elderly individuals with and without spouse were no longer significant after adjusting for gender, age, schooling and per capita income (Table 3).

Considering the age groups (Table 4), mean scores diminish progressively with the advance in age, with statistically significant differences in all the scales except for *mental health* and *bodily pain*, comparing the age groups "80 or more" with those aged 60 to 69.

Individuals of the Catholic faith obtained better scores than those from Evangelical religion for *role-physical* and *vitality* indicators, even after adjusting for gender, age, per capita monthly income and schooling (Table 4).

Scores were higher in the strata with higher income. The greatest differences in mean scores between the lowest and highest income strata were found in the following scales: *role-physical* (14.1), *social functioning* (10.4) and *physical functioning* (9.7). Differences between income

Table 4

Mean scores, mean differences and confidence intervals (95%) of SF-36 scales according to age and religion. *Multi-Center Health Survey in the State of São Paulo (ISA-SP), 2001-2002.*

Scales	Age (in years)			Crude differences		Adjusted differences *		Crude differences		Adjusted differences *	
	60-69 (1)	70-79 (2)	80 or more (3)	Dif (2)-(1)	p (2)-(1)	Dif (2)-(1)	p (2)-(1)	Dif (3)-(1)	p (3)-(1)	Dif (3)-(1)	p (3)-(1)
Physical functioning	78.7 (76.0-80.7)	66.3 (61.8-70.8)	47.9 (43.4-52.4)	-12.4	0.000	-11.5	0.000	-30.8	0.000	-29.1	0.000
Role-physical	86.1 (83.2-88.9)	75.4 (68.4-82.3)	70.9 (62.4-79.3)	-10.6	0.002	-10.5	0.001	-15.1	0.001	-14.6	0.001
Bodily pain	76.0 (73.9-78.0)	72.1 (68.2-76.0)	71.0 (66.2-75.9)	-3.8	0.034	-2.8	0.085	-4.9	0.056	-2.7	0.318
General health	72.9 (71.0-74.7)	66.4 (63.1-69.6)	65.0 (60.1-69.9)	-6.5	0.001	-6.0	0.001	-7.8	0.001	-7.0	0.004
Vitality	67.7 (66.0-69.4)	61.2 (57.4-65.0)	54.7 (49.1-60.2)	-6.5	0.001	-5.8	0.003	-13.0	0.000	-12.0	0.000
Role-emotional	88.6 (86.2-91.0)	84.5 (80.6-88.3)	76.3 (68.0-84.5)	-4.1	0.033	-3.2	0.085	-8.0	0.004	-11.0	0.007
Social functioning	88.7 (86.9-90.4)	83.5 (78.5-88.4)	80.7 (74.5-86.8)	-5.2	0.018	-4.8	0.021	-12.3	0.009	-7.2	0.025
Mental health	70.3 (68.4-72.2)	69.3 (66.7-72.0)	69.2 (65.0-73.4)	-0.9	0.563	-0.1	0.946	-1.0	0.587	-0.1	0.980
Scales	Religion			Crude differences		Adjusted differences *		Crude differences		Adjusted differences *	
	Catholic (1)	Evangelical (2)	Others (3)	Dif (2)-(1)	p (2)-(1)	Dif (2)-(1)	p (2)-(1)	Dif (3)-(1)	p (3)-(1)	Dif (3)-(1)	p (3)-(1)
Physical functioning	72.2 (69.7-74.6)	67.3 (63.3-71.3)	71.8 (65.5-78.1)	-4.8	0.030	-3.2	0.118	-0.3	0.901	-1.2	0.627
Role-physical	82.2 (78.5-85.9)	72.3 (65.9-78.8)	85.6 (79.8-91.4)	-9.8	0.004	-7.4	0.026	3.4	0.198	0.7	0.802
Bodily pain	74.7 (72.3-77.1)	69.7 (66.4-73.0)	76.4 (71.6-81.2)	-5.0	0.013	-2.5	0.207	1.6	0.508	0.1	0.955
General health	70.0 (68.2-71.9)	67.1 (63.6-70.7)	73.9 (70.1-77.7)	-2.8	0.121	-1.6	0.375	3.8	0.036	1.6	0.354
Vitality	65.2 (63.2-67.1)	59.3 (55.3-63.3)	65.9 (61.5-70.3)	-5.8	0.006	-4.5	0.016	0.7	0.707	-1.6	0.444
Role-emotional	87.0 (84.7-89.2)	81.3 (75.3-87.2)	86.6 (80.3-92.8)	-5.3	0.045	-4.0	0.146	-3.0	0.905	-2.7	0.431
Social functioning	87.0 (84.6-89.4)	81.7 (77.5-85.8)	83.9 (77.3-90.6)	-5.6	0.007	-3.7	0.051	-0.3	0.322	-2.5	0.379
Mental health	70.0 (68.3-71.6)	69.1 (66.0-72.2)	70.3 (66.4-74.1)	-0.8	0.619	1.1	0.479	0.3	0.864	-1.1	0.567

* Differences adjusted by gender, age, per capita income and schooling using multiple linear regression model.

strata were non-significant in the *role-emotional*, *mental health* and *bodily pain* scales (Table 5).

Comparing years of education, better health-related quality of life was observed among those with more years of schooling. Differences were significant in all scales, except *role-emotional* and *social functioning*, between the segment with 9 or more years of schooling and that with less than 4 years. The highest differences were found in *bodily pain* (10.6), *physical functioning* (10.0 points) and *role-physical* (8.3). Differences were non-significant between the stratum with 4 to 8 years of schooling and that with less than 4 years in the following scales: *general health*, *vitality*, *social functioning*, *role-emotional* and *mental health* (Table 5).

Discussion

The SF-36 is an instrument that enables the investigation of health-related quality of life, addressing multiple dimensions: *role-physical*, *physical functioning*, *bodily pain*, *general health*, *vitality*, *role-emotional*, *social functioning* and *mental health*^{11,17}. Based on the reviewed literature, this is the first Brazilian paper that analyzes health-related quality of life in elderly using the SF-36 in a population-based study.

Among the eight dimensions assessed by the SF-36, the population studied in the present survey obtained the worst scores in the scales of: *vitality*, *mental health* and *general health*. Other studies showed similar results. Lam et al.¹⁸ in a study carried out in China in individuals aged 14 years or older, also found the lowest scores in

Table 5

Mean scores, mean differences and confidence intervals (95%) of SF-36 scales according to per capita monthly income and schooling. *Multi-Center Health Survey in the State of São Paulo (ISA-SP), 2001-2002.*

Scales	Per capita monthly income (in minimum wages)			Crude differences		Adjusted differences *		Crude differences		Adjusted differences *	
	< 1 (1)	1-4 (2)	> 4 (3)	Dif (2)-(1)	p (2)-(1)	Dif (2)-(1)	p (2)-(1)	Dif (3)-(1)	p (3)/(1)	Dif (3)-(1)	p (3)-(1)
Physical functioning	63.7 (60.4-67.1)	72.5 (69.1-75.8)	76.6 (73.6-79.7)	8.7	0.000	9.3	0.000	12.9	0.000	9.7	0.000
Role-physical	72.9 (67.8-78.0)	80.4 (75.5-86.1)	89.9 (86.8-93.1)	7.8	0.027	7.5	0.039	17.0	0.000	14.1	0.000
Bodily pain	69.1 (66.1-72.1)	74.3 (71.4-77.2)	78.9 (75.4-82.4)	5.1	0.010	4.3	0.029	9.7	0.000	5.0	0.060
General health	65.8 (62.8-68.8)	69.7 (67.1-72.3)	74.9 (72.5-77.2)	3.9	0.031	4.2	0.018	9.0	0.000	7.7	0.001
Vitality	58.9 (56.1-61.7)	64.6 (61.8-67.5)	69.1 (66.5-71.8)	5.6	0.003	6.2	0.000	10.1	0.000	8.8	0.000
Role-emotional	80.8 (76.4-85.2)	86.2 (82.6-89.8)	91.0 (87.8-94.3)	5.3	0.063	5.8	0.052	10.1	0.000	9.2	0.003
Social functioning	79.7 (75.7-83.8)	86.4 (83.0-89.8)	91.0 (88.6-93.4)	6.6	0.004	7.5	0.001	11.2	0.000	10.4	0.000
Mental health	66.9 (64.2-69.7)	69.3 (67.2-71.4)	74.0 (71.6-76.4)	2.3	0.138	2.3	0.117	7.0	0.000	4.7	0.023
	Schooling (in years)			Crude differences		Adjusted differences *		Crude differences		Adjusted differences *	
	0-3 (1)	4-8 (2)	9 or more (3)	Dif (2)-(1)	p (2)-(1)	Dif (2)-(1)	p (2)-(1)	D if (3)-(1)	p (3)-(1)	D if (3)-(1)	p (3)-(1)
Physical functioning	65.6 (62.8-68.3)	73.9 (70.1-77.6)	79.7 (75.8-83.7)	8.2	0.000	5.1	0.006	14.1	0.000	10.0	0.000
Role-physical	74.6 (69.6-79.6)	84.3 (79.8-88.7)	89.6 (85.5-93.8)	9.6	0.000	7.0	0.007	15.0	0.000	8.3	0.018
Bodily pain	69.7 (66.8-72.7)	75.6 (72.5-78.6)	81.5 (77.6-85.3)	5.8	0.009	4.7	0.038	11.8	0.000	10.6	0.000
General health	67.2 (64.7-69.7)	70.4 (67.9-73.0)	75.6 (72.8-78.4)	3.2	0.038	1.7	0.234	8.4	0.000	4.3	0.036
Vitality	61.3 (58.6-63.9)	64.7 (61.8-67.6)	70.6 (67.4-73.7)	3.4	0.070	1.3	0.438	9.3	0.000	4.8	0.045
Role-emotional	82.6 (78.1-87.0)	88.1 (85.1-91.1)	90.2 (86.5-93.9)	5.5	0.038	3.0	0.185	7.3	0.012	3.4	0.283
Social functioning	83.1 (79.5-86.6)	87.3 (83.5-91.0)	89.7 (86.6-92.8)	4.1	0.076	2.0	0.374	6.6	0.005	3.5	0.144
Mental health	67.7 (65.6-69.8)	69.2 (66.7-71.7)	76.0 (73.2-78.9)	1.4	0.373	0.6	0.680	8.3	0.000	6.3	0.006

* Differences adjusted by gender, age, per capita income and schooling using multiple linear regression model.

these three domains. Leplège et al.¹⁹, in research developed in France, found the worst mean scores in the *general health*, *role-emotional* and *vitality* domains. In a sample of 3,802 individuals aged 15 years or more, Wyss et al.¹³ observed in Tanzania, in individuals aged 65 and over, the lowest scores in *general health* and *vitality*.

Analyzing health-related quality of life according to gender, this study showed that women were in a worse situation than men in all SF-36 scales except *role-physical*. Similar results were found in other studies. In a sample of 1,688 individuals aged 18 years or older in China, Li et al.¹⁴ found lower scores among women in the following dimensions: *physical functioning*, *bodily pain*, *general health* and *vitality*. Wyss et al.¹³ also observed that women obtained lower scores than men in all SF-36 scales. In Brazil, studies published on self-rated health using a general question found a worse self-assessment of health among women^{20,21,22,23}. The fact that

women exhibit a worse self-assessed level of health may be attributed to the greater perception and knowledge that they have regarding diseases and symptoms¹. The role as a family health caregiver makes women dedicate more attention to the signs of diseases. Studies generally demonstrate a greater prevalence of reported illness and use of healthcare services among women in comparison to men^{1,24}.

The influence of skin color/ethnicity on the health situation has been studied by some authors^{23,25,26}. In relation to this variable, the present study found no significant associations. The difference encountered in unadjusted analysis can be attributed to socioeconomic inequality and not to the condition of skin color *per se*. Dachs²⁵ found no significant differences in self-assessed health according to skin color when the analyses were adjusted for schooling and income. A study on the prevalence of 12 chronic diseases in a Brazilian population (PNAD-2003), showed

slight differences between black and white individuals, with a lower prevalence, for seven of the 12 diseases, among individuals with mixed skin color in comparison to those with white skin, after adjusting for age, gender and schooling¹.

Considering marital status, elderly individuals with spouses reported a better health status than those with no spouse in two dimensions. However, the differences were no longer significant in the multiple linear regression, as elderly individuals without spouses are generally older and female. Thus no influence from marital status on HRQOL was detected in the present study. This finding differs from the study of Wyss et al.¹³, in which single individuals obtained higher scores than widow/widowers, even after adjusting for age and gender.

The age factor has considerable influence in HRQOL. As expected, older individuals have poorer health status than younger ones. No significant differences by age were detected in the *bodily pain* and *mental health* scales, revealing that these two dimensions are not greatly compromised by the advance in age. Population-based studies carried out in other countries using the SF-36 also found lower scores with an increase in age, especially in the physical component, along with a weak or lack of a decline in the mental component, similar to the results of this Brazilian study^{12,13,14}. The influence of age on self-assessed health is also documented by the Brazilian literature^{20,21,22,23}.

According to religion, elderly individuals pertaining to Evangelical faiths obtained lower scores than those of the Catholic religion in *role-physical and vitality* domains, even after adjusting for age, gender, per capita income and schooling. One of the limitations of cross-sectional studies, however, is that they do not allow the identification of cause and effect. It is possible that individuals in a poorer state of health migrate from one religion to another in search of greater spiritual support. A number of authors have studied the relationship between religious affiliation and health events, finding no association with preventive practices for women's cancers²⁷ or the prevalence of hypertension²⁸. In a systematic literature review, Moreira-Almeida et al.²⁹ found that greater religious involvement is associated with better mental health. Two studies derived from the *Multi-Center Intervention Study on Suicide Behavior* (SUPRE-MISS) in Brazil^{30,31} found associations between religious affiliation and suicidal behavior as well as between religious affiliation and the prevalence of alcohol abuse. The former observed a greater proportion of suicidal ideation among those of the Spiritualist doctrine when compared to those of the

Evangelical, whereas the latter found a greater prevalence of alcohol abuse among Spiritualists and Catholics when compared to those of the Evangelical faiths.

In the present study, there was a positive association between socioeconomic levels and HRQOL. The worst scores in all the SF-36 scales were found in the lowest strata of income and schooling. Studies from other countries using the SF-36 also found that individuals from lower socioeconomic strata obtained lower average scores in all eight dimensions^{19,26}. Other studies carried out in Brazil have found differences in self-rated health status according to the level of schooling^{20,21,32}. Lima-Costa et al.³² found that even slight differences in family income exert an influence in self-rated health status among the elderly.

The present study detected significant social inequality in HRQOL of the elderly, especially with regard to *physical functioning* and *role-physical*, which were more compromised in relation to the analyzed variables. Health-related quality of life were shown to be worse among: elderly women, individuals with more advanced ages, those with lower incomes, with lower levels of schooling and those who practice evangelical religions in comparison to the catholic faith. According to bibliographic review this is the first paper providing a Brazilian elderly profile of SF-36 scores by demographic and social factors. These data can be used for future comparison and to monitor Brazilian elderly HRQOL.

The rapid demographic changes occurring in the country, with a growing number of elderly individuals and those with chronic illnesses, stressed the need to assess and to monitor different health dimensions in order to guide specific interventions³³. Measures of HRQOL are especially required from the perspective of promoting active ageing that foresees the inclusion of the elderly in social contexts, with autonomy and independence in their activities, as well as actively contributing in the community³⁴. When working with healthcare programs targeting the elderly, it is also necessary to take into account significant social inequalities and to provide conditions to protect the more vulnerable segments of this population.

Resumo

Com o aumento da esperança de vida, a melhoria da qualidade de vida dos anos conquistados passou a ser um dos maiores desafios da saúde pública. O objetivo deste estudo foi avaliar a qualidade de vida relacionada à saúde (QVRS) de idosos do sudeste brasileiro segundo fatores demográficos e sócio-econômicos. O estudo transversal, de base populacional, incluiu 1.958 indivíduos com 60 anos ou mais. A QVRS foi avaliada com o instrumento SF-36. As menores médias de escores foram observadas nos domínios de vitalidade, saúde mental e estado geral de saúde, e as mais altas em aspectos emocionais, sociais e físicos. Apresentaram pior QVRS os idosos do sexo feminino, de idade mais avançada, com menor nível de renda, menor escolaridade e de religião evangélica. As maiores diferenças de escores entre os subgrupos sócio-demográficos foram observadas nos domínios de capacidade funcional e aspectos físicos. Os resultados apontam a necessidade dos programas de saúde levarem em conta a multidimensionalidade da saúde e as significativas desigualdades sociais presentes, de forma a priorizar os componentes mais comprometidos da QVRS e os subgrupos populacionais mais vulneráveis.

Idoso; Qualidade de Vida; Iniquidade Social; Questionários

Contributors

M. G. Lima proposed the article and performed the literature review, data analysis and drafting of the manuscript. M. B. A. Barros acted as adviser for the article proposal, data analysis and drafting the manuscript. M. B. A. Barros, C. L. G. César, L. Carandina and M. Goldbaum developed the ISA-SP project, drafted the instruments, coordinated the field research and contributed toward the revision of the article. R. M. Ciconelli contributed to the drafting and revision of the manuscript.

Acknowledgments

The authors are grateful to the São Paulo State Research Foundation (FAPESP) – Public Policy Project, process nº. 88/14099 and the São Paulo State Secretary of Health for financing the fieldwork; to the Secretary of Health Surveillance of the Brazilian Ministry of Health for financial support in the data analysis through the Health Analysis Collaborative Center of FCM/UNICAMP (partnership 2763/2003); to the Secretary of Education of the State of Minas Gerais for the permission given to the first author to attend the Master's course.

References

1. Barros MBA, César CLG, Carandina L, Torre GD. Desigualdades sociais na prevalência de doenças crônicas no Brasil, PNAD-2003. *Ciênc Saúde Coletiva* 2006; 11:911-26.
2. Ramos LR. Fatores determinantes do envelhecimento saudável em idosos residentes em centro urbano: Projeto Epidoso, São Paulo. *Cad Saúde Pública* 2003; 19:793-8.
3. Bowling A, Brazier J. Quality of life in social science and medicine. *Soc Sci Med* 1995; 41:1337-8.
4. The World Health Organization Quality of Life assessment (WHOQOL): position paper from the World Health Organization. *Soc Sci Med* 1995; 41:1403-9.
5. Seidl EMF, Zannon CMLC. Qualidade de vida e saúde: aspectos conceituais e metodológicos. *Cad Saúde Pública* 2004; 20:580-8.
6. Centers for Disease Control and Prevention. Measuring health days. Atlanta: Centers for Disease Control and Prevention; 2000.
7. Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav* 1997; 38:21-37.
8. Viacava F. Informações em saúde: a importância dos inquéritos populacionais. *Ciênc Saúde Coletiva* 2002; 7:607-21.
9. Ware JE, Gandek B. Overview of the SF-36 Health Survey and International Quality of Life Assessment (IQOLA) project. *J Clin Epidemiol* 1998; 51:903-12.
10. Tsay SY, Chi LY, Lee CH, Chou P. Health-related quality of life as a predictor of mortality among community-dwelling older persons. *Eur J Epidemiol* 2007; 22:19-26.

11. Ciconelli RM, Ferraz MB, Santos W, Meinão I, Quaresma MR. Tradução para a língua portuguesa e validação do questionário genérico de avaliação de qualidade de vida SF-36 (Brasil SF-36). *Rev Bras Reumatol* 1999; 39:143-50.
12. Perkins AJ, Stump TE, Monahan PO, McHorney CA. Assessment of differential item functioning for demographic comparisons in the MOS SF-36 health survey. *Qual Life Res* 2006; 15:331-48.
13. Wyss K, Wagner AK, Whiting D, Mtasiwa DM, Tanner M, Gandek B, et al. Validation of the Kiswahili version of the SF-36 Health Survey in a representative sample of an urban population in Tanzania. *Qual Life Res* 1999; 8:111-20.
14. Li L, Wang HM, Shen Y. Chinese SF-36 Health Survey: translation, cultural adaptation, validation and normalization. *J Epidemiol Community Health* 2003; 57:259-65.
15. Cesar CLG. Metodologia. In: César CLG, Carandina L, Alves MCGP, Barros MBA, Goldbaum M, organizadores. Saúde e condição de vida em São Paulo. Inquérito multicêntrico de saúde no Estado de São Paulo 2005 – ISA-SP. São Paulo: Faculdade de Saúde Pública, Universidade de São Paulo; 2005. p. 37-46.
16. Alves MCGP. Plano de amostragem. In: César CLG, Carandina L, Alves MCGP, Barros MBA, Goldbaum M, organizadores. Saúde e condição de vida em São Paulo. Inquérito multicêntrico de saúde no Estado de São Paulo 2005 – ISA-SP. São Paulo: Faculdade de Saúde Pública, Universidade de São Paulo; 2005. p. 47-62.
17. Huang I-C, Wu AW, Frangakis C. Do the SF-36 and WHOQOL-BREF measure the same constructs? Evidence from the Taiwan population. *Qual Life Res* 2006; 15:15-24.
18. Lam CLK, Gandek B, Ren XS, Chan MS. Tests of scaling assumptions and construct validity of the Chinese (HK) version of the SF-36 Health Survey. *J Clin Epidemiol* 1998; 51:1139-47.
19. Leplège A, Escosse E, Verdier A, Perneger TV. The French SF-36 Health Survey: translation, cultural adaptation and preliminary psychometric evaluation. *J Clin Epidemiol* 1998; 51:1013-23.
20. Dachs JNW, Santos APR. Auto-avaliação do estado de saúde no Brasil: análise dos dados da PNAD/2003. *Ciênc Saúde Coletiva* 2006; 11:887-94.
21. Szwarcwald CL, Souza-Júnior PRB, Esteves MAP, Damascena GN, Viacava F. Socio-demographic determinants of self-rated health in Brazil. *Cad Saúde Pública* 2005; 21 Suppl: S54-64.
22. Beltrão KI, Sugahara S. Comparação de informações sobre saúde das populações brasileira e norte-americana baseada em dados da PNAD/98 e USA NHIS/96. *Ciênc Saúde Coletiva* 2002; 7: 841-67.
23. Barros MBA. Auto-avaliação de saúde. In: César CLG, Carandina L, Alves MCGP, Barros MBA, Goldbaum M, organizadores. Saúde e condição de vida em São Paulo. Inquérito multicêntrico de saúde no Estado de São Paulo 2005 – ISA-SP. São Paulo: Faculdade de Saúde Pública, Universidade de São Paulo; 2005. p. 173-82.
24. Pinheiro RS, Viacava F, Travassos C, Brito AS. Gênero, morbidade, acesso e utilização de serviços de saúde no Brasil. *Ciênc Saúde Coletiva* 2002; 7:687-707.
25. Dachs JNW. Determinantes das desigualdades na auto-avaliação do estado de saúde no Brasil: análise dos dados da PNAD/1998. *Ciênc Saúde Coletiva* 2002; 7:641-57.
26. Franks P, Gold MR, Fiscella K. Sociodemographics, self-rated health and mortality in US. *Soc Sci Med* 2003; 56:2505-14.
27. Amorim VMSL, Barros MBA, César CLG, Carandina L, Goldbaum M. Fatores associados à não realização do exame de Papanicolaou: um estudo de base populacional no Município de Campinas, São Paulo, Brasil. *Cad Saúde Pública* 2006; 22:2329-38.
28. Zaitune MPA, Barros MBA, César CLG, Carandina L, Goldbaum M. Hipertensão arterial em idosos: prevalência, fatores associados e práticas de controle no Município de Campinas, São Paulo, Brasil. *Cad Saúde Pública* 2006; 22:285-94.
29. Moreira-Almeida A, Neto FL, Koenig HG. Religiousness and mental health: a review. *Rev Bras Psiquiatr* 2006; 28:242-50.
30. Botega NJ, Barros MBA, Oliveira HB, Dalgalarondo P, Marín-León L. Suicidal behavior in the community: prevalence and factors associated with suicidal ideation. *Rev Bras Psiquiatr* 2005; 27:45-53.
31. Barros MBA, Botega NJ, Dalgalarondo P, Marín-León L, Oliveira HB. Prevalence of alcohol abuse and associated factors in a population-based study. *Rev Saúde Pública* 2007; 41:502-9.
32. Lima-Costa MF, Barreto S, Giatti L, Uchôa E. Desigualdade social e saúde entre idosos brasileiros: um estudo baseado na *Pesquisa Nacional por Amostras de Domicílios*. *Cad Saúde Pública* 2003; 19:745-57.
33. Lima-Costa MF, Veras R. Saúde pública e envelhecimento. *Cad Saúde Pública* 2003; 19:700-1.
34. Organização Mundial da Saúde. Envelhecimento ativo: uma política de saúde. Brasília: Organização Pan-Americana da Saúde; 2005.

Submitted on 18/Jun/2008

Final version resubmitted on 17/Mar/2009

Approved on 13/May/2009