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Factors associated to quality of life in active elderly

Fatores associados à qualidade de vida em idosos ativos

ABSTRACT

OBJECTIVE: To analyze whether quality of life in active, healthy elderly individuals is influenced by functional status and sociodemographic characteristics, as well as psychological parameters.

METHODS: Study conducted in a sample of 120 active elderly subjects recruited from two open universities of the third age in the cities of São Paulo and São José dos Campos (Southeastern Brazil) between May 2005 and April 2006. Quality of life was measured using the abbreviated Brazilian version of the World Health Organization Quality of Live (WHOQOL-bref) questionnaire. Sociodemographic, clinical and functional variables were measured through crossculturally validated assessments by the Mini Mental State Examination, Geriatric Depression Scale, Functional Reach, One-Leg Balance Test, Timed Up and Go Test, Six-Minute Walk Test, Human Activity Profile and a complementary questionnaire. Simple descriptive analyses, Pearson's correlation coefficient, Student's t-test for non-related samples, analyses of variance, linear regression analyses and variance inflation factor were performed. The significance level for all statistical tests was set at 0.05.

RESULTS: Linear regression analysis showed an independent correlation without colinearity between depressive symptoms measured by the Geriatric Depression Scale and four domains of the WHOQOL-bref. Not having a conjugal life implied greater perception in the social domain; developing leisure activities and having an income over five minimum wages implied greater perception in the environment domain.

CONCLUSIONS: Functional status had no influence on the Quality of Life variable in the analysis models in active elderly. In contrast, psychological factors, as assessed by the Geriatric Depression Scale, and sociodemographic characteristics, such as marital status, income and leisure activities, had an impact on quality of life.

DESCRIPTORS: Aged. Quality of Life. Life Style. Health Status. Socioeconomic Factors.

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RESUMO

OBJETIVO: Analisar se a qualidade de vida de idosos ativos e saudáveis pode ser influenciada por estado funcional, características sociodemográficas e por parâmetros psicológicos.

MÉTODOS: Estudo com amostra de 120 idosos ativos participantes de duas universidades abertas à terceira idade, nas cidades de São Paulo e São José dos Campos (SP), entre 2005 e 2006. A qualidade de vida foi mensurada utilizando a versão brasileira e reduzida do *World Health Organization Quality Of Life* (WHOQOL-bref). As variáveis sociodemográficas, clínicas e funcionais foram medidas por meio do *Mini Mental State Examination, Geriatric Depression Scale, Functional Reach, One Leg Balance Test, Timed Up and Go Test, Six-Minute Walking Test, Human Activity Profile* e questionário complementar. Foi realizada a análise descritiva simples, o coeficiente de correlação de Pearson, o teste T para amostras não relacionadas, a análise de variância, a análise de regressão linear e o cálculo do fator de inflação da variância. O nível de significância para todos os testes foi fixado em 0,05.

RESULTADOS: A análise de regressão linear mostrou relação independente e sem colinearidade entre os quatro domínios do WHOQOL-bref e sintomas depressivos avaliados pela *Geriatric Depression Scale.* Não possuir vida conjugal implicou melhor percepção no domínio social; desenvolver atividades de lazer e possuir renda superior a cinco salários mínimos implicou melhor percepção no domínio meio ambiente.

CONCLUSÕES: O estado funcional não foi capaz de influenciar o comportamento da variável qualidade de vida nos modelos de análise em idosos ativos, ao contrário dos fatores psicológicos avaliados pela *Geriatric Depression Scale* e das características sociodemográficas como estado civil, renda e prática de atividades de lazer.

DESCRITORES: Idoso. Qualidade de Vida. Estilo de Vida. Nível de Saúde. Fatores Socioeconômicos.

INTRODUCTION

The proportion of people over 60 years of age has been growing more than any other age group since the 1970s. This is especially true in developing countries where the elderly is expected to reach 67% of the population by 2020.[23] According to the United Nations projections for Latin America, with a projected population of 191 million by 2009, comprising 18 million elderly people, Brazil will have the fifth largest elderly population among 192 countries.[a]

Health promotion policies for encouraging the elderly to remain active and independent and that effectively have a positive effect on their quality of life is a concern for countries going through this demographic transition. According to the World Health Organization (WHO), remaining active means maintaining one's physical, social, and mental potential throughout the entire life cycle, allowing the involvement of the elderly in social, economic, cultural, spiritual, and civic activities.[23]

Actively aging is related to a satisfactory perception individuals have regarding their position in life within a cultural background and value system in which they live as well as to their goals, expectations and social standards. Quality of life represents an individual's responses to physical (objective) and mental (subjective) factors that contribute toward a "normal" life, permeated with personal satisfaction, self-esteem, comparisons to others, previous experiences, financial situation, general health status and emotional state.[9]

Determinants in active aging involve complex systems of health promotion and disease prevention, as well as behavioral (e.g., physical activity), psychological (cognitive impairment and depression), environmental (architectonic barriers and access to transportation), and economic factors (income, employment and access

[a] Instituto Brasileiro de Geografia e Estatística. Resultado Censo 2000 [Internet]. Rio de Janeiro, 2000 [cited 2005 May 14]. Available from: http://www.ibge.gov.br/series_estatisticas/exibedados.php?idnivel=BR&idserie=POP300

to medications). Other determinants include the ability to perform basic and instrumental activities of daily living and the number of comorbidities.[23] Among this set of factors, those of economic order are fundamental to the promotion of physical health and education throughout life. Education also promotes a better quality of life as it provides intellectual development and social adaptation. It is assumed that educational programs offered by universities open to senior citizens favor a social support network with family members and friends; motivate the search for information and social interaction; and facilitate intellectual development and a large part of the prerequisites for active aging.[14] Such programs are therefore attended by autonomous and independent elderly individuals who differ from the general elderly population in the community in that they represent the concept of active aging as proposed by the WHO.

The aim of the present study was to investigate whether quality of life in active, healthy elderly individuals is influenced by functional status and sociodemographic characteristics, as well as psychological parameters.

METHODS

An analytical cross-sectional study was carried out in a sample of 120 subjects over 60 years of age, both males and females, attending two open universities of the third age in the cities of São Paulo and São José dos Campos, Southeastern Brazil.

Individuals with independent mobility regardless gait-assistance devices were included in the study. The following were the exclusion criteria: locomotion by exclusive means of a wheelchair; inability to answer the assessment questionnaires due to serious hearing problems or severe communication disorders; unstable angina or acute myocardial infarction within one month prior to the tests, and verbal or written refusal to participate in the study after clarification and reading of the consent form. No one met the exclusion criteria at the two universities studied.

Data were collected by means of questionnaires and performance tests at a rehabilitation center in São Paulo, affiliated to the local university, and at the campus of the open university of the third age in São José dos Campos, from May 2005 to April 2006. A structured questionnaire was applied to collect sociodemographic and clinical data, such as age, gender, marital status, family arrangement, schooling, social security status, occupation, housing condition, personal income, reason for seeking the university, leisure activities, self-reported comorbidities, subjective perception of vision and hearing abilities, falls in the previous year, use of medications, body mass index (BMI) and engagement in physical activity. The cut-off values used for BMI followed the recommendation by Lipschitz[13] for the elderly population: low weight BMI<22 kg/m^2; normal weight 22≤BMI<27 kg/m^2, and overweight ≥27 kg/m^2.

The Mini Mental State Examination (MMSE) was used in the assessment of cognitive state. The Brazilian version of the 30-item Geriatric Depression Scale (GDS) was used, with a cut-off value of 11 or more symptoms of depression, based on the recommendation by Yesavage, who found 84% sensitivity and 95% specificity.[25]

The Visual Analogue Scale (VAS) was employed for pain assessment. Functional exercise capacity was assessed using the Six-Minute Walk Test.[2] Mobility was assessed by the Timed Up and Go Test (TUGT),[15] with the following normal ranges for healthy elderly individuals in different age groups: 7.1 to 9.0 seconds for those between 60 and 69 years, 8.2 to 10.2 seconds for those between 70 and 79 years; and 10.0 to 12.7 for those between 80 and 99 years.[3] Balance was assessed using the Functional Reach[8] and One-Leg Balance Test.[22] Functional capacity was assessed by the Brazilian version of the Human Activity Profile (HAP), which has items that are difficult enough to determine high levels of capacity or functional performance, thereby minimizing the ceiling effect commonly seen in other functional assessment scales by assessing the individual's functional level as well as the level of physical activity.[20]

The World Health Organization Quality Of Life – bref (WHOQOL),[11] an abbreviated version of the WHOQOL-100, was used for the assessment of quality of life domains. The WHOQOL-bref consists of 26 items – two on overall quality of life and 24 representing four domains: physical, psychological, social relationships, and environment.

The power of the sample to detect errors was of up to 8.9% when the proportions estimated 0.5 for significance level and 95% for confidence intervals. Simple descriptive analysis was used. Pearson's correlation coefficient (r ≥0.3) was used to identify the degree of association between quantitative variables. The Student's t-test for non-related samples was used to determine the degree of association between dependent variables (quantitative) and qualitative variables. Analysis of variance (ANOVA) was employed for qualitative variables with three or more categories. Multiple linear regression was used to identify independent associations after the preliminary analysis. The significance level for all statistical tests was set at 0.05. The variance inflation factor was also estimated.

The study was approved by Research Ethics Committee at the Universidade Federal de São Paulo.

RESULTS

The sample was characterized by a female majority (85.8%) with mean age of 69 years (standard deviation [SD]=5), ranging between 60 and 89 years old. Most elderly had a conjugal life (39.2%); among those who did not have a conjugal life, 38.3% were widowed. Subjects had an average of 9.94 years of schooling (SD=4.93); 24.2% of them had university education. There were no illiterate subjects in the sample, as literacy is a prerequisite for enrolment at the open university. In regard to the family structure, 69.3% resided with family members. The average monthly income was US$ 687.76 (SD=601.66), 55.8% of the elderly subjects interviewed had health insurance and 80.8% were homeowners.

The study subjects reported having sought the university for reasons of occupying their free time and socialization (55.8%), intellectual improvement (28.3%), or to address a health or family-related problem (15.8%). When asked about leisure, 92.5% engaged in leisure activities and 66.7% in trips and social activities. There was a preference for group (48.3%) and outdoor activities (56.7%).

The average number of reported comorbidities was 5.62 illnesses (SD=2.96). Dyslipidemia was the most prevalent condition (49.2%), followed by systemic arterial hypertension (46.7%), peripheral venous insufficiency (45.8%), and osteoarthritis (39.2%). Seventy-five per cent had osteoarticular pain, showing an average of 2.47 centimeters on the pain visual analogue scale. Only one elderly subject was a smoker (0.8% of the sample). Only 11.7% of the elderly studied reported having been hospitalized in the previous six months and 85.8% made use of medications.

Vision and hearing abilities were self-reported as "good" or "excellent" by 70.8% and 65% of the elderly, respectively. Twenty-eight per cent of the subjects had suffered falls in the previous six months, 49.2% reported fear of falling and 1.7% made use of gait assistive devices.

Mean BMI of the elderly studied was 27.06 kg/m^2 (SD=4.86). Forty-four per cent were classified as overweight and 13.3% were low weight.

Of all, 67.5% engaged in physical activity, 41.7% engaged in physical activities from one to four times per week, with duration of thirty minutes to one hour per session.

The average MMSE score was 28.92 points (SD=1.33); 89.2% scored higher than 24 points. The average GDS score was 6.88 points (SD=5.32); 80.8% scored lower than 11 points.

On the Functional Reach scale, subjects showed an average of 27.27 centimeters (SD=4.97). Seventy-one per cent of them managed to perform the One-Leg Balance Test.

In the TUGT mobility assessment, subjects performed the task in an average of 8.10 seconds (SD=1.62) and 99.2% performed it within 13.5 seconds.

On the Six-Minute Walk Test for assessing functional exercise capacity, the average distance covered was 477.68 meters (SD=65.05).

According to the HAP, 88.3% of the elderly subjects were classified as "above average". With respect to physical activity, 81.7% were classified as "moderately active" and 7.5% as "active". The HAP score indicated that 70% of the elderly were "better than the chronological age".

The preliminary analysis showed a negative correlation between the physical (–0.499), psychological (–0.632), social relations (–0.551) and environment (–0.582) domains of the WHOQOL-bref questionnaire and the GDS.

Not having a conjugal life was associated to better performance in the social relationships domain of the WHOQOL-bref questionnaire. Living alone, having a personal income of more than five monthly minimum wages, having health insurance and engaging in leisure activities were associated to better performance in the environment domain of the WHOQOL-bref questionnaire as show in Table 1.

Self-reported vision and hearing classified as "good" or "excellent" was associated to better performance in the environment domain of the WHOQOL-bref questionnaire. Engaging in physical activities was associated to the physical domain of the WHOQOL-bref; subjects who engaged in physical activities five or more times per week scored higher in this domain. Having reported suffering a fall in the previous six months was associated to worse performance in the physical domain of the WHOQOL-bref. Those who reported having fear of falling scored lower in the psychological and environment domains as shown in Table 2.

The elderly who were classified as "above average" showed better performance in the physical and environment domains of the WHOQOL-bref. The subjects showing the best performance in the physical, psychological, social, and environment domains of the WHOQOL-bref were those classified as "better than chronological age" based on HAP (Table 3). In addition, Table 3 shows the average scores on the WHOQOL-bref questionnaire according to functional variables.

For the multiple linear regression analysis the clinical variable "frequency of physical activity" was recategorized before grouping the remaining variables in the statistical procedure.

The variance inflation factor was estimated to exclude the possibility of overlapping of highly-correlated independent variables. Values between 0.19 and 5.30 denote no colinearity between the variables in the regression

Table 1. Average scores on the WHOQOL-bref questionnaire according to sociodemographic variables in 120 active elderly individuals. Cities of São Paulo and São José dos Campos, Southeastern Brazil, 2005-2006.

Variable	n	Average scores on the WHOQOL-bref domains							
		Physical domain	p-value	Psychological domain	p-value	Social domain	p-value	Environment domain	p-value
Marital status									
Conjugal life	47	61.17	0.321	60.72	0.189	67.02	0.003*	64.09	0.141
No conjugal life	73	62.72		63.18		75.45		67.72	
Family structure									
Alone	38	64.28		63.70		75.00		71.29	
With family	82	61.10	0.051	61.53	0.269	70.83	0.171	63.98	0.004*
Personal income									
Less than 5 minimum wages	80	61.38		60.88		71.56		62.96	
5 or more minimum wages	40	63.57	0.175	64.89	0.037*	73.33	0.557	72.96	≤0.001*
Health insurance									
Yes	91	62.48		62.63		72.71		68.16	
No	29	60.96	0.393	60.91	0.421	70.40	0.487	60.45	0.005*
Engages leisure activities									
Yes	111	62.58		62.61		72.89		67.53	
No	09	56.34	0.03*	57.40	0.133	62.96	0.064	51.04	≤0.001*
Average		62.11		62.22		72.15		66.30	
Standard deviation		8.31		9.97		15.48		13.15	

*$p \leq 0.05$

model. Table 4 displays the results of the independent correlations for each domain regarding quality of life of active elderly.

DISCUSSION

The WHO has promoted a process of optimizing opportunities for health, participation and security among the elderly with the aim of improving their quality of life.[23] Based on our findings, we may infer that the population studied fulfils the criteria for the classification of active elderly individuals.

The presence of illness may impair the perception of health and quality of life of the elderly. However, these same individuals may be considered healthy, even if they have chronic, degenerative, but controlled diseases. Among active elderly subjects studied, there was an average of 5.62 self-reported comorbidities, a finding that is consistent with that of a population-based study carried out in São Paulo.[16] Despite this considerable number of comorbidities, most of the elderly subjects analyzed were considered either moderately active (81.7%) or active (7.5%) from a functional perspective, as assessed by the HAP. We can suggest a plausible reason for this fact if we consider that health is a good indicator of negative quality of life, but it may be insufficient indication of successful aging.[24]

These elderly individuals had good mobility, similar to that found by Bohannon in the evaluation of healthy elderly (60 to 69 years of age) with performance ranging from 7.1 to 9.0 seconds.[3] This fact is also important for it is lower than the cutoff value of 13.5 seconds adopted by Shumway-Cook et al as a risk for falls in the upcoming year.[19] As such, the elderly subjects in the present study are theoretically clear of this event, which is directly related to morbidity.

Good mobility was reflected in the results of the functional exercise capacity. Troosters et al[21] showed that elderly individuals free of chronic degenerative diseases and with no history of hospital admission walked an average of 631 meters. However, age, gender, and BMI impaired performance in this test. Though elderly in the present study had lower performance (477 m) when compared to the elderly subjects studied by Troosters et al, they were older, mostly females, and had a greater number of self-reported chronic degenerative disease and higher mean BMI.

Not having a conjugal life, having higher schooling (24.2% of subjects had university education) and having an average monthly income of US$ 687.76 favored a positive perception of quality of life. An income greater than five minimum wages was associated to better performance in the environment domain of quality of life. Schooling contributed toward a greater

Table 2. Average scores on the WHOQOL-bref questionnaire according to "clinical " variables in 120 active elderly individuals. Cities of São Paulo and São José dos Campos, Southeastern Brazil, 2005-2006.

Variable	n	Average scores on the WHOQOL-bref domains							
		Physical domain	p-value	Psychological domain	p-value	Social domain	p-value	Environment domain	p-value
Subjective perception of vision									
Bad or very bad	30	61.07	0.430	59.72	0.113	69.72	0.323	62.18	0.048*
Good or excellent	90	62.46		63.05		72.96		67.67	
Self-reported systemic arterial hypertension									
Yes	56	60.77	0.100	60.56	0.089	68.60	0.018*	62.66	0.004*
No	64	63.28		63.67		75.26		69.48	
Self-reported heart disease									
Yes	33	61.90	0.867	59.84	0.109	67.67	0.050*	64.58	0.380
No	87	62.19		63.12		73.85		66.95	
Self-reported depression									
Yes	26	59.34	0.050*	58.17	0.019*	67.30	0.071	59.61	0.003*
No	94	62.87		63.34		73.49		68.15	
Self-reported insomnia									
Yes	35	58.57	0.002*	59.16	0.031*	66.19	0.006*	62.58	0.047*
No	85	63.57		63.48		74.60		67.83	
Engages physical activity									
Yes	81	63.09	0.048*	62.60	0.549	73.04	0.365	67.28	0.240
No	39	60.07		61.43		70.29		64.26	
Frequency of physical activity									
Never	39	60.07		61.43		70.29		64.26	
1 to 4 times per week	50	61.71	0.028*	61.33	0.292	72.66	0.640	65.06	0.077
5 or more times per week	31	65.32		64.65		73.65		70.86	
Fall in previous 6 months									
Yes	34	64.49	0.048*	63.35	0.435	72.79	0.777	69.85	0.063
No	86	61.17		61.77		71.89		64.89	
Fear of falling									
Yes	59	61.74	0.634	60.38	0.046*	71.61	0.708	63.24	0.012*
No	61	62.47		64.00		72.67		69.26	
Average		62.11		62.22		72.15		66.30	
Standard deviation		8.31		9.97		15.48		13.15	

* $p \leq 0.05$

income, which can ensure better health at advanced ages. Healthy lifestyles are common among groups with higher income as they have greater knowledge on disease prevention; have healthier habits throughout their lives; and have greater access to health services by means of private health plans.[17]

A better financial situation also favors greater autonomy in the choice of leisure activities, increased access to goods and services, relationships and, especially, family arrangements. An individual who is not dependent can choose to live alone, thereby exercising his/her independence and privacy without giving up contact with family members. Another option would be to live in a multi-generation household, thereby participating in raising grandchildren and in the family income.[4] This context implies a situation of security, allowing elderly individuals to remain active and socially involved.

According to a review by Peel et al[14] on determinant behaviors of healthy aging, the elderly subjects of the present study had favorable behaviors regarding nearly all risk factors: they did not smoke, regularly engaged in physical activities, had satisfactory BMIs and a healthy lifestyle. By seeking the open university of the third age to occupy their free time, they socialize and improve intellectually. Nearly all the subjects engaged in leisure activities, preferring trips and group social encounters.

Table 3. Average scores on the WHOQOL-bref questionnaire according to "functional" variables in 120 active elderly individuals. Cities of São Paulo and São José dos Campos, Southeastern Brazil, 2005-2006.

Variable	n	Average scores on the WHOQOL-bref questionnaire domains							
		Physical domain	p-value	Psychological domain	p-value	Social domain	p-value	Environment domain	p-value
Aptitude classification (HAP)									
Low	4	58.03		56.25		75.00		60.93	
Reasonable	10	59.64	0.357	63.33	0.459	71.66	0.930	62.18	0.399
Above average	106	62.50		62.34		72.09		66.89	
Activity classification (HAP)									
Impaired	13	60.16		61.53		72.43		61.77	
Moderately active	98	62.28	0.648	62.15	0.856	71.68	0.634	66.80	0.423
Active	9	63.09		63.88		76.85		67.36	
Score (HAP)									
Worse than chronological age	22	59.74		59.65		71.96		63.35	
Age compatible	14	61.73	0.305	61.60	0.369	70.83	0.938	60.04	0.052
Better than chronological age	84	62.79		62.99		72.42		68.11	
One-leg balance									
Normal	86	62.62	0.286	62.45	0.690	72.18	0.967	66.71	0.587
Abnormal	34	60.81		61.64		72.05		65.25	
Average		62.11		62.22		72.15		66.30	
Standard deviation		8.31		9.97		15.48		13.15	

HAP: Human Activity Profile

Table 4. Final model of the linear regression analysis for each quality of life domain in active elderly subjects. Cities of São Paulo and São José dos Campos, Southeastern Brazil, 2005-2006. (N=120)

Variable	Final model				
	ß coefficient	Standard error	p-value	VIF	VIF mean
Physical domain					1.64
Geriatric Depression Scale	-0.77	0.12	≤0.001*	3.30	
Psychological domain					1.80
Geriatric Depression Scale	-1.18	0.13	≤0.001*	3.15	
Social domain					1.79
Geriatric Depression Scale	-1.51	0.22	≤0.001*	3.38	
Marital status	5.37	2.43	0.029*	1.11	
Environment domain					1.69
Geriatric Depression Scale	-1.24	0.17	≤0.001*	3.28	
Engages leisure activities	-10.44	3.45	0.003*	1.44	
Personal income in minimum wages	7.83	1.90	≤0.001*	1.35	

VIF: Variance inflation factor
*$p \leq 0.05$

According to Xavier et al,[24] having good health, good family relationships, financial security, friends and work ability are determinants of good quality of life.

Not having a conjugal life was a preponderant factor for a better quality of life in the social relationships domain. In a pioneering study on successful aging Rohe & Kahn[18] reported that lack of social network support, whether from their spouse, family or social groups, may increase morbidity and mortality rates in older population.

The predominance of widowed women in the sample could be the key to this issue. Fernandez-Ballesteros et al[10] analyzed the contribution of sociodemographic and psychosocial factors to life satisfaction among the elderly and found that married women were more

satisfied than widowed, single or divorced women. Also, the level of satisfaction among married women was associated to higher income and schooling, physical and leisure activities, and having a better social life and health. The present study showed similar factors associated to a better perception of health in active elderly women but it contrasted with regard to marital status.

In Brazil, however, there are anthropological and social factors that can explain the differences between the data found in our study and those from other studies. If we consider that most elderly Brazilian women did not have paid jobs during their entire lives, were not self-sufficient during their youth and adult life and depended on their spouses, widowhood can means autonomy and independence from both the financial and social standpoints. One additional contributing factor is the widowhood pension they receive, which is proportional to the last benefits due to their spouse, that combined with their retirement pension generates a higher income for these elderly women.[7] The average monthly income of the sample studied was higher among elderly with no conjugal life (US$ 822.46) than those with a conjugal life (US$ 473.38). In a closer analysis, we can clearly see that married subjects had the lowest income (US$ 473.38), followed by divorced (US$ 638.60), widowed (US$ 859.15), and single elderly (US$ 983.19). The association of all quality of life domains with GDS scores should be carefully interpreted: despite the low rate of potential depression cases (19.2%), higher scores on GDS corresponded to lower scores on the WHOQOL-bref. It is a controversial issue as it is not yet clear the extent to which subjective measures of quality of life may be negatively affected by psychopathological symptoms, especially by depression symptoms, and which quality of life measures can be considered valid in the presence of these symptoms. There is measure overlapping in quality of life and depression constructs. Some of the items of WHOQOL-bref questionnaire and GDS are similar, such as questions about the interviewee's perception of meaning of life, concentration ability, negative feelings, anxiety, depression, restlessness, mood swings, vitality for daily living activities and those related to self-confidence. It shows that quality of life measures are associated to the severity of depression symptoms.[1]

Quality of life and depression measures have distinct evaluative capabilities; GDS assesses the presence or not of a particular factor indicative a depression symptom, whereas the WHOQOL-bref assesses the intensity of an effect or level of satisfaction in a particular situation and the impact on quality of life. Therefore, the WHOQOL-bref should be used in combination with an assessment of depression symptoms to determine whether a quality of life measure is biased by such symptoms before prematurely coming to any conclusions regarding the quality of life of any individual.[1] In the present study, the scores indicative of potential depression cases were low and the variance inflation factor revealed that there was no colinearity between the WHOQOL-bref and GDS. This indicates the need to apply the GDS to active elderly individuals as the presence of depression may have a significant negative effect on their quality of life.

Although the WHOQOL-bref has adequate psychometric properties for the elderly population, as Chachamovich et al[5] showed, the instrument does not address some important aspects the elderly individuals reported as having an influence on their quality of life such as relationships with family members, motor or sensory losses that limit their daily activities, spirituality and social participation. The first two aspects are assessed in the WHOQOL-bref, but only indirectly by addressing the relationship with friends, relatives, acquaintances and locomotion, whereas the third and fourth aspects are not addressed at all. The WHOQOL group recognizes the limitations of their instrument in the assessment of quality of life of the elderly and has therefore developed the WHOQOL-OLD. It is a complementary instrument to either the WHOQOL-bref or the WHOQOL-100, with 24 Likert scale items addressing the following six components: sensory functioning; autonomy; past, present and future activities; social participation; death and dying; and intimacy.[6,12] The WHOQOL-OLD was not used in the present study for it was not available when the field work began.

As the elderly attending the open university were found to be functionally and cognitively well, financially stable, actively participating in the program and seeking to improve their knowledge, they can be considered representative of active aging. Depression symptoms, however, can disrupt this harmonious cycle. Early diagnosis and treatment of depression is therefore of vital importance, as well as evaluations of a multidisciplinary team, in order to keep them on the path of functionality and good quality of life.

It is thus important to investigate other groups of elderly that belong to senior citizen centers, sports centers for the elderly and active elderly in the community in an attempt to assess similarities and differences in the influence of objective factors such as functional status, as well as sociodemographic characteristics and psychological factors on the quality of life of these populations. Further studies can provide more input to the planning of public policies that can help improve the quality of life of a much larger proportion of elderly population.

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