

Health related quality of life among elderly living in region of high vulnerability for health in Belo Horizonte, Minas Gerais, Brazil

Qualidade de vida relacionada à saúde em idosos residentes em região de alta vulnerabilidade para saúde de Belo Horizonte, Minas Gerais

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ABSTRACT: *Objective:* To investigate whether social relations, sociodemographic characteristics, lifestyle, and health conditions are associated with health-related quality of life (HRQOL) among elderly persons living in regions classified as high vulnerable in terms of health. *Methods:* A cross-sectional study conducted with a population-based random sample of 366 elderly (≥ 60 years of age) persons registered at a primary health-care unit in Belo Horizonte, Minas Gerais, Brazil. HRQOL was measured using the *Medical Outcomes Study 12-Item Short-Form Health Survey (SF-12)* and the scores obtained in the physical component score (PCS) and mental component score (MCS) were our response variables. Social relations, sociodemographic characteristics, lifestyle, and health conditions were considered our groups of explanatory variables. Multiple linear regression models were used for the analysis. *Results:* In the final multivariate models, we found that elevated number of diagnosis of chronic diseases, and being bedridden for the last 15 days were variables associated with worse PCS and MCS. However, lack of education, dissatisfaction with personal relationships, lack of support and help when bedridden or to go to the doctor, and to prepare meals were associated with worse HRQOL only in MCS. Participants who reported black race/color, absence of work activity, lack of physical activity, no alcohol consumption, and hospitalization in the last 12 months had worse HRQOL only in PCS. *Conclusion:* In addition to the aspects related to social adversity, lifestyle, and health conditions, some functional aspects of social relations were important for understanding the HRQOL in elderly persons living in social vulnerability. *Keywords:* Quality of life. Elderly. Aging. Cross-sectional studies. Social networking. Interpersonal relationships.

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RESUMO: *Objetivo:* Investigar se as relações sociais, juntamente com características sociodemográficas, hábitos de vida e condições de saúde estão associados à qualidade de vida relacionada à saúde (QVRS) em idosos residentes em região considerada de alta vulnerabilidade para a saúde. *Métodos:* Estudo transversal realizado com amostra aleatória de 366 idosos (≥ 60 anos) adscritos a um centro de saúde de Belo Horizonte, Minas Gerais. A QVRS foi aferida pelo *Medical Outcomes Study 12-Item Short-Form Health Survey (SF-12)* e os escores obtidos nos componentes físico (PCS) e mental (MCS) foram utilizados como variáveis resposta. As variáveis explicativas foram divididas em quatro blocos: sociodemográfico, relações sociais, hábitos de vida e condições de saúde. Modelos de regressão linear múltipla foram utilizados. *Resultados:* Nos modelos multivariados finais, encontramos que elevado número de diagnósticos de doenças crônicas e ter estado acamado nos últimos 15 dias foram variáveis associadas à pior QVRS no domínio físico e mental. Entretanto, ausência de escolaridade, insatisfação com relacionamentos pessoais e não ter sempre que necessário o apoio de alguém para ajudar a ficar de cama, ir ao médico e preparar refeições foi associado à pior QVRS apenas no MCS. Ter declarado cor da pele preta, ausência de atividade de trabalho, não praticar atividade física, não consumir álcool e internação nos últimos 12 meses estiveram associados à pior QVRS apenas no PCS. *Conclusão:* Além da adversidade social, hábitos de vida e condições de saúde, alguns aspectos funcionais das relações sociais foram importantes para compreensão da QVRS em idosos em vulnerabilidade social.

Palavras-chave: Qualidade de vida. Idoso. Envelhecimento. Estudos transversais. Rede social. Relações interpessoais.

INTRODUCTION

The share of the population aged 60 years and older increased from 4.3% in 1950 to 13.0% in 2013. In the same period, life expectancy rose from 45.5 to 74.8 years^{1,2}. As a result of this rapid population aging and increased life expectancy, the Brazilian population has faced a significant increase in the prevalence of chronic noncommunicable diseases and disabilities³. In this regard, it becomes increasingly important to ensure that the increased longevity of the population is also accompanied by a better quality of life.

Quality of life is a subjective and multidimensional construct that encompasses the perception and understanding of reality and incorporates satisfaction at areas of life that people value^{4,5}. It is an individual construct associated with the degree of expectation, culture, and personality^{4,5}. Overall, quality of life is related to self-esteem and personal well-being and, therefore, tends to be influenced by several aspects such as health and socioeconomic status, lifestyle, social interaction, family support, and satisfaction with life⁶. Some authors consider that the functional aspect is the major determinant of quality of life, because the health status influences the adequate performance in functions considered of great importance by the individuals^{4,5}. Thus, the concept of “health-related quality of life (HRQOL)” was created to incorporate this appreciation of health status as a determinant of quality of life^{4,5}.

The HRQOL is a strong prognostic indicator of mortality among elderly persons⁷, and previous studies conducted in Brazil found that the social adversity^{8,9}, lifestyle (such as regular physical activity, alcohol consumption, and smoking)^{8,10}, and current health conditions^{8,11,12} are important factors to understand the HRQOL in the elderly persons. Studies in other countries have reported similar results^{13,15}, but, in the international context, the fragility of social relationships has also been identified as a factor associated with worse HRQOL^{16,17}.

Social relationships can be defined as the degree to which individuals are connected and integrated into communities¹⁸, and, according to Due et al.¹⁹, it has two dimensions: the structural and functional aspects. The structure of social relations corresponds to formal and informal relationships (social network) and is usually analyzed by the number of social relationships that an individual maintains, the frequency at which individuals contact people from their social network, and diversity and reciprocity of these relationships. On the other hand, the functional aspect relates to qualitative and behavioral factors of social relationships and encompasses the social support, social anchorage (including engagement and social integration), and relational stress (a negative dimension of social relations)¹⁹.

Several health conditions that have an impact on functionality, such as cognitive decline²⁰, dementia²¹, depression²², limitation²³, and functional decline²⁴ have been associated with structural and functional aspects of social relations in the elderly persons, which may partly explain the link between these aspects and HRQOL. Despite these findings, the association between social relationships and physical and mental components of HRQOL has been poorly explored in Brazil, especially among elderly persons at low socioeconomic status, who tend to have higher social isolation^{20,24}. In this context, the aim of this study was to investigate whether social relationships along with sociodemographic characteristics, lifestyle habits, and health conditions are associated with HRQOL in elderly people living in the region of Belo Horizonte, Minas Gerais, considered highly vulnerable to health conditions.

METHODS

This analysis is part of the project "Aging and Health," a cross-sectional study aimed at understanding the health profile of elderly persons who are residents in a low income community of Belo Horizonte, Minas Gerais. This study was conducted between April and October 2007 using a random sample of elderly patients (≥ 60 years) registered at the primary health-care unit of Vila Pinho, located in the health district of Barreiro in the southwest region of the city of Belo Horizonte. The primary health-care unit catchment area is considered of high risk according to the Health Vulnerability Index, which is a composite index based on socioeconomic and health indicators developed by the Municipal Health Department of the city of Belo Horizonte²⁵. A confidence interval of 95%, a precision of 4%, and a sample loss of 20% were considered for the calculation of this sample, totaling 405 individuals. The project was approved by the Ethics Committee of the Universidade Federal de Minas Gerais (379/06) and by the Municipal Health Department of Belo Horizonte – Secretaria Municipal de Saúde de Belo Horizonte (065/2006). All participants of this study agreed and signed the Informed Consent Form.

VARIABLES OF THE STUDY

RESPONSE VARIABLES

The HRQOL was assessed by the Medical Outcomes Study 12-Item Short-Form Health Survey (SF-12)²⁶. The SF-12 is composed of 12 items, and their answers were aggregated into two summary measures: the physical component score (PCS) and the mental component score (MCS)²⁶. The PCS considers the individual's perception of their functional capability, physical aspects, pain, and general health condition. On the other hand, the MCS considers aspects related to vitality, social functioning, emotional aspects, and mental health. Both summary components vary from 0 to 100 and higher values reflect better HRQOL²⁶. The scores on the PCS and MCS were considered separately as response variables of this study.

EXPLANATORY VARIABLES

The explanatory variables were organized into four groups: sociodemographic, social relations, lifestyle, and health conditions. Details on the categorization and definition of these variables can be seen in Table 1.

The sociodemographic group was composed of the following variables: gender, age, self-reported skin color, educational level, family income, and presence of work activities in the week prior to the interview. The social relations group contemplated variables to measure structural and functional aspects of social relations²¹. The structural aspects were investigated by the following variables: marital status, living alone, necessity of the elderly being alone most part of the day, and number of relatives and friends with whom the elderly people could talk about almost anything. The functional aspects were studied by the variables: always having the support needed to help staying in bed, to go to the doctor, and to prepare meals; participation of the elderly persons in recreational activities; and satisfaction of the elderly people with personal relationships. The lifestyle group contained the following variables: regular practice of physical activity during leisure time, smoking, regular consumption of fruits and/or vegetables, and consumption of any alcoholic beverage in the last 30 days. In the health conditions group, the following variables were considered: the number of self-reported chronic diseases diagnosed by a physician, number of medical consultations and hospitalization in the last 12 months, and if the participant has been bedridden for the last 15 days.

DATA ANALYSIS

Initially, the description of the study variables by means of frequency distribution and average (physical and mental components of HRQOL) was made. The association

Table 1. Characteristics of population of elderly participants and univariate analysis. Belo Horizonte, Minas Gerais, 2007 (n = 366).

Variables	n (%)	PCS	MCS
		β (95%CI) ^a	β (95%CI) ^a
Sociodemographic			
Gender			
Male	147 (40.2)	Ref	Ref
Female	219 (59.8)	-3.10 (-5.09; -1.10)**	-3.95 (-6.28; -1.62)**
Age (in years)			
60 – 64	128 (35.0)	Ref	Ref
65 – 69	93 (25.4)	-2.08 (-4.65; 0.48)	-1.26 (-4.26; 1.73)
≥ 70	145 (39.6)	-2.69 (-4.97; -0.41)*	-3.65 (-6.32; -0.98)**
Self-reported skin color			
White	102 (27.9)	Ref	Ref
Brown	192 (52.5)	-2.13 (-4.43; 0.17)	-0.17 (-2.89; 2.54)
Black	58 (15.9)	-4.72 (-7.81; -1.64)**	-2.96 (-6.60; 0.69)
Others	14 (3.8)	-3.49 (-8.83; 1.86)	-0.89 (-7.20; 5.43)
Schooling (in years)			
≥ 4	124 (33.9)	Ref	Ref
1 – 3	112 (30.6)	-3.59 (-6.02; -1.17)**	-3.29 (-6.15; -0.42)*
0	130 (35.5)	-4.19 (-6.53; -1.85)***	-3.80 (-6.56; -1.04)**
Monthly family income (in minimum wage)			
≥ 4	66 (18.0)	Ref	Ref
1 – 3	158 (43.2)	-2.97 (-5.72; -0.21)*	-1.00 (-4.25; 2.24)
Up to 1	142 (38.8)	-3.30 (-6.10; -0.50)*	-2.55 (-5.85; 0.75)
Labor activity in the week prior to the interview			
Yes	113 (30.9)	Ref	Ref
No	253 (69.1)	-3.86 (-5.97; -1.75)***	-3.49 (-5.97; -1.00)**
Social relations			
Marital status			
Married	159 (43.4)	Ref	Ref
Not married	207 (56.6)	-0.90 (-2.89; 1.10)	-0.44 (-2.78; 1.90)
Living alone			
No	336 (92.3)	Ref	Ref
Yes	28 (7.7)	0.38 (-3.35; 4.10)	-0.72 (-5.08; 3.64)
Staying alone in most part of the day			
Never/rarely/sometimes	260 (71.4)	Ref	Ref
Almost always/always	104 (28.6)	-1.88 (-4.07; 0.31)	-1.81 (-4.37; 0.76)
Number of relatives with whom the elderly persons could talk about almost everything^b			
≥ 5	131 (36.0)	Ref	Ref
2 – 4	118 (32.4)	-1.52 (-3.92; 0.88)	-0.27 (-3.09; 2.54)
0 – 1	115 (31.6)	-1.65 (-4.07; 0.76)	-0.93 (-3.76; 1.90)
Number of friends with whom the elderly persons could talk about almost everything^b			
≥ 4	131 (36.0)	Ref	Ref
1 – 3	126 (34.6)	0.17 (-2.20; 2.53)	-0.45 (-3.22; 2.31)
0	107 (29.4)	-0.20 (-2.67; 2.27)	-1.49 (-4.37; 1.40)
Always having the support needed to help staying in bed, to go to the doctor and to prepare meals			
Yes	232 (63.9)	Ref	Ref
No	131 (36.1)	-0.31 (-2.38; 1.75)	-3.21 (-5.61; -0.81)**

Continue...

Table 1. Continuation.

Variables	n (%)	PCS	MCS
		β (95%CI) ^a	β (95%CI) ^a
Participation of the elderly persons in recreational activities ^c			
Yes	96 (26.3)	Ref	Ref
No	269 (73.7)	-1.33 (-3.58; 0.92)	-1.39 (-4.02; 1.25)
Satisfaction with personal relationships			
Very satisfied/satisfied	291 (80.0)	Ref	Ref
Indifferent/dissatisfied/very dissatisfied	73 (20.0)	-3.87 (-6.32; -1.43)**	-8.57 (-11.33; -5.81)***
Lifestyle habits			
Regular practice of physical activity during leisure time ^d			
Yes	54 (14.8)	Ref	Ref
No	310 (85.2)	-5.74 (-8.47; -3.02)***	-1.55 (-4.82; 1.73)
Smoking			
Yes	44 (12.0)	2.00 (-1.03; 5.04)	0.26 (-3.31; 3.83)
No	322 (88.0)	Ref	Ref
Regular consumption of fruits and vegetables ^e			
Yes	174 (47.5)	Ref	Ref
No	192 (52.5)	-1.52 (-3.50; 0.46)	-2.25 (-4.56; 0.06)
Alcohol consumption in the last 30 days			
Yes	59 (16.1)	Ref	Ref
No	307 (83.9)	-5.86 (-8.49; -3.24)***	-2.48 (-5.63; 0.66)
Health conditions			
Number of self-reported chronic diseases diagnosed by physician ^f			
0 – 1	129 (35.4)	Ref	Ref
2 – 3	139 (38.2)	-5.04 (-7.24; -2.84)***	-2.41 (-5.00; 0.18)
≥ 4	96 (26.4)	-7.58 (-10.0; -5.15)***	-8.28 (-11.14; -5.42)***
Number of medical appointments in the last 12 months			
0 – 1	129 (35.3)	Ref	Ref
2 – 3	132 (36.1)	-2.65 (-4.97; -0.34)*	-2.24 (-4.97; 0.50)
≥ 4	105 (28.7)	-4.21 (-6.66; -1.75)**	-2.68 (-5.59; 0.23)
Hospitalization in the last 12 months			
No	312 (85.3)	Ref	Ref
Yes	54 (14.8)	-5.82 (-8.55; -3.10)***	-5.34 (-8.57; -2.11)**
Being bedridden for the last 15 days			
No	326 (89.1)	Ref	Ref
Yes	40 (10.9)	-7.48 (-10.55; -4.40)***	-5.64 (-9.31; -1.97)**

PCS: physical component score; MCS: mental component score; 95%CI: 95% confidence interval; ^athe regression beta coefficients represent the difference in average scores of physical component score and mental component score according to each category of explanatory variables; *p <0.05; **p <0.01; ***p <0.001; ^bvariables categorized using the tertile of the distribution of numbers of friends and relatives cited by the participants; ^cparticipation in recreational activity was defined as participation in recreational or artistic group activities (musical group, choir, art, etc.) or any other type of association (community, religious, etc.) for at least once a week in the last 12 months; ^dregular physical activity was defined by the report of physical activities during leisure time for at least three times a week for more than 30 minutes; ^eregular consumption of fruits and/or vegetables was defined as the consumption of these foods on 5 or more days a week; ^fthe evaluated diseases were: spine disease or back pain, arthritis or rheumatism, cancer, diabetes, bronchitis or asthma, hypertension, heart disease, chronic kidney failure, depression, and tendinitis or tenosynovitis.

between the explanatory variables and the two components of HRQOL (PCS and MCS) was investigated using linear regression in two different models, one for each dependent variable. We conducted multivariate analyzes for each of the four groups of explanatory variables, including all variables associated with the 20% significance level in the univariate analysis. Subsequently, the explanatory variables associated with the response variables in the multivariate models by groups were entered simultaneously in the multivariate model to compose the final model. We used the backward elimination procedure, and the variables retained in the multivariate models by groups and those retained in the final models were the variables that remain associated with the response variables to a 5% significance level.

The regression beta coefficients and their respective 95% confidence intervals (95% CI) were reported, and they represent the differences in the mean scores on both PCS and MCS, according to the explanatory variables considered in the models. The normality of the residuals and homoscedasticity were checked graphically. Analyses were performed using Stata 13.

RESULTS

Among the 405 elderly persons who were part of the sample, 373 individuals agreed to participate in the study, and 366 answered the SF-12 and, hence, were included in this analysis. Sociodemographic characteristics, social relations, health conditions, and the prevalence of lifestyle among the elderly participants can be seen in Table 1. Participants were aged between 60 and 94 years (mean 69.2 ± 7.5 years), and most elderly persons were female subjects (59.8%), self-reported brown skin color (52.5%), had less than 4 years of schooling (66.1%), and reported having family income lower than four minimum wages (82%).

The PCS and MCS scores obtained an average of $42.8 (\pm 9.62)$ and $45.1 (\pm 11.27)$, respectively. In the univariate analysis, the worst HRQOL in the physical component was associated with the following characteristics: female gender, 70 years or older, self-reported black skin color, less than 4 years of schooling, family income lower than four minimum wages, absence of labor activity in the week prior to the survey, not satisfied with personal relationships, no physical activity during leisure time, no alcohol consumption in the last 30 days, diagnosis of two or more chronic diseases, two or more medical appointments in the last 12 months, hospitalization in the last 12 months, and being bedridden for the last 15 days (Table 1). In the final multivariate model, the worst HRQOL in the physical component remained associated with self-reported black skin, absence of labor activity in the week prior to the survey, no physical activity during leisure time, no alcohol consumption in the last 30 days, diagnosis of two or more chronic diseases, hospitalization in the last 12 months, and being bedridden for the last 15 days (Table 2). The variables retained in the final model explained 23% of the variability in the scores of the PCS (Table 2).

In the mental component, univariate analysis identified that the worst HRQOL was associated with the following characteristics: female gender, 70 years or older, less than 4 years of schooling, absence of labor activity in the week prior to the survey, not always

Table 2. Variables associated with physical component score in the final multivariate model. Belo Horizonte, Minas Gerais, 2007.

Variables	β (95%CI) ^a
Sociodemographic	
Self-reported skin color	
White	Ref
Brown	-1.65 (-3.70; 0.40)
Black	-3.80 (-6.54; -1.06)**
Others	-2.04 (-6.80; 2.71)
Labor activity	
Yes	Ref
No	-2.42 (-4.35; -0.48)*
Lifestyle habits	
Regular physical activity	
Yes	Ref
No	-4.28 (-6.79; -1.77)**
Alcohol consumption in the last 30 days	
Yes	Ref
No	-4.15 (-6.57; -1.74)**
Health conditions	
Number of physician diagnoses of chronic diseases	
0 – 1	Ref
2 – 3	-4.16 (-6.20; -2.11)***
≥ 4	-5.68 (-7.99; -3.37)***
Hospitalization in the last 12 months	
No	Ref
Yes	-3.01 (-5.59; -0.44)*
Being bedridden for the last 15 days	
No	Ref
Yes	-5.22 (-8.06; -2.38)**
Adjusted R-squared	0.23

95%CI: 95% confidence interval; ^athe regression beta coefficients represent the difference in the scores of physical component score and mental component score according to each category of explanatory variables; *p < 0.05; **p < 0.01; ***p < 0.001.

having the support needed to help staying in bed, to go to the doctor and to prepare meals, not satisfied with personal relationships, have four or more diagnoses of chronic diseases, hospitalization in the last 12 months, and being bedridden for the last 15 days (Table 1). In the final multivariate model, MCS remained negatively associated with the absence of education, not always having the support needed to help staying in bed, to go to the doctor and to prepare meals, not satisfied with personal relationships, physician-diagnosed four or more chronic diseases, and being bedridden for the last 15 days (Table 3). The variables in the final model explained 19% of the variability of the scores obtained in the MCS (Table 3).

Table 3. Variables associated with mental component score in the final multivariate model. Belo Horizonte, Minas Gerais, 2007.

Variables	β (95%CI) ^a
Sociodemographic	
Schooling (in years)	
≥ 4	Ref
1 – 3	-2.54 (-5.17; 0.10)
0	-3.76 (-6.28; -1.23)**
Social relations	
Satisfaction with personal relationships	
Very satisfied/satisfied	Ref
Indifferent/dissatisfied/very dissatisfied	-7.31 (-9.96; -4.66)***
Always having the support needed to help staying in bed, to go to the doctor and to prepare meals	
Yes	Ref
No	-2.91 (-5.10; -0.73)**
Health conditions	
Number of physician diagnoses of chronic diseases	
0 – 1	Ref
2 – 3	-1.48 (-3.93; 0.97)
≥ 4	-6.86 (-9.61; -4.10)***
Being bedridden for the last 15 days	
No	Ref
Yes	-3.56 (-6.96; -0.17)*
Adjusted R ²	0.19

95%CI: 95% confidence interval; ^athe regression beta coefficients represent the difference in the scores of physical component score and mental component score according to each category of explanatory variables; *p < 0.05; **p < 0.01; ***p < 0.001.

DISCUSSION

This work demonstrated that the physical and mental components of HRQOL were associated with social characteristics and health conditions. We found no association between the structural aspects of social relations and HRQOL, but some functional aspects were independently associated with MCS. In addition, we found that lifestyle, such as regular physical activity and alcohol consumption, was associated with HRQOL only in the physical component. Our results show once again the multidimensional aspect of HRQOL and the challenge in understanding the factors that explain this construct, given that the variables that remained associated with the physical and mental components in the final model explained only 23 and 19% of the variability of PCS and MCS, respectively.

The participants of this study had a higher exposure to social adversity (lower levels of income and education) than elderly people living in the metropolitan region of Belo Horizonte²⁷. In addition, the elderly participants of this study lived in an area in which environmental, social, and health indicators reflect a high-risk for health. Because of these characteristics, we expected that the average scores found in the physical and mental components of HRQOL in this study were lower than the averages found in the elderly population in general in the country. This hypothesis was confirmed only in the physical component of HRQOL, as the average PCS of this study was lower than that observed in a population-based study conducted in the state of São Paulo (42.8 versus 47.6). However, the mean MCS found in these two studies were similar (45.1 in Belo Horizonte versus 44.6 in São Paulo)¹⁰.

Elderly people with no education had a poorer HRQOL in the mental component. In addition, self-declared black skin and absence of labor activity during the week prior to the survey were also characteristics independently associated with lower scores on the PCS. These results suggest that the more exposed to social adversity elderly people are, the worse the HRQOL. This result is consistent with findings from previous studies^{8,9,13,17}. The socioeconomic status is a distal determinant of health and acts as a starting point, which can result in different exposure and vulnerability to risk factors related to various health outcomes²⁸ that may impact on HRQOL. It is important to emphasize that the associations found in this study were independent from variables of health conditions, showing that the association widely established between the occurrence of chronic diseases and socioeconomic disadvantage²⁸ not fully explained the relationship between social adversity and HRQOL. Thus, it is possible that the stress resulting from exposure to adverse social conditions and discrimination experiences can also be important aspects to explain the association between social adversity and HRQOL²⁹.

There is evidence that exposure to socioeconomic adversity and the fragility of social relations interact synergistically to promote morbidities that have the potential to impact the HRQOL^{20,30}. In addition, recent literature review found that living in

adverse social contexts, characterized by lack of easy access to services in the neighborhood (i.e.: places for shopping, public transportation, banks, clubs, etc.) impacts negatively on social relations as it hinders the connection between the community members³¹. Thus, given the social characteristics and housing conditions of the participants of this study, we expected that the structural and functional aspects of social relationships were associated with HRQOL in this analysis. However, only functional aspects of social relations, such as dissatisfaction with personal relationships and not always having the support needed to help staying in bed, to go to the doctor, and to prepare meals were independently associated with worse HRQOL and only in the mental component. It should be noted that dissatisfaction with personal relationships was associated with a decrease of 7.3 points in average MCS. These results suggest that, in this population, the perception of quality of personal relationships and the perception of the presence of social support may be more important aspects of HRQOL than simply the existence (or quantity) of these relations. Our results are consistent with other studies that show that functional aspects of social relations better predict the self-rated health^{32,33} and mortality³⁴ than structural aspects. However, population-based study in Italy has shown that both structural and functional aspects of social relations were associated with physical and mental components of HRQOL¹⁷.

Elderly people who do not practice physical activity during leisure time had a poorer HRQOL in the physical component; however, this behavior was not associated with MCS. The association between physical activity and HRQOL has been demonstrated in several studies^{10,14,17,35} and this association usually has greater magnitude in the physical component than in the mental component^{10,14,17}. Physical activity reduces the intrinsic deleterious effects of aging, acts as a protective factor for various diseases and health problems, and it is related to the functionality maintenance over time¹⁴, which are aspects intrinsically related to the physical component of HRQOL. As this study has a cross-sectional design, we cannot disregard the possibility that the elderly persons who have worse HRQOL tend to be less physically active. However, longitudinal studies^{14,35} show that the lack of physical activity predicts decline in HRQOL. Thus, public health measures to promote physical activity in older adults can also be considered an HRQOL promotion policy. Such measures may be considered a challenge, especially in socially vulnerable populations such as the participants of this study, because they reside in places with adverse social and physical characteristics (i.e.: lack of security, scarcity of sidewalks and lighting, and lack of appropriate places to perform physical activities such as parks and squares), making it difficult to practice physical activities³⁶.

We have found that the absence of alcohol consumption was associated with worse HRQOL in the physical component. Moderate alcohol consumption has a protective effect on the occurrence of various health events that have the potential to impact on functionality, which could explain the association between alcohol consumption and the physical component of HRQOL. For example, the moderate use of alcohol in the elderly persons has been associated with lower rates of cognitive decline, dementia, cardiovascular disease, and

depression symptoms^{37,38}. However, we know that the decline in health conditions induces the reduction in alcohol consumption³⁹. Thus, reverse causality can be a major explanation for our findings. It is also important to note that, despite the moderate consumption of alcohol is associated with better HRQOL in longitudinal studies^{40,41}, the decline in HRQOL associated with increasing age is similar for all categories of alcohol consumption, even among those who do not consume alcoholic drinks⁴⁰. Thus, there is no evidence that would support a recommendation of alcohol consumption for the elderly persons in order to minimize the decline in HRQOL.

The prevalence of chronic diseases and multimorbidity are increasing mainly in populations exposed to socioeconomic adversity³ such as the elderly persons of this study. The results of our analysis show that this morbidity profile has great impact on HRQOL, as the greater the number of medical diagnoses of chronic diseases, the worse the HRQOL in the physical and mental components. In addition, being bedridden for the last 15 days was independently associated with the PCS and MCS, while the occurrence of hospitalization was associated with worse HRQOL only in PCS. These results are consistent with other previous studies^{11,12,15,17} conducted among noninstitutionalized elderly persons and demonstrate that the functional aspects affect not only the physical component of quality of life but also the mental component when influencing the proper performance of functions considered important by individuals.

This study has some limitations that need to be highlighted. The variables retained in the final model explained a small proportion of the variability of distribution of PCS and MCS and a reduced number of variables remained independently associated with HRQOL, especially the variables of the social relations group. All study participants were elderly people who lived in a low-income region as previously mentioned. Therefore, the homogeneity of the socioeconomic profile of the studied population along with the small size of our sample may have hindered the finding of associations between HRQOL and the explanatory variables, especially associations of small magnitude. In addition, as already mentioned, another limitation of this analysis is its cross-sectional design and, therefore, we cannot ignore that the associations found in this study are a result of reverse causality. Finally, we did not use indicators of all dimensions covered in the structural and functional aspects of social relations. Therefore, it is possible that other aspects of social relations, not evaluated in this study, are important for understanding the HRQOL of elderly persons in social vulnerability.

CONCLUSION

The information generated by this research suggests that functional aspects of social relations, socioeconomic characteristics, lifestyle habits, and health conditions were relevant to an understanding of HRQOL in the elderly persons in social vulnerability. Further studies investigating the role of social relations in HRQOL among the elderly persons are necessary to better understand this association in the national context.

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