Association of self-perceived quality of life and health, physical activity and functional performance among older adults in the interior of Brazil

Renata da Costa Barbosa[1]
Ana Luiza Lima Sousa[2]

Abstract

Objective: to analyze self-perception of health and quality of life associated with contextual factors in non-institutionalized older adults people in a rural municipality in the interior of Brazil. *Method:* Cross-sectional population-based study. Individuals aged 60 years or more, not institutionalized, living in a municipality with rural characteristics were included. Sociodemographic variables, self-perceived health and quality of life, level of physical activity and functional performance were used. Data were collected at home with application of interviews and instruments: WHOQOL BREF, International Physical Activity Questionnaire (IPAQ) and Timed Up and Go test (TUG). For the comparison and association analysis, the chi-square or Fisher's exact test and the Prevalence Ratio (PR) and confidence intervals (CI) were applied. *Results*: The study involved 142 older adults, 58.5% female, with a mean age of 72.4 (±8.0) years. Self-perceived health was associated with the practice of physical activity (PR=1.13, CI=1.01-1.27) and with functional performance (PR=1.24, CI=1.03 -1.48). The perception of good/very good health (PR=1.66, CI=1.57-1.76) and quality of life (PR=1.70, CI=1.60-1.79) was associated with positive to the practice of physical activity and functional independence. *Conclusion:* The practice of physical activity and maintenance of functional independence significantly contribute to a positive perception of health and quality of life. However, elderly people who are insufficiently active and independent may also have a good perception of health. Interventions in public policies that consider the intrinsic characteristics of each population are recommended, aiming to maintain or improve the perception of health and quality of life of the elderly.

Keywords: Aged; Self perception; Motor Activity; Functional physical performance; Health of elderly; Rural population.

[1] Universidade Federal de Goiás, Faculdade de Medicina, Programa de Pós-Graduação em Ciências da Saúde. Goiânia, GO, Brasil.

[2] Universidade Federal de Goiás, Faculdade de Enfermagem, Liga de Hipertensão Arterial. Goiânia. GO, Brasil.

The authors declare that there is no conflict in the conception of this work..

There was no funding for the execution of this work.

Correspondence
Renata da Costa Barbosa
renatacbfisio@gmail.com

Received: July 10, 2021
Approved: November 23, 2021

http://dx.doi.org/10.1590/1981-22562022025.210141

INTRODUCTION

The aging process is influenced by biological, environmental and psychological factors[1] and causes different changes that can impact the individual's life, their perception of health and quality of life[2]. Healthy aging can be considered a process of development and maintenance of functional capacity that enables well-being in old age[1].

Understanding the relationship between health, quality of life and functional capacity in the face of declines associated with aging is a challenge to offer better care to this population[3]. An active lifestyle contributes to the reduction of physical limitations and maintenance of the older person's autonomy, in addition, physical activity is shown to be a relevant factor for conditions of positive perception of quality of life and health[4]. Physical activity can be influenced by the place of residence[5] and reflect on individual and collective health.

Brazilian older people living in rural areas receive little attention, as the largest public investments in health are concentrated in urban settings[6]. Generally, studies address isolated topics such as physical activity[7,8], functional performance[9,10] and self-perception of health or quality of life[4,11], without analysis of possible associations capable of affecting the experience of these specific populations. Perceived health is associated with the perception of quality of life and consists of feeling good even in the presence of diseases that cause some impediment to the performance of skills and abilities[4].

Therefore, the objective of this study was to analyze the self-perception of health and quality of life associated with contextual factors in non-institutionalized older people in a rural municipality in the interior of Brazil..

METHOD

Cross-sectional, population-based study with an older population residing in a municipality in the interior of Brazil. The municipality of Trombas is located in the State of Goiás, in the Center-West region of Brazil, 418 kilometers from Goiânia, with an estimated population of 3,572 inhabitants. It also has a degree of urbanization below 75% and a population density of 4.32 inhabitants per square kilometer, characterizing it as a rural municipality[12].

The calculated sample size considered the size of the older population residing in the municipality (for the finite population correction factor) equal to 518, estimated frequency of physical activity practice of 67.0%[13], confidence limit of 5% and effect size equal to one. The sample size calculated was 206 individuals, considering a non-response rate of 10% after two attempts.

Older people aged 60 years or more, living in the city for at least five years and who had a preserved state of cognition for understanding simple commands, such as saying their full name, date of birth and expressing interest in participating in the research, were included. Those who were not located for data collection or who refused to participate in the study or who were in a situation of distance due to travel or hospitalization were excluded. All regions of the city were considered for data collection, the visits in each region occurred in different weeks, repeating only a second time according to the collection time, in situations where the older person was not located in the first visit.

Initially, 380 older people were identified with a record carried out by the family health teams of the Municipal Health Department. During the period from March 4th to July 26th, 2019, totaling 21 weeks of collection, 265 older people were visited, representing 69.7% of those registered and, of these, 142 (53.6%) accepted the invitation to participate in the research, a loss rate twice as high as expected.

Data were collected during home visits carried out by the researcher, registered in a database and the individual approach was standardized with the application of specific forms to collect sociodemographic information (gender, age group, education, marital status, skin color and individual income) and validated instruments to assess functional performance, physical activity and self-perception of quality of life and health.

The first two generic questions of the *World Health Organization Quality of Life bref* (WHOQOL BREF) questionnaire were used to assess self-perceived health and quality of life[14]. The first question is related to the self-perception of quality of life in general and the second, the individual's perception of their own health[14]. The answer scores range from 1 to 5 on the Likert Scale (1=very bad; 2=bad; 3=fair; 4=good; and 5=very good) or in percentage scores ranging from 0 to 100. The higher the score, better perception of quality of life and perception of health of the evaluated[14]. The results obtained were classified as bad/very bad, fair and good/very good.

The International Physical Activity Questionnaire (IPAQ), a long version adapted for older people, was used to assess the participants' level of physical activity. This instrument makes it possible to estimate the weekly time spent on physical activities of different intensities and in different everyday contexts[15]. It is an instrument applied internationally and validated for the Brazilian older people population[15]. The IPAQ adapted for older people is composed of five domains, with 15 questions. The instrument's questions include activities practiced at work, in transport, at home or in the garden and those performed at leisure, including walking, exercise or sport[16].

To categorize the IPAQ results, the classification in minutes/week[16] was used, considering as sufficiently active those who practiced at least moderate activity, at least 150 minutes per week; lower scores were classified as insufficiently active[17]. Sufficiently active older people were further categorized into those who performed leisure activities and those who performed activities at work or household chores.

To verify the functional performance, the *Timed "Up & Go" Test* (TUG) was used, which classifies the individual's functionality into categories, informing about their balance, gait speed and functional abilities[18]. The test measures, in seconds, the time required for the individual to get up from a standard armchair (height of approximately 46cm), walk a distance of 3 meters, turn around, walk back to the chair and sit again[18]. The test was applied three times on the same day (with a two-minute interval between tests), with each participant, and the best result was chosen as the final score. The following classification was considered for both genders: independent individual in activities of daily living (ADLs) (performs the test within 20 seconds) and dependent in ADLs (over 20 seconds)[18].

To perform statistical analysis, the significance level was set at $p<0.05$. Variables were descriptively analyzed using relative and absolute frequency, as well as measures of position and dispersion. Quantitative variables were presented as mean and standard deviation or as median and interquartile range (IQ) Q1 - Q3 (25% - 75%). Comparisons of proportions were made using the chi-square test or Fisher's exact test. As a measure of association, the Prevalence Ratio (PR) with a 95% confidence interval (CI) was used. Regression models were run and analysis strategies were applied to unveil possible results from the collected data. One of the missing assumptions for applying multiple regression was the frequency distribution of data in categorical variables.

Functional performance and physical activity level were aggregated, generating the following classification: sufficiently active and independent; sufficiently active and dependent; insufficiently active and independent and insufficiently active and dependent. Older people who were sufficiently active were identified, within this group there were those who were also independent and those who were dependent on their ADLs. Similarly, within the group of insufficiently active older people, those who were independent and those who were dependent on their ADLs were verified.

All study participants signed the Informed Consent Form and the project was approved by the Research Ethics Committee of the Hospital das Clínicas of the Federal University of Goiás, with opinion No. 3,157,986 and CAAE protocol: 03823418.4.0000.5078.

RESULTS

The final study sample consisted of 142 older people, which represented 37.4% of those registered in the Family Health Strategy in the city. Mean age

was 72.4 (±8.0), minimum 60 and maximum 97 years; median age of 71.5 years (IQ: 66–79 years), similar between sexes.

Female participants and younger older people (between 60 and 69 years of age) had a higher proportion. In addition, it was found that 38.7% of the older people attended from one to three years of formal school, 53.5% were married and most were retired (Table 1).

There was no significant association between sociodemographic variables and self-perceived health or quality of life categories (Table 2).

Table 1. Sociodemographic characteristics of the sample (n=142). Trombas, GO, 2019.

Variables	n (%)
Sex	
Male	59 (41.5)
Female	83 (58.5)
Education	
Never went to school, but knows how to read and write	21 (14.8)
Never went to school and can't read and write	17 (12.0)
Attended 1 to 3 years of formal school	55 (38.7)
Attended from 4 to 6 years of formal school	25 (17.6)
Attended more than 6 years of formal school	24 (16.9)
Age group	
60 to 69 years old	58 (40.8)
70 to 79 years old	52 (36.6)
80 years or more	32 (22.6)
Marital status	
Separated/divorced	10 (7.0)
Single/widower	56 (39.5)
Married	76 (53.5)
Skin color	
White	34 (23.9)
Brown	91 (64.1)
Black	17 (12.0)
Yellow	-
Individual income (MW[1])	
Less than 1	3 (2.1)
1 to 2	128 (90.1)
2 or more	8 (5.7)
No own income	3 (2.1)
Retirement	
Retired	120 (84.5)
Not retired	22 (15.5)

[1] MW: minimum wage in effect at the time; value = BRL 998.00.

Table 2. Sociodemographic characteristics of the sample according to self-perception of health and quality of life among the older people (n=142). Trombas, GO, 2019.

Variables	Self-perception of health		*p* value *	Self-Perception of Quality of Life		*p* value *
	bad/very bad/ fair n(%)	Good /Very good n(%)		bad/very bad/ fair n(%)	Good /Very good n(%)	
Sex			0.981			0.595
Male	25 (42.4)	34 (57.6)		23 (39.0)	36 (61.0)	
Female	35 (42.2)	48 (57.8)		28 (33.7)	55 (60.4)	
Education			0.597			0.186
Never went to school, but knows how to read and write	11 (52.4)	10 (47.6)		7 (33.3)	14 (66.7)	
Never went to school and can't read and write	8 (47.1)	9 (52.9)		6 (35.3)	11 (64.7)	
Attended 1 to 3 years of formal school	20 (39.2)	31 (60.8)		23 (45.1)	28 (54.9)	
Attended from 4 to 6 years of formal school	10 (40.0)	15 (60.0)		7 (28.0)	18 (72.0)	
Attended more than 6 years of formal school	7 (29.2)	17 (70.8)		5 (20.8)	19 (79.2)	
Age group			0.101			0.068
60 to 69 years old	19 (32.8)	39 (67.2)		17 (29.3)	41 (70.7)	
70 to 79 years old	23 (44.2)	29 (55.8)		17 (32.7)	35 (67.3)	
80 years or more	18 (56.2)	14 (43.8)		17 (53.1)	15 (46.9)	
Marital status			0.929			0.857
Separated/divorced	4 (40.0)	6 (60.0)		4(40.0)	6 (60.0)	
Single/widower	25 (44.6)	31 (55.4)		21 (37.5)	35 (62.5)	
Married	31 (40.8)	45 (59.2)		26 (34.2)	50 (65.8)	
Skin color			0.128			0.413
White	17 (50.0)	17 (50.0)		15 (44.1)	19 (55.9)	
Brown	33 (36.3)	58 (63.7)		29 (31.9)	62 (68.1)	
Black	10 (58.8)	7 (41.2)		7 (41.2)	10 (58.8)	
Individual income (MW[1])			0.278			0.143
Less than 1	1 (33.3)	2 (66.7)		0 (0.0)	3 (100.0)	
1 to 2	56 (43.8)	72 (56.2)		51 (39.8)	77 (60.2)	
2 or more	1 (12.5)	7 (87.5)		0 (0.0)	8 (100.0)	
No own income	2 (66.7)	1 (33.3)		0 (0.0)	3 (100.0)	

[1] MW : minimum wage in effect at the time; value = BRL 998.00. * Chi square.

The proportion of older people who presented good or very good self-perceived health and self-perceived quality of life was higher compared to the other categories (Figure 1).

As for the practice of physical activity, of the total number of participants, 95 (66.9%) were classified as sufficiently active and 33.1% as insufficiently active. Among those sufficiently active, 55.8% performed some type of leisure activity and 44.2% performed activities related to work or household chores.

Regarding functional performance, the TUG test identified that 124 (88.6%) of the older people evaluated were independent in the ADLs.

Of the total of sufficiently active older people, 64.2% (p=0.012) had good or very good self-perceived health. However, no associations were found between the type of physical activity (leisure or work and tasks) and self-perceived health and quality of life. As for functional performance, 62.1% (p=0.018) of the independent older people perceived their health as good or very good.

By categorizing the sample according to the practice of physical activity together with functional performance, it was found that 65.7% of the participants were sufficiently active and independent in their ADLs.

An association of self-perceived health with the practice of physical activity and independence in activities of daily living was observed, in which the largest proportion of this group had good/very good self-perceived health (Table 3). As for the self-perception of quality of life, associations were observed with the practice of physical activity and functional performance. The largest proportion of older people who perceived their quality of life as good/very good were sufficiently active and independent (Table 3).

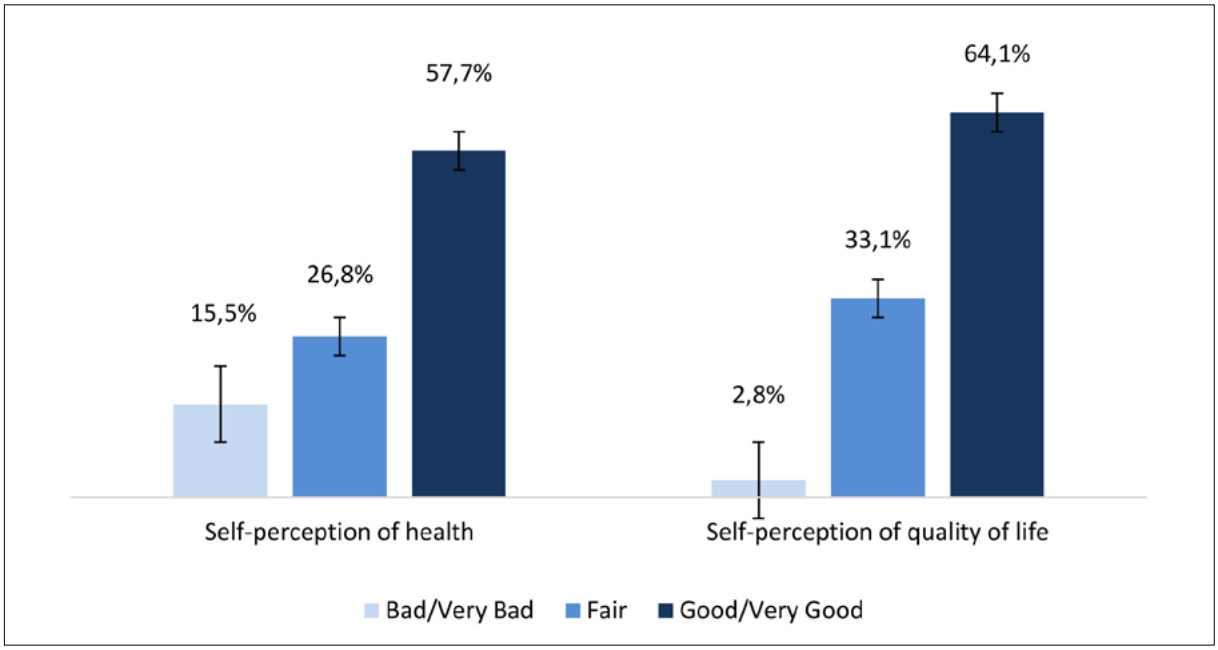

Figure 1. Assessment of the sample's self-perception of quality of life and health. Trombas, GO, 2019.

Table 3. Self-perception of health and quality of life and association with physical activity and functional performance among older people. Trombas, GO, 2019.

	Self-Perception of Health				
Physical Activity and Functional Performance	Bad/Very Bad/Fair	Good/ Very Good	PR	95% CI	*p* value*
	n (%)	n (%)			
Sufficiently Active					0.000
Dependent	2 (100.0)	0 (0.0)	1.66	1.57-1.76	
Independent	31 (33.7)	61 (66.3)			
Insufficiently active					0.368
Dependent	9 (64.3)	5 (35.7)	1.10	0.89-1.38	
Independent	16 (50.0)	16 (50.0)			
	Self-Perception of Quality of Life				
Sufficiently Active					0.000
Dependent	2 (100.0)	0 (0.0)	1.70	1.60-1.79	
Independent	28 (30.4)	64 (69.6)			
Insufficiently active					0.439
Dependent	7 (50.0)	7 (50.0)	1.08	0.88-1.33	
Independent	12 (37.5)	20 (62.5)			

PR: Prevalence Ratio, 95%CI: 95% Confidence Interval, *Chi-square

DISCUSSION

In this study, a smaller proportion of the older people had bad or very bad self-perceived health and quality of life, with more than half of the participants perceiving their health and quality of life as good or very good. Although no association with sociodemographic variables was identified in this specific population, it is recognized that self-perceived health can be influenced by age, gender, educational level, lifestyle, cultural, biological, psychological and social factors and place of residence[19].

A study carried out with the population of a small town in the interior of Goiás identified that the vast majority of respondents had good or very good self-perception of health[20].

The life story of each one reflects on how the aging process and even diseases are understood[21]. In the presence of physical, psychological, emotional and social problems, feelings of fragility and insecurity reflect on how health is perceived[22].

Self-perceived quality of life was significantly associated with the practice of physical activity and independence in ADLs, not being associated with any other variable in this study. This result was contrary to a study that verified the factors associated with the positive perception of quality of life in low-income older women in rural and urban areas of a city in northeastern Brazil. No associations were found between self-perceived quality of life and physical activity level[11]. However, several studies confirm the results presented, and report a positive relationship between the practice of physical activity and/or functional independence with good quality of life[7,10]. These results can be explained by the way of evaluating the quality of life. In some studies, the perception that the individual had of their own quality of life was evaluated. In others, domains of the WHOQOL OLD instrument were used, which investigates various factors related to quality of life (autonomy, sensory functioning, past, present and future activities, social participation, death and dying, and intimacy).

In the present study, it was found that two thirds of the older people were sufficiently active, which is in line with the prevalence of 67.0% found by Peixoto et al.[13] and with older people living in rural areas in Bahia (64.2%)[23]. These characteristics were only associated with self-perceived health.

It was observed in this study that older people who are sufficiently active and with greater independence in activities of daily living reported self-perception of health as good or very good, indicating an association in the way they perceive their own well-being. It was identified that the practice of physical activity and better functional performance were associated with a healthy aging process. It is noteworthy, in this study, that the type of physical activity did not influence the self-perception of health of the older people in rural areas, with only an association with the level of physical activity being observed. The practice of physical activity can be influenced by the environmental and social conditions to which the older people are inserted[23], and older people in rural areas may have a healthier lifestyle than when they live in large urban areas[5].

Walking has been the most frequent physical activity among the urban older people population in Brazil, according to what was revealed in a descriptive study carried out in all capitals and in the Federal District[24]. In the population of the present study, 44.2% of the older people remained active by carrying out domestic activities, gardening, commuting, growing crops and farming. While 55.8% included in their daily life some physical activity aimed at leisure, predominantly walking.

Studies in Brazil have shown that populations residing in rural areas have a more active behavior in the domains of work, commuting and home, such as physical activity[8,23]. On the other hand, there was a high frequency of insufficiently active individuals, especially in leisure activities, regardless of age, in this population[25].

Older people living in rural areas may have a healthier lifestyle, with better eating habits and more active behaviors in daily activities[8,23]. In rural southern Brazil, the participation of older people in leisure activities was high (79.8%) and was associated with gender, marital status, education and income. The authors included in leisure activities, both physical and manual/artistic, intellectual, associative and tourist activities, identifying 46.2% of the sample with the practice of leisure-time physical activity[26].

The results found in this research can be explained by issues related to health education actions promoted by the municipality itself, which address themes about the promotion of healthy eating and physical activity[27]. The older people expressed the need to perform physical activities such as walking and maintaining healthy lifestyle habits. Physical activity can favor the promotion of positive health perception among older people. In addition to increasing life expectancy and reducing the risk of chronic diseases, contributing to the maintenance of physical fitness and functional capacity[4].

In another study, carried out with older women who were former students of a University in North Carolina, in the United States, leisure-time physical activity and satisfaction with the time of leisure-time physical activity were positively correlated with self-perceived health[28]. Older Chinese people who were exposed to green spaces and exercised frequently were more likely to report a good perception of health compared to those who exercised infrequently[29].

With regard to self-perceived health, 64.2% of sufficiently active older people significantly perceived their health as good or very good. A cross-sectional study carried out with older people in a small town in the interior of Bahia did not find associations between the level of physical activity and self-rated health, with a prevalence of 53.9% of physical inactivity among the participants[7]. In an urban area in southern Brazil, physical activity was an important factor in the relationship between self-perceived health and quality of life in older women participating in a physical activity program[4].

Physical inactivity is considered a determining factor in the reduction of autonomy and independence of the older people population, as it exacerbates the damage to physiological and biomechanical systems caused by aging[3]. The beneficial effects of physical activity are well accepted, as is its importance for improving health conditions, especially in the older people population[7]. However, in this study, 69.6% of the insufficiently active older people were

independent in their ADLs and 50% had good or very good health perception.

Higher self-perceived health scores were associated with less limitation in performing activities[30]. On the other hand, a study in a rural population in northeastern Brazil did not show a significant association between self-perceived health and functional incapacity, with associations between functional incapacity and chronic diseases such as arterial hypertension and heart disease being observed. The negative self-perception of health reported by this population was 57.9%[31].

A possible explanation for the implications presented is due to the characteristic differences of each research, such as the type of instrument used to assess functional capacity. It is also highlighted that the functional capacity and the perception of health are influenced by issues intrinsic to each studied population[19].

In the present study, a large part of the older people who were independent in their ADLs were also sufficiently active, and of these, two thirds had a good or very good perception of health. A study with older people in Brazil, carried out in three different urban centers showed that having a negative perception of health (fair or bad), using more than two medications, having depressive symptoms and being insufficiently active (lowest quartile of physical activity level, ≤ 60 minutes/week) were factors associated with functional disability in ADLs. Short or prolonged sleep, smoking and physical inactivity were factors that increased the need for assistance in activities of daily living of rural older people[32].

Independence in performing usual tasks is a factor that determines the health of older people[33]. The decline in functionality is a reason for a worse perception of health[31]. A cross-sectional study carried out in the northeast region of Brazil, with older people living in rural districts, showed a low proportion of dependence on performing ADLs (3.4%) and functional disability (13.7%)[23]. In addition, the results of this research are consistent with studies in the northern region of Brazil, in which 94.0% of the older people studied in rural areas and 97.0% in urban areas presented good functionality[9,10].

Similar to the present investigation, other studies showed that functionality is directly linked to self-perception of the general health status[30,32,33]. A cohort study carried out with older people aged 60 to 69 years in a rural region of Norway highlighted that, after 11 years, low self-perception of health and depression were risk factors for the need for assistance in one or more activities of daily living[32].

A study in an urban area with active and sedentary older women in the State of Rio de Janeiro, Brazil, indicated that functional autonomy was classified as low for all groups. The authors suggested that the physical activities offered to the active groups did not represent enough stimuli to improve the physical capacity of the participants[3]. Activities that promote improvements in aerobic capacity can preserve the physiological functions affected by aging[3]. In this study, sufficiently active and insufficiently active older people had a level of 50% or more of functional independence.

Explanatory elements that enable the understanding of functional decline are still complex, however, there is a consensus on the preservation of functional conditions through certain habits, such as the practice of physical activity. However, the factors associated with functional disability and physical activity are still little explored, often limited to specific isolated surveys[33,34].

A recognized limitation of the present study was associated with data collection that lasted over time, reflecting possible measurement biases. To minimize this possibility, validated assessment instruments were used and measurements performed at home were made with calibrated devices and always applied by the same person.

Doubts arise about the relationship between being independent in ADLs and/or being sufficiently active, and which of the characteristics most significantly influence the perception of health in older people. Since, being independent in ADLs does not necessarily mean being active enough. In the literature, the concept of investigating the behavior (performing an activity) versus the outcome (the result of performing an activity) is growing, checking which would produce the greatest beneficial effects to the individual[35]. Therefore, studies that

can investigate in more detail the benefits of being independent in ADLs as an outcome and of being sufficiently active as a behavior are suggested.

Some other points should be highlighted as a strength of the study, such as the situational diagnosis of the living conditions of older people living in a rural municipality in the interior of Brazil. The questions answered during the home visits allowed for personal expressions from the older people, including claims to the government. Also during data collection, the researcher collected suggestions for interventions in public policies in the social and health area, with suggestions for immediate and late application.

Also noteworthy is the creation of a cohort with the older people participating in the study so that they are monitored in a health surveillance system in the city.

CONCLUSIONS

The practice of physical activity and maintenance of independence in activities of daily living are factors that contribute to a positive perception of health and quality of life. However, older people who are insufficiently active and independent also perceive their health as good or very good. Furthermore, the type of physical activity was not associated with perceived health.

Interventions in public policies in the social and health area are recommended, considering the specific characteristics of the population so that they can provide for the maintenance or improvement of a good perception of health and quality of life. These actions can contribute to the strengthening of family and community bonds, promoting autonomy and improving the quality of life and health of this population. We recommend that the Health Units and other social facilities in the city be used to offer activities guided by trained professionals.

It is expected that the contributions of this work, for the community of the studied municipality, extend to other municipalities with similar characteristics, collaborating to highlight the impact of science on society. It is suggested that more studies be carried out with older people in communities with rural characteristics, as the vast Brazilian territory presents different characteristics from one region to another.

Edited by: Marquiony Marques dos Santos

REFERENCES

1. Organização Mundial da Saúde . Relatório Mundial de Envelhecimento e Saúde. Geneva: OMS; 2015.
2. Condello GAO, Capranica LAO, Migliaccio S, Forte R, Di Baldassarre AAO, Pesce CA-O. Energy Balance and Active Lifestyle: Potential Mediators of Health and Quality of Life Perception in Aging. Nutrients. 2019;11(9):1-9.
3. Moraes FLR, Corrêa P, Coelho WS. Avaliação da autonomia funcional, capacidades físicas e qualidade de vida de idosos fisicamente ativos e sedentários. Rev Bras Prescrição Fisiol Exerc. 2018;12(74):297-307.
4. Gomes FRH, Gasparotto GS, de Oliveira V, Vagetti GC. Autopercepção de saúde associada à percepção de qualidade de vida em idosas praticantes de atividade física de Ponta Grossa, Paraná, Brasil. Rev Kairós. 2019;22(3):1-10.
5. Whitfield G, Carlson S, Ussery E, Fulton J, Galuska DA, Petersen R. Trends in Meeting Physical Activity Guidelines Among Urban and Rural Dwelling Adults - United States, 2008-2017. Morb Mortal Wkly Rep. 2019;68(23):513-8.
6. Garbaccio JL, Tonaco LAB, Estêvão WG, Barcelos BJ. Aging and quality of life of elderly people in rural areas. Rev Bras Enferm. 2018;71:724-32.
7. Rodrigues SC, dos Santos L, Pinheiro Júnior JA, Valença Neto PF, Casotti CA. Nível de atividade física em idosos residentes em um município de pequeno porte: dados do estudo base. Rev Bras Prescrição Fisiol Exerc. 2019;13(82):1-10.
8. Ribeiro CG, Ferretti F, Sá CA. Quality of life based on level of physical activity among elderly residents of urban and rural areas. Rev Bras Geriatr Gerontol. 2017;20(3):330-9.

9. da Costa RS, Leão LF, Campos HLM. Envelhecer na zona rural do interior do estado do Amazonas, desempenho cognitivo, funcionalidade e percepção de saúde: um estudo transversal. Rev Kairós. 2020;23(1):1-10.

10. Freitas CV, Sarges ESNF, Moreira KECS, Carneiro SR. Evaluation of frailty, functional capacity and quality of life of the elderly in geriatric outpatient clinic of a university hospital. Rev Bras Geriatr Gerontol. 2016;19(1):119-28.

11. Santos JR, Couto JO, Santos WS, Gueiros MM, Morais Jr. GS, Silva RJS. Fatores associados à percepção de qualidade de vida em idosos de baixa renda. Motricidade. 2016;12:139-46.

12. Instituto Brasileiro de Geografia e Estatística. População do Município de Trombas, Goiás [Internet]. Rio de Janeiro: IBGE; 2010. Available from: https://cidades.ibge.gov.br/brasil/go/trombas/panorama2010 .

13. Peixoto SV, Mambrini JVM, Firmo JOA, de Loyola Filho AI, de Souza Jr. PRB, de Andrade FB, et al. Physical activity practice among older adults: results of the ELSI-Brazil. Rev Saúde Pública. 2018;52(Supl 2):1-10.

14. World Health Organization. WHOQOL-BREF : introduction, administration, scoring and generic version of the assessment : field trial version, December 1996. Geneva: WHO; 1996.

15. Benedetti TRB, Antunes PC, Rodriguez-Añez CR, Mazo GZ, Petroski EL. Reprodutibilidade e validade do Questionário Internacional de Atividade Física (IPAQ) em homens idosos. Rev Bras Med Esporte. 2007;13:11-6.

16. Mazo GZ, Benedetti TRB. Adaptação do questionário internacional de atividade física para idosos. Rev Bras Cineantropom Desenvolv Hum. 2010;12(6)480-4.

17. Bull FC, Al-Ansari SS, Biddle S, Borodulin K, Buman MP, Cardon G, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. Br J Sports Med. 2020;54(24):1451-62.

18. Podsiadlo D, Richardson S. The Timed "Up & Go": a Test of Basic Functional Mobility for Frail Elderly Persons. J Am Geriatr Soc. 1991;39(2):142-8.

19. Sayón-Orea C, Santiago S, Bes-Rastrollo MAO, Martínez-González MA-O, Pastor MA-O, Moreno-Aliaga MJ, et al. Determinants of Self-Rated Health Perception in a Sample of a Physically Active Population: PLENUFAR VI Study. Int J Environ Res Public Health. 2018;15(10):1-10.

20. Inuzuka S, Jardim PCV, Abrahams-Gessel S, Souza LG, Rezende AC, Perillo NB, et al. Self-rated health status and illiteracy as death predictors in a Brazilian cohort. PLos ONE. 2018;13(7):e0200501.

21. Borges A, Santos G, Kummer J, Fior L, Molin V, Wibelinger L. Autopercepção de saúde em idosos residentes em um município do interior do Rio Grande do Sul. Rev Bras Geriatr Gerontol. 2014;17(1):79-86.

22. Moimaz S, Almeida M, Lolli L, Garbin C, Saliba N. Envelhecimento: Análise de dimensões relacionadas à percepção dos idosos. Rev Bras Geriatr Gerontol. 2009;12(3):361-75.

23. Rodrigues WKM, Rocha SV, Vasconcelos LRC, Diniz KO. Atividade física e incapacidade funcional em idosos da zona rural de um município do nordeste do Brasil. Rev Bras Promoç Saúde. 2015;28(1):126-32.

24. Lima DF, Lima LA, Mazzardo O, Anguera MdG, Piovani VGS, da Silva Jr. AP, et al. O padrão da atividade física no lazer de idosos brasileiros. Cad Educ Fis. 2018;16(2)1-10.

25. Wanzeler F, Nogueira J. Atividade física em populações rurais do Brasil: uma revisão da literatura. Rev Bras Ciênc Mov. 2019;27(4):1-10.

26. Pitilin EB, Massaroli A, Luzardo AR, Lentsck MH, Baratieri T, Gasparin VA. Fatores associados às atividades de lazer de idosos residentes na zona rural. Rev Bras Enferm. 2020;73(Supl. 3):1-10.

27. Seabra CAM, Xavier SPL, Sampaio YPCC, de Oliveira MF, Quirino GS, Machado MFAS. Health education as a strategy for the promotion of the health of the elderly: an integrative review. Rev Bras Geriatr Gerontol. 2019;22(4):1-10.

28. Eifert EK, Hall M, Smith PH, Wideman L. Quality of life as a mediator of leisure activity and perceived health among older women. J Women Aging. 2018;31(1):1-10.

29. Chen H, Liu Y, Zhu Z, Li Z. Does where you live matter to your health? Investigating factors that influence the self-rated health of urban and rural Chinese residents: evidence drawn from Chinese General Social Survey data. Health Qual Life Outocomes. 2017;15(1):1-10.

30. Guerra FP, Dias RC, Pereira LSM, Assis LO, Assis MG. Factors that impact functional performance of elderly with low back pain. Fisioter Mov. 2017;30:63-73.

31. Almeida T, Santos C, Rocha S, Pedreira R, Pinto Jr. E. Prevalência e fatores associados à incapacidade funcional em idosos residentes na zona rural. Rev Ciênc Méd Biol. 2016;15:1-10.

32. Storeng SH, Sund ER, Krokstad S. Factors associated with basic and instrumental activities of daily living in elderly participants of a population-based survey: the Nord-Trøndelag Health Study, Norway. BMJ Open. 2018;8(3):1-10.

33. Virtuoso Jr. JS, Tribess S, Smith Menezes A, Meneguci J, Sasaki JE. Fatores associados à incapacidade funcional em idosos brasileiros. Rev Andal Med Deporte. 2016:1-9.

34. Del Duca G F, Silva MCD, Silva SGD, Nahas MV, Hallal PC. Incapacidade funcional em idosos institucionalizados. Rev Bras Ativ Fís Saúde. 2012;16(2):120-4.

35. Dankel SJ, Loenneke JP, Loprinzi PD. Determining the Importance of Meeting Muscle-Strengthening Activity Guidelines: Is the Behavior or the Outcome of the Behavior (Strength) a More Important Determinant of All-Cause Mortality? Mayo Clin Proc. 2016;91(2):166-74.