Self-perception of health among the elderly in the northeast region of Brazil: a population-based study

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Sandra Rêgo de Jesus
Multidisciplinary Institute in Health, Federal University of Bahia, Vitória da Conquista, Brazil.
Higher degree of education: PhD in Statistics

Hellen Jasmyn Ramos Aguiar
Multidisciplinary Institute in Health, Federal University of Bahia, Vitória da Conquista, Brazil.
Higher education degree: Undergraduate student in Nursing

ABSTRACT

Self-perception of health status is a good indicator because it reflects various aspects of health conditions, care, and use of health services, and has been used as a guiding instrument for health promotion actions in the elderly population. This study aimed to identify the factors associated with positive self-perception of health among the elderly in the Northeast region of Brazil. This is a cross-sectional study with 7,206 elderly (≥ 60 years old) interviewed by the Surveillance System of Risk and Protective Factors for Chronic Diseases by Telephone Survey (VIGITEL) in 2018. Sociodemographic, behavioral and health condition variables were grouped according to a previously defined conceptual hierarchical model to aid in the description of self-perceived health. Poisson regression was used, and prevalence ratios with their respective 95% confidence intervals were estimated. The prevalence of positive self-perception of health was 46.29%. The probability of a better perception of health increased with male gender (PR = 1.25), age between 60 and 64 years (PR = 1.12), high schooling (9 years or more of study - PR = 1.25), possession of health insurance (PR = 1.27), regular consumption of fruits and vegetables (PR = 1.14) and sufficient physical activity during leisure time (PR = 1.26), but decreased with black and brown race (PR = 0.89), presence of diabetes (PR = 0.74) and presence of hypertension (PR = 0.70). The analysis of these factors indicates important aspects for the formulation of specific public policies, in view of health equity, health promotion and disease prevention to improve the quality of life of this population.

Keywords: Self-perception of health, aging, prevalence, cross-sectional studies.

1 INTRODUCTION

In countries of socioeconomic development, such as Brazil, the aging of the population has been happening at an accelerated pace, with reductions in the fertility rate of the population and an increase in life expectancy, leading to significant changes in the age structure of the population. Projections by the Brazilian Institute of Geography and Statistics (IBGE) show that the elderly population aged 65 years or older will reach 25.5% (58.2 million elderly) in 2060, that is, a quarter of the population, while in 2018 this proportion was 9.2% (19.2 million)[1]. This process of demographic transition will require the formulation of public policies to improve the quality of life of this population segment.

Aging is accompanied by biological, psychoemotional and sociocultural factors2. This dynamic and progressive process, which occurs differently from the way of life of everyone, causes

greater vulnerability and higher incidence of pathological processes that can lead the individual to death [3].

As one of its consequences, aging brings an increase in the incidence of chronic non-communicable diseases (NCDs), which can directly influence the autonomy of the elderly, leading to functional disability and dependence, compromising well-being and quality of life4.

The characterization of the health conditions of the elderly requires a thorough study regarding different aspects of life, such as demographic and socioeconomic factors, chronic diseases, use of medications, functional capacity, and access to health services 5,6.

One of the ways to conduct this type of study is the use of one of the most used indicators in the evaluation of the health status of the elderly, self-perception of health. Self-perceived health status is a subjective indicator of an individual's perception of their own well-being, which is reliable, effective, fast, and inexpensive to assess the health of this population. In addition, it includes physical, cognitive, and emotional aspects, as well as issues related to happiness and contentment 7,8.

There are several indications that perceived health is an excellent predictor, because it signals quality of life, morbidity, decreased functionality, and also reveals the number of chronic diseases, the degree of dysfunction and depression, which have led to speculation of mortality in the elderly population[4]. This measure has been widely used in studies with the elderly because it is closely related to mortality and functional decline in this age group and because it is an instrument for formulating health policies aimed at improving the health of the elderly population9.

The peculiarities that include self-perception justify the performance of local and regional research, which can subsidize government agencies in the formulation of measures to improve the health of the community, especially of the elderly, whose population grows gradually. Therefore, clarifying the factors that interfere in the self-perception of health of the elderly can help determine which dimensions need to be better considered and recognized by health professionals10.

Although the perceived health condition is an important indicator for monitoring the general health of the elderly, positive self-assessment is still a scarce topic in the Brazilian literature. Population-based studies with the elderly in specific locations have shown that the prevalence of positive self-perception of health ranges from 24.7% to 89.1% [9,10]. In this context, it is noteworthy that most of the national publications on the self-assessment of the health status of the elderly are concentrated in the Southeast region [7, 9, 11].

The Northeast region of Brazil presents a scenario of socioeconomic fragilities, in which the number of people over 60 years of age increases gradually, the difficulties of access to basic health care, education and other basic needs of this population is different from the other regions of the country. Among the difficulties identified are the delay in diagnosis and inadequate control of chronic non-communicable diseases and neurological diseases12.

Considering that self-rated health is associated with the adoption of health behaviors; knowing the aspects involved in the positive self-perception of health can facilitate the understanding of factors related to health conditions and quality of life, in addition to subsidizing the development of intersectoral strategies that can improve the quality of life of the elderly[13]. Thus, the present study aims to identify the factors associated with positive self-perception of health in elderly people living in the capitals of the Northeast region of Brazil.

2 METHODOLOGIES

This is a cross-sectional population-based study that used data from the VIGITEL system (Surveillance of Risk and Protective Factors for Chronic Diseases by Telephone Survey) for the year 2018. This telephone survey has been conducted annually since 2006 by the Ministry of Health in Brazilian capitals and the Federal District. The system selects a probabilistic sample of the adult population (≥ 18 years old) living in households served by at least one fixed telephone line. To compensate for the bias of the non-universal coverage of fixed telephony, post-stratification weights were used according to age, sex and schooling. The post-stratification weight of each individual in the sample was calculated by the "rake" method[14].

The questions of the VIGITEL questionnaire address demographic and socioeconomic characteristics of the individuals, characteristics of the pattern of diet and physical activity, reported weight and height, frequency of consumption of cigarettes and alcoholic beverages, reported morbidity among other questions, such as self-assessment of health status[14].

In the present study, we considered the individuals drawn in the VIGITEL telephone survey, during the year 2018, aged 60 years or more, living in the capitals of the Northeast Region, Brazil, and with all the information for the variables of interest.

Self-perception of health status was verified by the following question: "Would you classify your health status as: very good, good, fair, bad or very bad?". From these response options a dichotomous variable was created, considering the self-perception of health as positive ("very good" and "good") or negative ("fair", "poor" and "very poor").

The independent variables used were: gender (male, female), age group (60 to 64, 65 to 69, 70 to 74 and ≥ 75 years), marital status (single, married/united, widowed and separated/divorced), race/skin color (white, brown/black or yellow/indigenous), schooling (0 to 4, 5 to 8 and 9 or more years of study), possession of health insurance (yes, no), smoking (non-smoker, former smoker and current smoker), leisure-time physical activity (insufficient: from 0 to 149 min of physical activities/week and sufficient: ≥ 150 min of physical activities/week)[14], consumption of alcoholic beverages (yes, no), recommended consumption of fruits and vegetables — five or more servings daily (yes, no),

diabetes (yes, no), systemic arterial hypertension (yes, no) and body mass index (underweight: < 22 Kg/m2, eutrophic: from 22 to 27 Kg/m2 and overweight: > 27 Kg/m2)[15].

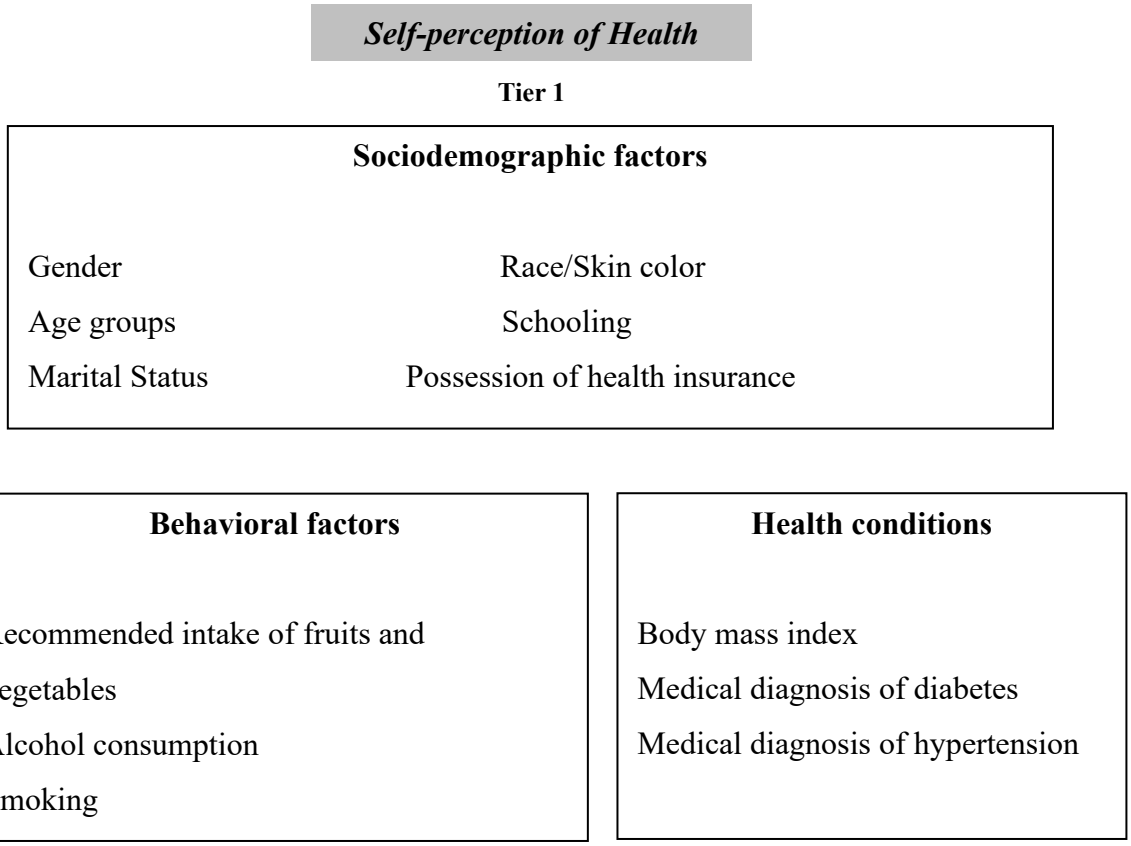
Statistical analysis was performed according to a predefined conceptual model (Figure 1) to help determine the self-perception of health of the elderly. The model defined two hierarchical levels: the first level (distal) included only one block with all sociodemographic variables and the second level (proximal) included two blocks, one for behavioral variables and the other for variables of health conditions.

The characterization of the studied population was performed through the relative frequencies and the prevalence of positive self-perception of health was calculated according to the nature of the exposures. The association of the explanatory variables with the outcome (self-perception of health) was measured by the crude and adjusted Prevalence Ratios (PR), which were estimated by Poisson regression with robust variance[16,17].

Initially, bivariate analysis was performed with estimates of crude prevalence ratios (PR) and respective 95%CI. The variables that presented in the bivariate analyses a p-value ≤ 0.20 were selected for multivariate regression analysis. In the multivariate analysis, we adopted the hierarchical input of the variables in blocks, following the order defined in the conceptual structure (Figure 1). The variables of level 1 (sociodemographic block) were first introduced into the hierarchical model, keeping in the model the variables that showed a statistically significant association with positive self-perception of health ($p \leq 0.05$). This procedure was repeated for the variables of level 2, being thus constituted: behavioral block and health conditions block. All the variables of the level 2 blocks were introduced together, because we assume that they operate at the same level. The variables of the distal block remained as adjustment factors for those of the proximal blocks. Since we were interested in the effect of the distal level variables (even if they are mediated by the proximal variables), our final estimate for the effect of the distal variables is that before the introduction of the proximal variables, while the estimates of the effect of the proximal level variables should be made after the introduction of the variables at the distal level in the model, excluding variables with $p > 0.05$. Statistical analyses were performed using the Stata 15.0 program (Stata Corp., College Station, United States), using the *svy* command to analyze data from complex samples. Because it is a complex sample, the results will be presented as proportions.

VIGITEL was approved by the National Commission for Ethics in Research for Human Beings of the Ministry of Health (opinion No. 2.100.213/2017 – Certificate of Presentation of Ethical Appreciation (CAAE) No. 65610017.1.0000.0008). The Informed Consent Form was replaced by verbal consent at the time of telephone contact with the interviewees.

Figure 1 - Hierarchical model proposed for the factors associated with self-perception of health in the elderly.



3 FINDINGS

In 2018, for all 9 cities in the Northeast region, Vigitel conducted 18,294 interviews with adults (≥ 18 years old), which indicates a participation rate of 70.66%, ranging from 70.08% in Recife to 72.12% in João Pessoa. Among the 18,294 individuals surveyed, 7,206 were elderly.

The prevalence of positive self-perception of health among the elderly (≥ 60 years) from the Northeast was 46.29% (95%CI: 46.21 – 46.37), being lower among the elderly living in Recife 40.98% (95%CI: 40.78 – 41.18). Prevalences of positive self-perception of health higher than 48% were observed for the elderly living in Natal (49.53%; CI95%: 49.23 – 49.82), Fortaleza (50.33%; CI95%: 50.15 – 50.51) and Aracaju (51.42%; CI95%: 51.04 – 51.79) (Table 1).

Table 1 - Prevalence of positive self-perception of health in the elderly in the capitals of the Northeast Region. Vigitel, Brazil, 2018.

Capital	Prevalence (%)	95% CI
Aracaju	51,42	51,04 – 51,79
Fortress	50,33	50,15 – 50,51
John Person	47,91	47,60 – 48,23
Maceio	42,62	42,33 – 42,91
Christmas	49,53	49,23 – 49,82
Reef	40,98	40,78 – 41,18
Savior	44,64	44,47 – 44,81
St. Louis	45,16	44,83 – 45,50
Teresina	47,43	47,11 – 47,75
Total	**46,29**	**46,21 – 46,37**

95% CI : 95% confidence interval.

Table 2 shows the distribution of the elderly population and the prevalence of positive self-perception of health according to sociodemographic factors (level 1 variables). There is a higher prevalence of positive self-perception of health among males (51.17%), in the age group of 60 to 64 years (48.88%), in married/united individuals (48.63%), in those who declare themselves to be white (50.23%), in those with 9 or more years of schooling (55.14%) and in those with health insurance (53.45%).

All sociodemographic factors were significantly associated with positive self-perception of health in the crude analysis (p-value<0.05). Having health insurance was the factor that most significantly increased the prevalence of positive self-perception of health of the elderly (PR=1.32; CI95%: 1.23 – 1.42) (Table 2).

Table 2 - Prevalence and crude prevalence ratio of positive self-perception of health according to sociodemographic factors of the elderly in the Northeast Region. **Vigitel, Brazil, 2018.**

Variables	Frequency (%)	Prevalence (%)	RPa	95% CI	P-value
Sex					
Female	60,01	43,04	1,00		
Male	39,99	51,17	1,19	1,10 – 1,28	<0,001
Age group (years)					
75 or but	24,95	43,48	1,00		
70 a 74	16,88	45,59	1,05	0,94 – 1,17	0,392
65 a 69	19,16	45,29	1,04	0,94 – 1,16	0,444
60 a 64	30,39	48,88	1,12	1,02 – 1,24	0,015
Marital Status					
Married/United	59,78	48,63	1,00		
Single	14,27	44,09	0,90	0,80 –1,01	0,089
Widower	18,37	41,98	0,86	0,79 – 0,95	0,002
Separated/divorced	7,57	42,07	0,86	0,75 – 0,99	0,037
Race / Skin color					
White	41,04	50,53	1,00		
Brown/black	56,76	43,09	0,85	0,78 – 0,92	<0,001
Yellow/indigenous	2,20	44,43	0,88	0,65 – 1,19	0,406
Education (years of study)					
0 a 4	4,02	42,46	1,00		
5 a 8	23,84	39,39	0,93	0,83 – 1,04	0,205
9 or but	35,96	55,14	1,30	1,20 – 1,41	<0,001
Possession of health insurance					

No	55,67	40,40	1,00		
Yes	44,33	53,45	1,32	1,23 – 1,42	<0.001

aCrude prevalence ratio ; 95% CI : 95% confidence interval.

The description of the sample, the prevalence of positive self-perception of health and the crude prevalence ratio according to the behavioral factors and health conditions of the elderly are presented in Table 3 (level 2 variables). A higher prevalence of positive self-perception is highlighted among the elderly who reported regular consumption of fruits and vegetables (53.55%), in those who use alcoholic beverages (53.68%), in smokers (51.54%), in those who practice physical activities during leisure time at a sufficient level (57.04%), in those who were of adequate weight at the time of the research (49.89%), in those who did not report diabetes (50.17%)) and neither hypertension (58.45%).

Except for the variable related to smoking, all behavioral factors and health conditions were associated with positive self-perception of health in the crude analysis (p-value<0.05). Practicing physical activity during leisure time was the factor that most significantly increased the prevalence of positive self-perception of health of the elderly (PR=1.35; CI95%: 1.25 – 1.45) (Table 3).

Table 3 - Prevalence and crude prevalence ratio of positive self-perception of health according to behavioral factors and health conditions of the elderly in the Northeast Region. **Vigitel, Brazil, 2018.**

Variables	Frequency (%)	Prevalence (%)	RPa	95% CI	P-value
Regular consumption of fruits and vegetables					
No	65,46	42,45	1,00		
Yes	34,54	53,55	1,26	1,17 – 1,35	<0,001
Alcohol consumption					
No	75,35	43,87	1,00		
Yes	24,65	53,68	1,22	1,13 – 1,33	<0,001
Smoking					
Non-smoker	56,42	46,94	1,00		
Current smoker	0,55	51,54	1,10	0,94 – 1,28	0,230
Ex-smoker	38,08	44,56	0,95	0,88 – 1,03	0,197
Physical activity during leisure time					
Insufficient	72,59	42,23	1,00		
Enough	27,41	57,04	1,35	1,25 – 1,45	<0,001
Body mass index					
Eutrophic	43,38	49,89	1,00		
Low weight	1,48	45,35	0,91	0,82 – 1,01	0,080
Overweight	41,81	42,88	0,86	0,79 – 0,93	<0,001
Diabetes					
No	78,07	50,17	1,00		
Yes	21,93	32,46	0,65	0,58 – 0,72	<0,001
Hypertension					
No	41,74	58,45	1,00		
Yes	58,26	37,57	0,64	0,60 – 0,69	<0.001

aCrude prevalence ratio ; 95% CI : 95% confidence interval.

The results of the final multivariate hierarchical analysis are presented in Table 4. The variables that increased the prevalence of positive self-perception of health by more than 20% in the elderly

were: male gender (PR= 1.25; CI95%:1.16 - 1.37), schooling of 9 or more years of schooling (PR=1.25; CI95%:1.13 – 1.39), having health insurance (PR= 1.27; CI95%:1.17 – 1.39) and practicing leisure-time physical activity (PR= 1.26; CI95%:1.16 – 1.37). It is also observed that the variables age group from 60 to 64 years and regular consumption of fruits and vegetables remained positively associated with positive self-perception of health. Brown/black skin color (PR=0.89; CI95%:0.81 – 0.96), having a medical diagnosis of diabetes (PR= 0.74; CI95%:0.65 – 0.84) and hypertension (PR= 0.70; CI95%:0.64 – 0.76) are factors that significantly decrease the probability of an elderly person reporting positive self-perception of health.

Table 4 - Multivariate analysis of factors associated with positive self-perception of health in the elderly in the Northeast Region. Vigitel, Brazil, 2018.

Levels	RP	95% CI	P-value
Tier 1			
Gender			
Female	1,00		
Male	1,25	1,16 - 1,37	<0,001
Age group (years)			
75 or but	1,00		
70 a 74	1,05	0,94 – 1,17	0,392
65 a 69	1,04	0,94 – 1,16	0,444
60 a 64	1,12	1,02 – 1,24	0,015
Race / Skin color			
White	1,00		
Brown/black	0,89	0,81 – 0,96	0,004
Yellow/indigenous	0,93	0,69 – 1,27	0,656
Education (years of study)			
From 0 to 4 years	1,00		
From 5 to 8 years	0,97	0,84 – 1,11	0,667
>= 9 years	1,25	1,13 – 1,39	<0.001
Possession of health insurance			
No	1,00		
Yes	1,27	1,17 – 1,39	<0.001
Tier 2			
Regular consumption of fruits and vegetables			
No	1,00		
Yes	1,14	1,06 - 1,24	0,001
Physical activity during leisure time			
Insufficient	1,00		
Enough	1,26	1,16 – 1,37	<0,001
Diabetes			
No	1,00		
Yes	0,74	0,65 – 0,84	<0,001
Hypertension			
No	1,00		
Yes	0,70	0,64 – 0,76	<0.001

PR: Prevalence ratio; 95% CI : 95% confidence interval.

4 DISUSSION

The prevalence of positive self-perception of health in elderly residents in the Northeast region of Brazil was 46.29%. The prevalence of positive self-perception is lower compared to the study conducted in Florianópolis-SC, in 2015, with a similar methodology, which estimated the prevalence

of positive self-perception of health at 51.2%[10]. Another study conducted in three cities in Brazil (Ilhéus-BA, Caratinga-MG and Nova Santa Rosa-PR), in 2009, showed a 50.4% prevalence of positive self-perception[18]. In the study conducted in Campinas-SP, in 2008-2009, the estimated prevalence of positive self-perception was 89.1%[11]. In another country, Colombia, an investigation conducted in Santiago de Cali in 2009, the prevalence of positive self-perception was 59.9%[19]. It should be noted that some studies present lower prevalence values of positive self-perception of health[9,20,21]. The literature points out that the differences between the prevalences of this outcome can be attributed to the criteria for measuring and categorizing self-perception of health, in the way the research was conducted, and also to demographic, socioeconomic and health service factors in each region. However, such disagreements do not mean a lessening value of the indicator, which represents a very useful measure in epidemiological surveys, and which reflects various aspects of health conditions, care and use of health services[22,23].

Regarding the factors associated with the prevalence of positive self-perception of health among the elderly in this study, a higher prevalence was observed among men, corroborating the findings of other studies on self-rated health in Brazil[10,24]. This fact can be attributed to the greater perception of women to the physical signs and symptoms of diseases, contributing to a greater demand for health services and, consequently, resulting in a greater number of medical diagnoses for themselves, which gives them worse self-rated health when compared to men[10,24].

When assessing the prevalence of positive self-perception of health by age group, it was found that elderly people between 60 and 64 years of age had a significantly higher prevalence of positive health perception. This finding is in agreement with the literature, which indicates a decrease in this positive evaluation among older individuals10. Other studies in Brazil have shown an association between increasing age and poor self-perception of health status[25,26]. This result has been explained by the fact that most chronic diseases are more common at older ages, substantially impairing the outcome in question[25,27].

It was observed that self-reported race or skin color was inversely associated with positive self-perceived health. The black elderly, that is, those who reported their skin color as brown or black, had a lower prevalence of positively assessing their health status when compared to the white elderly, corroborating the findings of Gomes et al (2021)[28]. This result may probably indicate worse living conditions and greater difficulty of the black population in maintaining an adequate state of health. Other national and international studies with the elderly have shown an association between self-rated health and race[29,30,31].

In the present investigation, associations of positive self-perception of health were also observed among the elderly with 9 years of schooling or more, possession of health insurance, regular consumption of fruits and vegetables and practice of physical activity. Schooling is configured as a

proxy for income and has been considered as a determining factor in access to health services[32,33]. It is known that the higher educational level translates into more access to information and, consequently, the adoption of better healthy life habits, such as physical activity and adequate nutrition[10,34]. Other studies also show that schooling is strongly related to the possession of health insurance[35,36]. In addition, having health insurance can facilitate access to health services and preventive actions37, as well as improve the quality of life related to health status and, consequently, improve the perception of health status.

A health survey study of elderly residents in Campinas, São Paulo, showed that the consumption of fruits and vegetables was associated with positive self-perception of health11. The regular consumption of fruits and vegetables may be related to higher schooling[38,39,] taking into account the concern about the effect of the diet in the face of disease manifestations, the need for changes in eating habits or the quality of the diet ingested40,41. In addition, some studies indicate that the regular consumption of fruits and vegetables may be associated with age and the practice of physical activity[39,42]. Therefore, the regular consumption of fruits and vegetables is an important factor in the healthy habits of the individual and, consequently, improves the quality of life.

The elderly who practices sufficient physical activity during leisure time presented the highest prevalence of positive self-perception of health. The practice of regular physical activity, with the adoption of a healthy lifestyle, can cause benefits in elderly individuals such as improvement/maintenance of functional capacity, better control and prevention of chronic diseases, greater well-being and self-esteem, greater social interaction and, consequently, improved quality of life, which influences the self-assessment of health status[10,43]. A national household survey study, with a sample of 1,705 elderly, showed a higher prevalence of positive self-perception of health in elderly active in leisure time in relation to the elderly who were not sufficiently active10, corroborating the findings of the present study.

The presence of the chronic diseases studied was inversely associated with the self-perception of positive health of the elderly, confirming the relationship between the worst health assessment and the presence of diseases, which has been described in other studies[25,28,44,45]. This association can also be attributed to the result of the health reference of the elderly as absence of disease46. Chronic diseases in the elderly can bring limitations or disabilities in the performance of activities of daily living, difficulty in prolonged strict medication control and greater attendance at medical appointments, factors that can influence quality of life and, consequently, the perception of health[45,46,47].

The present study has some limitations, which should be considered in the interpretation of the results. This is a cross-sectional study, which evaluates only the association between variables, without the possibility of defining a causal relationship. Another limitation refers to the use of self-reported

information that may cause information bias, due to memory problems, lack of diagnosis, or omission thereof. However, it is noteworthy that the use of self-perceived health has been considered a good indicator in understanding the health of the elderly. Another aspect to consider is the restriction of the Vigitel sample, which is extracted from the register of fixed telephone lines existing in the city. Although the reach of this fixed network is not universal, the use of post-stratification weights to the interviewees tends to minimize this fact[14].

Despite these limitations, the methodology used in this study answered the objectives and the associations found were corroborated by the literature. In addition, the relevance of this study lies in the scarce literature on the health of the elderly living in the Northeast region of Brazil, while the other studies are mostly from the Southeast region. It is noteworthy that studies such as this one contributes to the understanding of the various factors that can influence healthy aging in populations of specific regions and, consequently, managers and health professionals can implement actions that promote improvements in the health care of the elderly, in order to contribute to the quality of life of this population.

5 CONCLUSIONS

The prevalence of positive self-perception of health in the elderly in the Northeast region was lower than 47% in 2018 and is influenced by sociodemographic, behavioral and health condition factors. Male gender, age between 60 and 64 years, higher schooling, possession of health insurance, regular consumption of fruits and vegetables and sufficient physical activity during leisure time were the factors associated with a better perception of health among the elderly. The self-declared brown or black color, the presence of diabetes and the presence of hypertension were the factors that influenced the elderly to have a worse evaluation of their health in this study. These findings indicate important aspects for the formulation of specific public policies, in view of health equity, health promotion and disease prevention to improve the quality of life of this population.

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