Self-perceived health in older adults with low education: demographic, social and health-related behavior factors

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Abstract

Objective: To verify the relationship between positive self-perception of health (positive SPH) in less-educated older adults and demographic, social participation, and behavioral variables. *Methods:* This was a cross-sectional study (n=12,367), with elderly people over 60 years old of both sexes, with up to four years of study from several cities in Brazil, interviewed by the National Health Survey of the year 2019. For the analysis of data, the prevalence was initially described, and later, three Poisson regression models with robust adjustment for variance were constructed, with the analyzes being stratified by sex. *Results:* The prevalence of positive SPH was 38.8% in men and 34.8% in women. The last regression model built revealed associations with a lower positive SPH prevalence in black or brown women. In contrast, higher prevalence levels were found in single women, with higher income, participating in some associations, engaged in religious activities, visiting the doctor more often, physically active, and regularly consuming fruits and vegetables. In men, relationships with lower prevalence were found in blacks or browns and widowers, and higher prevalence levels were found in those engaging in religious activities and visiting the doctor more often. *Conclusions:* The study reinforces the importance of policies aimed at improving income, promoting healthy behaviors and encouraging social participation.

Keywords: Lifestyle. Perception. Elderly Health. Population Surveys.

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INTRODUCTION

Self-perceived health (SPH) is an epidemiological measure commonly used in gerontological studies and can be considered a good predictor of morbidity and mortality[1-4]. It is an easily applied healthcare measure to contemplate aspects of health in general with a single question.[1,5].

Older people have particularities regarding health because this is the time of life in which chronic diseases, limitations, and frailty generally emerge[6]. Studies involving SPH with the older population have used this measure to understand the factors related to healthy aging and well-being[1,3,5]. These studies have observed important associations between SPH and the presence of morbidities[7,8], lifestyle,[8,9] and social participation[10,11].

Studies also indicate that more educated individuals tend to report more frequently a positive perception of health[9,12], as well as a lower prevalence of chronic diseases and degenerative diseases[4,7,13]. In part, this is due to individuals with higher educational level in general having lower unemployment rates, higher income, more access to healthcare services, and higher health literacy when compared to individuals with fewer years of education[14,15].

In the Brazilian context, the number of years of education is related to the age group, with low-income older people having the lowest level of education and representing the highest amount of illiterates in Brazil[16,17]. Currently, it is estimated that 18% of the older people aged 60 and older are illiterate[16,17], despite the fact that most public policies for literacy are still focused on young people and adults[16-18].

Due to the increase in life expectancy, older people represent the fastest growing population group in Brazil and the one requiring a higher level of healthcare due to the natural decline they face[6,16,17]. Therefore, the objective of the present study is to identify factors associated with positive self-perceived health (positive SPH) in older Brazilians with lower education.

METHOD

This is a cross-sectional study from a larger database, the database of Pesquisa Nacional de Saúde (the National Health Survey - PNS) of 2019.

The PNS 2019 was sampled by conglomerate. Initially, a random master sample of 8,036 primary sampling units was selected from the database of Sistema Integrado de Pesquisas Domiciliares (the Integrated System of Household Surveys - SIPD) of IBGE (the Brazilian Institute of Geography and Statistics), which also gives rise to other national surveys[19,20].

The PNS sample was selected by excluding households located in hard-to-reach locations and institutions such as hospitals, barracks and convents, which resulted in 94,114 eligible households, and in 90,846 at least one resident answered the questionnaire, resulting in a sample of 293,731 individuals aged 15 years or older[19,20].

Of the 293,731 individuals who participated in the PNS 2019, 12,467 were 60 years or older, had low education (none to four years of study), and answered the question about SPH. Of these, 99 individuals were excluded for declaring themselves indigenous (due to the small number) and one of whom did not answer the question about race/color. Thus, the present study comprises a sample of 12,367 individuals.

Data were collected by presential interviews with the interviewers being duly identified and trained for this work via smartphone with the app for the analysis of variables already installed[19,20]. More information about the PNS 2019 method and sampling can be found in the document "Pesquisa Nacional de Saúde, 2019 - Informações sobre domicílios, acesso e utilização dos serviços de saúde"[19,20].

The dependent variable was the SPH, which was obtained with the question "In general, how do you perceive your health?". The response options were: very good, good, regular, bad, and very

bad. Subsequently, this variable was dichotomized considering as positive SPH those who answered very good and good, and as negative self-perceived health those who answered regular, bad, and very bad.

The independent variables and their respective classification criteria (information below that are in parentheses) were:

- **Sociodemographic variables:** gender (female; male); color (white, yellow; black and brown); age group (in years: 60-64; 65-69; 70-74; 75-79; 80 or older); family income*per capita* in minimum wages (MW), (0 to 1MW more than 1MW to 3MW; more than 3MW); marital status (married; separated or divorced; widowed; single).

- **Variables on health behavior:** last medical appointment (more than 3 years, from one to three years, up to one year), sufficient physical activity during leisure time ≥150 minutes/week (yes, no), tobacco consumption (yes, no), regular fruit consumption (≤ 5 days a week, ≥5 days a week), regular vegetable consumption (≤ 5 days a week, ≥5 days a week).

- **Social participation variables:** social participation in the community (associations), (sometimes during the year, rarely or no participation, monthly, weekly), participation in religious activities (sometimes during the year, rarely or no participation, monthly, weekly).

Initially, the sample distribution of older people aged 60 years or older interviewed by the PNS 2019 was described according to the education group (0-4; 5-8; 9-11; 12 years or more).

Then, an analytical analysis of the sample of older individuals with 0 to 4 years of education was performed. To this end, a prevalence ratio (PR) was used, and the calculation was performed using the Wald method, considering the 95% confidence interval (95% CI). Then, two adjusted prevalence ratio (aPR) models were developed using the Poisson regression with robust adjustment for variance. The first included social and demographic variables (gender, color, income, marital status); the other, in addition to these, also included variables related to health (presence of health morbidity, diabetes, hypertension). These three analyses were stratified by gender. The data analysis of the present study was performed using SPSS vs. 19.0.

The team responsible for the PNS was trained to collect data. The research was only initiated after the free and informed consent form was signed by the respondents[19,20]. The PNS was approved by Comissão Nacional de Ética em Pesquisa (the National Research Ethics Commission - CONEP) of Conselho Nacional de Saúde (the Brazilian National Health Council - CNS) in 2019[19,20].

RESULTS

The PNS 2019 included 21,179 older adults aged 60 years or older who answered the questions related to SPH and the years of education. Of these, 12,367 had from 0 to 4 years of education, 2,538, from 5 to 8 years of education, 3,588 from 9 to 11 years, 2,686 had 12 years or more of education (Table 1).

It is possible to verify in Table 1 important variations in the prevalence of positive SPH and income according to the education group. The prevalence of positive SPH reports and higher per capita income increases as the education years increase. The prevalence of SPH reports as "very good" and "good" in individuals with 0 to 4 years of education is 4.5% and 32.2% respectively, in those with 12 years of education or more it is 20% and 54.9%. The same occurred with income, in which only 5% of individuals with 0 to 4 years of education had a per capita income of more than three minimum wages, while those with 12 years or more represented 65.8% (Table 1).

Table 1. Distribution of the sample of older people aged 60 years or older interviewed by the PNS, Brazil, 2019. (N=21,179).

	Total (N=21,179)	0 to 4 years of education (n=12,367)	5 to 8 years of education (n=2,538)	9 to 11 years of education (n=3,588)	12 years or more of education (n=2,686)
Variables	N (%)	N (%)	N (%)	N (%)	N (%)
Gender					
Male	9.449 (44,6)	5.729 (46,3)	1.089 (42,9)	1.486 (41,4)	1.145 (42,6)
Female	11.730 (55,4)	6.638 (46,3)	1.449 (57,1)	2.102 (58,6)	1.541 (57,4)
Age group (years)					
60-64	6.407 (30,3)	2.998 (24,3)	1.002 (39,5)	1.401 (39,0)	1.006 (37,5)
65-69	5.364 (25,3)	2.925 (23,7)	679 (26,8)	1.001 (27,9)	759 (28,3)
70-74	3.915 (18,5)	2.486 (20,1)	381 (15,0)	567 (15,8)	481 (17,9)
75-79	2.707 (12,8)	1.906 (15,4)	235 (9,3)	316 (8,8)	250 (9,3)
80 and older	2.786 (13,2)	2.052 (16,6)	241 (9,5)	303 (8,4)	190 (7,1)
Color					
White and yellow	9.634 (45,5)	4.702 (38,0)	1.131 (44,1)	1.909 (53,2)	1.892 (70,4)
Blacks and browns	11.545 (54,5)	7.665 (62,0)	1.407 (56,0)	1.679 (46,8)	794 (29,6)
Per capita income (MW)					
0 to 1	9.291 (43,9)	7.100 (57,4)	1.088 (42,9)	935 (26,1)	168 (6,3)
more than 1 to 3	8.380 (39,6)	4.649 (37,6)	1.213 (47,8)	1751 (48,8)	767 (28,6)
More than 3	3.505 (16,6)	618 (5)	237 (9,3)	899 (25,1)	1.751 (65,2)
Marital Status					
Single	3.871 (18,3)	2.229 (18,0)	479 (18,9)	665 (18,5)	498 (18,5)
Married or common-law marriage	9.312 (44,0)	5.309 (42,9)	1.106 (43,6)	1.613 (45,0)	1.284 (47,8)
Widowed	5.638 (26,6)	3.784 (30,6)	645 (25,4)	776 (21,6)	433 (16,1)
Separated or Divorced	2.358 (11,1)	1.045 (8,4)	308 (12,1)	534 (14,9)	471 (17,5)
Positive self-perceived health					
Very good	1.596 (7,5)	555 (4,5)	135 (5,3)	368 (10,3)	538 (20,0)
Good	8.079 (38,1)	3.976 (32,2)	970 (38,2)	1.658 (46,2)	1.475 (54,9)
Regular	9.030 (42,6)	5.963 (48,2)	1.148 (45,2)	1.319 (36,8)	600 (22,3)
Bad	1.977 (9,3)	1.506 (12,2)	219 (8,6)	190 (5,3)	62 (2,3)
Very bad	497 (23)	367 (3,0)	66 (2,6)	53 (1,5)	11 (0,4)

Of the 12,367 older people with 0 to 4 years of esducation who were part of this group, most were female (53.7%), 62% referred themselves as black or brown, 42.9% lived with a partner, more than half (57.4%) had a per capita income of up to 1 minimum wage. Regarding SPH, 4.5% reported their health as "very good", 32.2% as "good", 48.2% as "regular", 12.2% as "bad", and 3% as "very bad" (Table 1).

The prevalence of positive SPH was found to be 36.7% in both genders, and of 34.8% in women and 38.8% in men, and the following associations were found in the last regression model developed, adjusted for socia, demographic and health variables.

Regarding the sociodemographic variables, the study showed lower prevalence of positive SPH in individuals who self-reported to be black or brown when compared to whites and yellows (PRaj=0.96; 95%CI 0.94-0.99 in women vs aPR=0 .94; 95%CI 0.91–0.96 in men); regarding the marital status, associations were found with higher prevalence in single women (aPR=1.04; 95%CI 1.01-1.08) and with lower prevalence in widowed men (PRaj=0.93; 95%CI 0.88-0.98). Higher prevalences were observed in those who had an income of 3 or more minimum wages (PRaj=1.18; 95%CI 1.11-1.24 in women vs. aPR=1.29; 95%CI 1.22–1.37 in men), from 1 to 3 minimum wages (aPR=1.09; 95%CI 1.03-1.15 in women vs. aPR=1.18; 95%CI 1.12-1.26 in men) compared to those who received 0 to 1 minimum wages. Regarding the age group variable, relationships were found only in men aged 70 to 74 years (PRaj=0.96; 95%CI 0.91–1.0).

As for the variables related to health behaviors, relationships were found in those who had at least one medical appointment in the last year (aPR=1.25; 95%CI 1.16–1.35 in women vs. aPR=1.22; 95%CI 1.16–1.28 in men), or had the last medical appointment from one to three years before (aPR=1.14; 95%CI 1.04-1.24 in women vs aPR=1.16; 95%CI 1.09-1.23 in men), when compared to those who had not had any medical appointments for more than three years. Regarding the regular consumption of fruits and vegetables, only women had an association with this behavior (PRaj=1.07; 95%CI 1.05-1.10). Associations were also found in women who practiced sufficient physical activity during leisure time (PRaj=1.13; 95%CI 1.08-1.19).

Regarding the variables of social support, associations were found in those who went to church weekly when compared to those who went once a year, rarely, or did not go (PRaj=1.25; 95%CI 1.16-1.35 in women vs. aPR=1.22; 95%CI 1.16–1.28 in men) and in women who participated weekly in some community association when compared to those who did not participate or rarely participated (PRaj=1.08; 95%CI 1.0-1.18).

Of the variables studied, there was a greater number of associations in women, which were generally stronger, except for the income variable, which showed a more explicit relationship in men.

Table 2. Association between socioeconomic and behavioral variables and positive self-perceived health in older women aged 60 years and older with 0 to 4 years of education, Brazil, PNS, Brazil, 2019, (n=6,638).

Variable	PR*	Rpaj**	Rpaj***
Color			
White and yellow	1	1	1
Blacks and browns	0,94(0,92; 0,96)	0,96(0,93;0,98)	0,96(0,94; 0,99)
Age group (years)			
60-64	1	1	1
65-69	1,0(0,96;1,04)	0,99(0,95; 1,03)	0,98(0,94;1,02)
70-74	1,01(0,98;1,05)	0,99(0,95; 1,03)	0,98(0,94;1,01)
75-79	1,03(0,99;1,06)	1,0(0,96; 1,04)	0,99(0,96;1,03)
80 ou mais	1,0(0,97; 1,04)	0,97(0,93; 1,01)	0,98(0,94;1,02)
Marital Status			
Married	1	1	1
Divorced	0,99(0,96; 1,02)	1,01(0,98; 1,05)	1,0(0,97; 1,03)
Widowed	1,01(0,96; 1,06)	1,02(0,98; 1,07)	1,01(0,97; 1,06)
Single	1,04(1,0; 1,07)	1,05(1,01; 1,09)	1,04(1,01; 1,08)
Per capita income (MW)			
0 to 1	1	1	1
more than 1 to 3	1,09(1,03; 1,16)	1,08(1,02; 1,15)	1,09(1,03; 1,15)
More than 3	1,19(1,13; 1,26)	1,17(1,11; 1,24)	1,18(1,11; 1,24)
Social participation in the community (associations)			
A few times a year, rarely, or does not participate	1	1	1
Monthly	1,03(0,89; 1,19)	1,02(0,88; 1,18)	0,99(0,86; 1,15)
Weekly	1,11(1,02; 1,20)	1,09(1,01; 1,18)	1,08(1,0; 1,18)
Participation in religious activities			
A few times a year, rarely, or does not participate	1	1	1
Monthly	1,04(1,01; 1,09)	1,04(1,01; 1,09)	1,04(1,0; 1,08)
Weekly	1,05(1,02; 1,08)	1,05(1,02; 1,07)	1,05(1,03; 1,08)
Last Medical Appointment			
More than 3 years ago	1	1	1
From 1 to 3 years ago	1,17(1,08; 1,26)	1,17(1,08; 1,27)	1,14(1,04; 1,24)
Up to 1 year ago	1,36(1,26; 1,44)	1,36(1,28; 1,46)	1,25(1,16; 1,35)
Sufficient physical activity during leisure time (≥150 minutes/week)			
No	1	1	1
Yes	1,11(1,05; 1,16)	1,13(1,07; 1,18)	1,13(1,08; 1,19)
Tobacco Consumption			
Yes	1	1	1
No	1,06(0,91; 1,23)	1,07(0,92; 1,24)	1,06(0,91; 1,23)
Regular Consumption of Fruits and Vegetables			
≤ 5 days a week	1	1	1
≥ 5 days a week	1,09(1,07; 1,12)	1,07(1,04; 1,09)	1,07(1,05; 1,10)

95%CI: 95% confidence interval; *Gross Prevalence Ratios (PR); **Adjusted Prevalence Ratios (aPR) by social and demographic variables (gender, color, income, marital status); ***Adjusted Prevalence Ratios (aPR) by social variables (gender, color, income, marital status) and demographic and health variables (presence of health morbidity; diabetes, arterial hypertension).

Table 3. Association between socioeconomic and behavioral variables and positive self-perceived health in older men aged 60 years and older with 0 to 4 years of education, Brazil, PNS, Brazil, 2019, (n=5.729).

Variable	PR*	aPR**	aPR***
Color			
White and yellow	1	1	1
Blacks and browns	0,93(0,90; 0,95)	0,94(0,92; 0,97)	0,94(0,91; 0,96)
Age group (years)			
60-64	1	1	1
65-69	1,01(0,97;1,06)	1,0(0,96; 1,05)	0,99(0,94;1,04)
70-74	0,97(0,93;1,01)	0,96(0,92; 1,01)	0,96(0,91;1,0)
75-79	0,99(0,95;1,03)	0,98(0,94; 1,02)	0,98(0,94; 1,02)
80 and older	0,95(0,91;0,99)	0,94(0,90; 0,98)	0,96(0,92; 1,0)
Marital Status			
Married	1	1	1
Divorced	0,94(0,90; 0,99)	0,97(0,93; 1,02)	0,96(0,91; 1,0)
Widowed	0,92(0,87; 0,97)	0,95(0,90; 1,0)	0,93(0,88; 0,98)
Single	0,98(0,95; 1,02)	1,01(0,97; 1,04)	0,98(0,94; 1,01)
Per capita income (MW)			
0 to 1	1	1	1
more than 1 to 3	1,19(1,12; 1,26)	1,17(1,11; 1,25)	1,18(1,12; 1,26)
More than 3	1,30(1,22; 1,38)	1,27(1,19; 1,34)	1,29(1,22; 1,37)
Social participation in the community (associations)			
A few times a year, rarely, or does not participate	1	1	1
Monthly	0,93(0,79; 1,09)	0,90(0,77; 1,06)	0,89(0,77; 1,04)
Weekly	1,13(1,0; 1,28)	1,09(0,97;1,23)	1,10(0,98; 1,24)
Participation in religious activities			
A few times a year, rarely, or does not participate	1	1	1
Monthly	0,99(0,95; 1,04)	1,0(0,95; 1,05)	1,0(0,96; 1,05)
Weekly	1,06(1,02; 1,09)	1,05(1,02; 1,08)	1,05(1,02; 1,08)
Last Medical Appointment			
More than 3 years ago	1	1	1
From 1 to 3 years ago	1,15(1,09; 1,22)	1,17(1,10; 1,24)	1,16(1,09; 1,23)
Up to 1 year ago	1,29(1,24; 1,35)	1,31(1,26; 1,37)	1,22(1,16; 1,28)
Sufficient physical activity during leisure time (≥150 minutes/week)			
No	1	1	1
Yes	1,03(0,97; 1,10)	1,03(0,98; 1,10)	1,03(0,98; 1,10)
Tobacco Consumption			
Yes	1	1	1
No	1,08(0,95; 1,24)	1,09(0,96; 1,25)	1,08(0,94; 1,24)
Regular Consumption of Fruits and Vegetables			
≤ 5 days a week	1	1	1
≥ 5 days a week	1,04(1,01; 1,07)	1,01(0,98; 1,04)	1,03(1,0; 1,06)

95%CI: 95% confidence interval; *Gross Prevalence Ratios (PR); **Adjusted Prevalence Ratios (aPR) by social and demographic variables (gender, color, income, marital status); ***Adjusted Prevalence Ratios (aPR) by social variables (gender, color, income, marital status) and demographic and health variables (presence of health morbidity; diabetes, arterial hypertension).

DISCUSSION

Among the main findings of the present study, the following stand out: 1) Higher prevalence of positive SPH in men (38.8%) than in women (34.8%); 2) Higher number of associations observed in women; 3) Regarding sociodemographic variables, relationships were found in both genders, with lower prevalence of positive SPH in those who self-reported as black and brown, whereas higher prevalence of the outcome was found in those who had higher income. In the variable marital status, lower prevalence was found in widowed men, and higher prevalence in single women; 4) As for the variables related to health and lifestyle, associations were observed with the practice of sufficient physical activity during leisure time and consumption of fruits and vegetables only in women. On the other hand, having more frequent medical appointments was associated with both genders; 5) Regarding the social participation, associations were found with social participation in community associations in women, and participation in religious activities in both genders.

Higher prevalences of positive SPH were found in other studies carried out in Brazil in the older population aged 60 years and older. Confortin et al.,[21] found a prevalence of 51.2% when studying a sample from the southern region; Silva et al.[22], 50.4% with a sample of three municipalities in the countryside of Brazil in the Northeast, Southeast and South regions; and Borim et al.,[3] found a prevalence of 80.9% in Campinas, São Paulo. These differences are possibly explained by the range of education of the sample, since in the present study only older people with low education were included. Studies on the topic showed that individuals with fewer years of education have worse SPH when compared to more educated individuals, and they also tend to have less healthy behaviors[12,15].

Research on the topic showed that men tend to report positive health more often.[21,23]. Barata[14] argues that this occurs, in part, due to the historical and social role given to women of having relative care and which is related to a more accentuated perception of possible health problems, while men sometimes end up neglecting such care due to the social construction that still persists in the male gender of not showing weaknesses.

As other studies[8,24], the present one also found lower prevalences of positive SPH in those who self-reportedas blacks or browns, with plausible results due to the historical and social inequalities that still persist between black and white people in the Brazilian context, and it is more evident in the population with fewer years of education.

Few differences were found between the age groups studied, which is also attributed to the homogeneity of the sample. However, it should be noted that part of the literature portrays that as age grows, the prevalence of positive health reports is lower because the number of pathologies and limitations tends to increase with aging[5,9].

The relationship between SPH and income is already known in the literature.[12,14,25]. Some authors argue that individuals who have a higher income tend to have better health conditions as they age.[12,26]because they have better financial conditions and can spend more on health-related issues[12,26].

A lower prevalence of positive SPH was found in widowers, and a higher one in single women. Similar findings were found by Jesus & Aguiar[27] with older widowers in Brazilian capitals and the Federal District. A possible hypothesis would be the difficulty of widowed men to deal with daily routine activities when compared to married men (food, organization, health-related aspects), while single older women would have more time for daily activities related to leisure when compared to the married ones.

Important associations were found with variables related to social support, such as the participation of women in community associations, a relationship also observed by other authors.[10,28]. Beiing part of a social support network is related to better cognitive and psychological health, as noted by Uchino[28] in a review study on the topic.

Other authors[8,11] also observed associations in a more frequent participation in religious activities. In addition to religious participation representing

an important social support, it should be noted that participating in religious activities is related to higher prevalence of other positive health behaviors such as less consumption of tobacco, alcoholic beverages, and optimism to deal with life's adversities.

Contrary to some studies carried out[8,29] no associations were found with smoking, but associations were found between the regular consumption of fruits and vegetables and the sufficient practice of physical activity during leisure time in women, behavioral variables whose importance and relationship with SPH are already well presented in the literature.[21,30-32]. Avoiding tobacco, consuming fruits and vegetables, as well as practicing physical activity is related to a delay in the onset of chronic non-communicable diseases. (NCD)[33].

The relationship between the frequency of medical appointments and SPH seems to be little explored in the literature, but a possible explanation for the association is that having more frequent appointments or having greater access to healthcare services is related to easier treatment and diagnosis. of diseases and safety regarding their own health condition.

The results presented by the study contribute to the knowledge of factors related to positive SPH in the older population with low education, reinforce the importance of promoting public policies to encourage healthy behaviors and to stimulate social participation. They show the relevance of policies to improve the quality of life of the population with fewer years of education or less access to economic/ social subsidies to facilitate the adoption of healthy behaviors in this population.

The present study has limitations such as the cross-sectional design, which prevents the establishment of the relationship between cause and effect of the variables studied, the weighting method was not used in the analysis and the limited number of variables available and used in the database of PNS, 2019. As positive points, we point out the statistical power that the sample presents and the contribution that the study brings to the literature when relating SPH in the older population with low education.

CONCLUSIONS

The study foundassociations with marital status (higher prevalence in single women and lower in widowed men), higher income, more frequent visits to the doctor and church. Relationships were found only in females who practice sufficient physical activity during leisure time, consume fruits and vegetables and participate in community associations.

The findings reveal the importance of policies to promote healthy behaviors, encourage social participation and more frequent search for healthcare services. Likewise, they demonstrate the importance of public policies to improve the income of the population with lower education, as this variable is intrinsically linked to social inequalities in health.

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