Self-assessment of health status and associated factors in elderly persons registered with the Family Health Strategy of Campina Grande, Paraíba

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Abstract

Objective: To determine the association between negative self-assessment of health status and sociodemographic variables and health indicators in elderly persons registered with the Family Health Strategy of Campina Grande, Paraíba. *Methodology:* A cross-sectional study with home-based primary data collection was carried out among elderly persons of both genders. The variables studied were: self-assessment of health, socioeconomic and demographic factors, number of referred chronic diseases and degree of dependence in basic activities of daily living. Possible factors associated with self-assessment of health were verified through multivariate logistic regression. *Results:* We evaluated 420 elderly persons (68.1% of whom were women) with an average age of 71.57 years. There was a positive association between negative self-assessment of health status and elderly persons with two or three chronic diseases (OR=2.70; CI95%:1.47-4.96), four or more chronic diseases (OR=4.35; CI95%:1,58-12.01), a mild degree of dependence (OR=2.34; CI95%:1.13-4.87), moderate dependence (OR=2.11; CI95%:1.07-4.17) and those who were married (OR=2.46; CI95%:1.01-6.01). *Conclusion:* The results show that the negative self-assessment of health status was associated with the number of referred chronic diseases and degree of dependence in basic activities of daily living. There was also a tendency towards association with married elderly persons. The results suggest the need for actions aimed at the prevention and diagnosis of chronic diseases, as well as the promotion and maintenance of functional capacity and disability prevention or treatment.

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INTRODUCTION

The aging process involves a gradual reduction in health status, which contributes to alterations in the epidemiological profile of individuals. These alterations are characterized by an elevated prevalence of chronic noncommunicable diseases (CNCDs),[1] making it essential to assess the health situation of this segment of the population.

Although indicators such as mortality and morbidity profiles, the presence of physical and cognitive deficits and the use of health services are often used to assess the health status of the elderly population, self-assessments of health status are now being used worldwide.[2-8] In these assessments, the elderly individual is asked a simple question: "How do you feel about your health?" This method is clearly easy to apply, viable and inexpensive.[9]

Studies that use self-assessments of health status reflect objective health conditions in distinct population groups, particularly in terms of quality of life and functional capacity.[10] Self-assessments indicate true health status, based on an integrated view of the individual, including biological, psychological and social dimensions.[11]

Given their multi-dimensional nature, several factors can affect an assessment of health status. Therefore, studies have been developed to determine which variables are associated with a negative self-assessment of health, addressing demographic and socio-economic data, social support, lifestyle, health conditions and the use of services.[11-17]

A study by Lima-Costa et al.[15] used data from the Pesquisa Nacional por Amostra de Domicílios (PNAD) - National Household Sample Survey, which was conducted between 1998 and 2003. The authors confirmed that the variables of *education, number of chronic conditions and number of medical consultations and hospitalizations in the previous 12 months* were positively associated with "poor" or "very poor" self-assessments of health.

Self-assessments of health have also been studied due to their strong association with mortality, regardless of the chronic diseases mentioned or the socio-economic conditions of the individual.[9] In Brazil, a cohort study containing 1667 individuals aged 65 years or more in the municipality of São Paulo-SP (1991 to 2001) reported a significant association between self-assessment of health status and mortality: elderly individuals who assessed their health as good, poor or very poor exhibited a higher death risk than those who assessed their health as excellent.[18] Studies that analyze the determinant factors of self-assessments of health are important, given that interventions related to these factors modify the self-assessment of health and consequently, reduce mortality.[9]

A recent systematic review of literature related to self-assessments of health status in the elderly Brazilian population found very few Brazilian publications on this subject. Most of those that exist are concentrated in the southeast of the country, which prevents comparisons between regions.[19] Therefore, the aim of the present study was to determine the correlation between negative self-assessments of health status and sociodemographic, demographic and health variables among elderly individuals registered with the Family Health Strategy in the city of Campina Grande in the state of Paraiba.

METHOD

The present study is part of a larger study titled: "*Multidimensional assessment of the health of elderly individuals registered with the Family Health Strategy of the municipality of Campina Grande, Paraíba, and their level of satisfaction with the services it provides*". The aim of this larger study is to assess these elderly individuals in terms of their biopsychosocial aspects. This cross-sectional, home-based study gathered primary data.

According to data from the Municipal Health Department, in 2008, there were 23,416 elderly individuals registered with 63 Unidades Básicas de

Saúde da Família (UBSF) - Basic Family Health Units in the six health districts of the municipality of Campina Grande, Paraíba. The sample of the larger study was calculated estimating a prevalence of outcomes of at least 25% (obesity diagnosis). The sample size was calculated using the following equation: $\{[E^2 \times p (1-p)] \times c\}/ A^2$, where: E is the limit of confidence (1.96), c is the coefficient of the sample correlation (2.1), as the sample is a conglomerate, and A is the precision accepted for the estimated prevalence (A=6%). The sample is proportional to each health district, constituting 420 elderly individuals.

One UBSF was selected at random from each of the six health districts. A survey was then performed to determine the quantity of elderly individuals registered. Subsequently, the proportion of elderly individuals per unit was calculated in relation to the total from the six units. Thus, the number of elderly participants was defined as the total number of elderly individuals to be interviewed. The following proportions (quantity) of elderly individuals were interviewed in the six UBSFs: 9.6% (40); 11.4% (48); 14.5% (61); 8.6% (36); 43.3% (182) and 12.6% (53), totaling 420 elderly individuals. In each UBSF, the systematic selection of elderly individuals led to the creation of a list with the names of all registered elderly individuals. The number of elderly individuals to be skipped before the next person on the list to be interviewed was defined based on the ratio between the total number of elderly individuals registered and the number of elderly individuals to be interviewed in that UBSF, which resulted in a value of five. Since the calculation was proportional, the gaps on the list were the same in all of the UBSFs. Therefore, after each person selected, four names on the list were skipped. The fifth name was selected, followed by the 10th, 15th, 20th and so on, in order to obtain a better distribution and ensure that all of the list was used.

Data collection was performed by three pairs of duly trained interviewers between August 2009 and May 2010. The following inclusion criteria were applied: individuals aged 60 years or more; of both genders; who had been selected to make up the sample. The following exclusion criteria were applied: individuals with severe clinical frailty; and no therapeutic possibilities; who were not in Campina Grande, Paraiba for longer than the field research in the area of the UBSF selected.

The dependent variable was the self-assessment of health status, which was assessed based on the answers to the question: "How do feel about your health?" The options given were: excellent; very good; good; normal and poor. For statistical purposes, this variable was dichotomized as a positive (excellent, very good or good) or negative (normal or poor) assessment of health status. The independent variables were demographic and socio-economic variables, the number of CNCDs mentioned and the level of dependence in basic activities of daily living (ADLs).

The demographic data included gender (female, male), age group (60 to 69 years, 70 to 79 years, 80 years or more), color/race (white and non-white) and marital status (single, married, separated, widowed). The socio-economic aspects included years of study (illiterate, one to four years, five to eight years and nine years or more), family arrangements (living alone or with others) and socio-economic level (A/B, C, D/E). The latter was based on the Brazilian Economic Class Criteria, provided by the Associação Brasileira de Empresas de Pesquisa (ABEP).[20]

The following question was used to obtain information about the number of CNCDs mentioned by the participants: "has a doctor or any other health professional ever told you that you have any of these diseases?" The following options were offered: arterial hypertension; cardiac problems; osteoporosis; embolism/stroke; arthritis/arthrosis/rheumatism; diabetes; chronic lung disease and cancer. For statistical purposes, the participants in the present study were classified as follows: no

CNCDs; one CNCD; two or three CNCDs; four or more CNCDs. The Barthel Index (BI)[21] was used to assess the level of dependence during ADLs. This index assesses the individual's functional capacity to execute daily activities, including: feeding themselves; dressing themselves; cleaning themselves; putting their orthopedic device in place; maintaining bladder and bowel control; using the toilet; moving around; climbing and descending stairs; and using a wheelchair. The level of dependence was established in accordance with the BI score, which ranges from 0 to 100. Based on their score, the participants were classified as: independent (100 points); mildly dependent (91-99 points); moderately dependent (61-90 points); severely dependent (21-60 points) or completely dependent (0-20 points).

The statistical analysis was conducted using SPSS 16.0. Logistic regression with bivariate and multivariate analysis was used to determine correlations between self-assessments of health and the independent variables. The explanatory variables that exhibited a significance of $p<0.25$ in the bivariate analysis were inserted in the multiple model. The forward stepwise method was used to introduce the variables into the models. The level of significance was set at $p<0.05$ and the confidence interval (CI) was 95%.

The research containing the data used in the present study received approval from the Research Ethics Committee of the Universidade Estadual da Paraíba (Paraiba State University) under protocol number CAAE: 0228.0133.000-08 and followed all of the precepts of Resolution 196/96 of the Conselho Nacional de Saúde (National Health Council), which governs research involving humans. All of the participants signed a Free and Informed Consent Form after receiving explanations (both verbal and written) concerning the research.

RESULTS

In total, 420 elderly individuals were assessed (68.1% female). Their mean age was 71.57(±9.19) years. Table 1 displays the distribution of the elderly individuals assessed, according to their self-assessment of health, gender and age group. Most of the participants considered their health to be normal (51.4%). Men aged between 70 and 79 years generally considered their health status to be good (41.9%), while normal was the most common rating in the other age groups. In all of the age groups, the female participants considered their health status to be normal.

Table 1. Distribution of the elderly individuals assessed, according to a self-assessment of their health status, gender and age. Campina Grande-PB, 2009-2010.

Gender / Age group	Self-assessment of health status					
	Excellent	Very good	Good	Normal	Poor	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Both genders						
60 to 69 years	9 (4.4)	11 (5.4)	51 (25.0)	110 (53.9)	23 (11.3)	204 (100.0)
70 to 79 years	2 (1.5)	7 (5.2)	38 (27.9)	65 (47.8)	24 (17.6)	136 (100.0)
80 years or more	1 (1.2)	1 (1.2)	21 (26.3)	41 (51.3)	16 (20.0)	80 (100.0)
Total	**12 (2.9)**	**19 (4.5)**	**110 (26.2)**	**216 (51.4)**	**63 (15.0)**	**420 (100.0)**
Male						
60 to 69 years	6 (9.4)	3 (4.7)	19 (29.7)	31 (48.4)	5 (7.8)	64 (100.0)
70 to 79 years	2 (4.7)	3 (7.0)	18 (41.9)	14 (32.6)	6 (14.0)	43 (100.0)
80 years or more	1 (3.7)	0 (0.0)	5 (18.5)	13 (48.1)	8 (29.6)	27 (100.0)
Total	**9 (6.8)**	**6 (4.4)**	**42 (31.3)**	**58 (43.3)**	**19 (14.2)**	**134 (100.0)**
Female						
60 to 69 years	3 (2.1)	8 (5.7)	32 (22.9)	79 (56.4)	18 (12.9)	140 (100.0)
70 to 79 years	0 (0.0)	4 (4.3)	20 (21.5)	51 (54.8)	18 (19.4)	93 (100.0)
80 years or more	0 (0.0)	1 (1.9)	16 (30.2)	28 (52.8)	8 (15.1)	53 (100.0)
Total	**3 (1.1)**	**13 (4.5)**	**68 (23.8)**	**158 (55.2)**	**44 (15.4)**	**286 (100.0)**

Table 2 displays the prevalence rates, demographic factors and socio-economic factors correlated with self-assessments of health status. The results show that gender was positively correlated with self-assessments of health (OR=1.78; CI95%: 1.16-2.72) and five to eight years of study was inversely correlated with self-assessments of health (OR=0.55; CI95%: 0.310-0.990).

Table 2. Prevalence, demographic and socio-economic factors associated with the self-assessment of health status in the elderly. Campina Grande-PB, 2009-2010.

Variables	Positive assessment n (%)	Negative assessment n (%)	OR	CI 95%	*p*-value
Gender					
Male	57 (42.5)	77 (57.5)	1.00	-	-
Female	84 (29.4)	202 (70.6)	1.78	1.16-2.72	**0.008**
Age group					
60 to 69 years	71 (34.8)	133 (65.2)	1.00	-	-
70 to 79 years	47 (34.6)	89 (65.4)	1.01	0.64-1.60	0.963
80 years or more	23 (28.7)	57 (71.3)	1.32	0.75-2.32	0.330
Color/race					
White	69 (33.3)	138 (66.7)	1.00	-	-
Non-white	72 (33.8)	141 (66.2)	0.98	0.65-1.46	0.919
Marital status					
Single	13 (50.0)	13 (50.0)	1.00	-	-
Married	82 (34.5)	156 (65.5)	1.90	0.84-4.29	0.121
Widowed	38 (28.8)	94 (71.2)	2.47	1.05-5.82	**0.038**
Divorced	8 (33.3)	16 (66.7)	2.00	0.64-6.29	0.235
Family setup					
Alone	11 (44.0)	14 (56.0)	1.00	-	-
Accompanied	130 (32.9)	265 (67.1)	1.60	0.70-3.62	0.259
Years of study					
Illiterate	32 (28.6)	80 (71.4)	1.00	-	-
1 to 4 years	58 (31.5)	126 (68.5)	0.869	0.52-1.45	0.593
5 to 8 years	39 (41.9)	54 (58.1)	0.554	0.31-0.99	**0.046**
9 years or more	12 (38.7)	19 (61.3)	0.633	0.28-1.45	0.281
Socio-economic level					
A/B	67 (37.6)	111 (62.4)	1.00	-	-
C	59 (30.7)	133 (69.3)	1.36	0.88-2.09	0.162
D/E	15 (30.0)	35 (70.0)	1.41	0.72-2.77	0.321

OR= *odds ratio*; CI= confidence interval.

Table 3 displays the prevalence rates and health indicators correlated with self-assessments of health among the elderly. The analysis indicates that the number of CNCDs mentioned was positively associated with a negative self-assessment of health status ($p<0.05$). A negative self-assessment of health status was positively associated with mildly dependent (OR=3,00; CI95%:1.49-6.02) and moderately dependent elderly individuals (OR=2.88; CI95%:1.54-5.41) (Table 3).

The following variables were included in the bivariate multiple-model logistic regression analysis: number of CNCDs; level of dependence in ADLs; gender; years of study and marital status. Table 4 displays the final model, containing the variables number of CNCDs, level of dependence in ADLs and marital status.

Participants that mentioned two to three CNCDs (OR=2.7; CI95%: 1.47-4.96) and four or more CNCDs (OR=4.35; CI95%: 1.58-12.01) exhibited a positive association with a negative self-assessment of health status. Mild dependence (OR=2.34; CI95%: 1.13-4.87) and moderate dependence (OR=2.11; CI95%: 1.07-4.17) remained positively associated with a negative self-assessment of health. The multiple analysis confirmed a tendency of positive associations between being married and providing a negative self-assessment of health (OR=2.46; CI95%: 1.01-6.01) (Table 4).

Table 3. Prevalence of heath indicators associated with the self-assessment of health status in the elderly. Campina Grande-PB, 2009-2010.

Variables	Positive assessment n (%)	Negative assessment n (%)	OR	CI 95%	*p*-value
No. of CNCDs mentioned					
0	37 (55.2)	30 (44.8)	1.00	-	-
1	46 (38.3)	74 (61.7)	1.89	1.04-3.46	0.038
2-3	51 (26.6)	141 (73.4)	3.30	1.86-5.86	**<0.0001**
4 or more	7 (17.5)	33 (82.5)	5.80	2.26-14.89	**<0.0001**
ADLs					
Independence	111 (40.2)	165 (59.8)	1.00	-	-
Mild dependence	11 (18.3)	49 (81.7)	3.00	1.49-6.02	**0.002**
Moderate dependence	14 (18.9)	60 (81.1)	2.88	1.54-5.41	**0.001**
Severe or total dependence	5 (55.6)	4 (44.4)	0.54	0.14-2.05	0.364

CNCD= chronic noncommunicable diseases; ADLs= activities of daily living; OR= odds ratio; CI= confidence interval.

Table 4. Multiple analysis of the factors associated with the self-assessment of health status. Campina Grande-PB, 2009-2010.

Variables	OR	CI 95%	*p*-value
No. of CNCDs mentioned			
0	1.00	-	-
1	1.79	0.95-3.35	0.070
2-3	2.70	1.47-4.96	**0.001**
4 or more	4.35	1.58-12.01	**0.004**
ADLs			
Independence	1.00	-	-
Mild dependence	2.34	1.13-4.87	**0.022**
Moderate dependence	2.11	1.07-4.17	**0.032**
Severe or total dependence	0.33	0.08-1.36	0.125
Marital status			
Single	1.00	-	**-**
Married	2.46	1.01-6.01	**0.047**
Widowed	2.16	0.85-5.49	0.107
Divorced	2.51	0.73-8.64	0.146

CNCD= chronic noncommunicable diseases; ADLs= activities of daily living; OR= odds ratio; CI= confidence interval.

DISCUSSION

The present study contains data concerning self-assessments of the health status of elderly individuals. The results of the multiple analysis showed that the number of CNCDs, the level of dependence and marital status were independently associated with self-assessments of health status (adjusted for gender and years of study).

The self-assessment of health status has been shown to be a reliable indicator, with a validity that is equal to other (more complex) measurements of health status, and is also easy to apply.[9,11] Different terms have been used in different studies to denominate self-assessments of health, including self-perception of health,[9,13,22] self-reported health condition,[23] self-reported health status[24] and subjective health status.[25]

In the present study, most of the elderly participants classified their health as normal in self-assessment. The second most common

classification was good. Similar results were found in a study with a representative sample of elderly individuals from Porto Alegre, Rio Grande do Sul, in which 43.2% considered their health to be normal and 34.0% classified it as good.[26] However, a study conducted with 722 elderly individuals in Madrid, Spain reported that the majority (41.8%) classified their health as good, followed by normal (36.6%).[5] The fact that elderly individuals who live in developed countries report a better health status than those living in developing countries could be linked to socio-economic issues, which have previously been addressed in several self-assessment studies.[6,11,13,27] In these studies, better socio-economic conditions were associated with better self-assessments of health status.

In the present study, analysis of the self-assessments per age group confirmed that the oldest individuals provided a greater proportion of poor self-assessments of health. Studies have shown that older elderly individuals generally provide a worse self-assessment than younger

elderly individuals.[28,29] Siqueira et al.[29] compared adults and elderly individuals and found that almost two thirds of the elderly participants considered their health to be normal or poor. This figure was less than 50% among the adults. The results of a telephone survey of Israeli individuals aged between 45 and 75 years showed that self-perceptions of health were negatively associated with age.[2]

Unlike the findings of the present study, a number of previous studies[4,30] have shown that elderly individuals aged 80 years or more reported a better assessment of their health than younger age groups. According to Pagotto et al.,[30] this result is due to a process of acceptance among the elderly, which involves the recognition of a degradation in health conditions as a natural part of the aging process. In the elderly, self-assessments of health are linked to the context in which they find themselves and address the physical and mental alterations that occur in old age, as well as associated cultural and environmental issues.[11] Given the peculiarities of the over 80 age group, studies are required to clarify the behavior of this age group in relation to self-assessments of health.

In the present study, the results of the bivariate analysis of demographic and socio-economic variables showed that gender was positively *associated with self-assessments of health status*, whereas *years of study* exhibited an inverse association with the outcome variable.

Parayba & Simões[31] analyzed the inequalities between the health of elderly men and women in Brazil, noting that elderly women tend to provide worse assessments of their own health than elderly men, with the exception of the over 80 age group, in which the opposite occurs. Since women live longer than men and experience more years of illness and disabilities, they tend to assess their own health in a more negative manner, mainly due to associations between the self-assessment and quality of life.[32]

Concerning education, the study that included elderly PNAD participants (1998 to 2003), as well as the cohort study of elderly individuals in Bambuí, Minas Gerais, confirmed that education was inversely associated with a poor or very poor self-assessment of health in all groups (four to seven years of study; eight years or more of study).[15] Education is a significant mediator between the socio-economic condition and self-assessments of health status.[33] Without doubt, this is due to the fact that individuals with more education and higher income levels have access to goods and services that ensure they have a higher quality of life and consequently, better health conditions.

The quantity of CNCDs and ADLs was also positively associated with self-assessments of health in the bivariate analysis. These variables remained in the final model, together with marital status.

Similar to the present study, a study by Alves & Rodrigues[13] confirmed significant associations between the quantity of CNCDs and ADLs and self-perceptions. However, as well as the variables used in the present study, these authors included instrumental activities of daily living and a variable known as "informant" (referring to the person who took part in the interview, elderly or otherwise), leading to the discovery of associations between these variables and the self-perception of health.

In the present study, CNCDs were positively associated with a negative self-assessment of health status, similar to the results of several other studies.[3,15,16,22,27,32] A study of elderly individuals in São Paulo reported that the presence of four or more chronic diseases was positively associated with a negative self-assessment of health, in both men and women.[34] Considering certain morbidities, a study conducted by Pagotto et al.[30] confirmed an association between a poor perception of health and the presence of diabetes *mellitus* and osteomuscular problems. Molarius & Janson[5] assessed the impact of chronic diseases on the self-assessment of health in a representative sample of the Swedish population and found that chronic diseases were associated with a poor assessment of health among elderly individuals.

This correlation between the presence of CNCDs and a negative self-assessment of health is worrying, considering the high prevalence of chronic diseases among the elderly population. A study conducted by Lima-Costa et al.[1] assessed elderly individuals in Brazil and found that

53.3% exhibited arterial hypertension, 24.2 % had arthritis or rheumatism, 17.3% suffered from cardiac problems and 16.1% had diabetes.

In the present study, the level of dependence in ADLs was positively associated with a negative self-assessment of health status. Similar results have been recorded in other studies conducted in Brazil.[11,13,17] A study in São Paulo[13] showed that elderly individuals who were dependent in ADLs were 2.7 times more likely to classify their health as poor than independent elderly individuals. A sectional study performed with cohort data from elderly individuals in Bambuí in the state of Minas Gerais[11] found a significant association between self-assessments of health and the inability to perform ADLs, with inability classified as limitations while performing one or more of the following activities: cleaning themselves; dressing themselves; moving from a bed to a chair; going to the toilet or feeding themselves. Considering that ADLs are components of functional capacity, other studies have indicated that the decrease in functional capacity among the elderly population is associated with a poor self-assessment of health.[9,23] These findings can be attributed to the fact that aging involves impaired motor performance and consequently, limitations while performing ADLs, leading to negative impacts on the health conditions of these individuals. Thus, the possibility of performing daily activities makes an elderly individual feel healthy.[7]

The present study was affected by the limitations that are inherent to cross-sectional studies. Although associations were found between self-assessments of health and health indicators, it was not possible to establish a causal relationship. In addition, the dependent variable is a perceived condition, which requires more in-depth clarifications concerning the power of psychosocial aspects. Concerning the variable outcome, one must consider that studies use different types of questions, as well as different answer categories. Therefore, there is a need to standardize these

aspects, which will enable comparisons between studies.[11,35]

However, these limitations do not compromise the results of the present study, since the methodological procedures used herein were adequate for the aims of this research. In addition, variables that addressed different domains (demographic, socio-economic and health) were analyzed, thereby contributing to a more comprehensive evaluation of self-assessments of health status, as well as which variables would be associated to self-assessments of health.

CONCLUSION

The results of the present study show that a negative self-assessment of health was associated with the number of chronic diseases mentioned and the level of dependence during activities of daily living, with a tendency to correlate with marital status. These results suggest the need for actions aimed at preventing and diagnosing chronic diseases, as well as others that promote and maintain functional capacity and prevent or treat disabilities. Given that dependence is not a permanent situation, but rather a dynamic process, the evolution of which can be prevented or improved, the importance of an adequate environment and assistance for elderly individuals is clear.

Given these findings, the relevance of understanding the factors associated with self-assessment of health among the elderly is clear, in terms of guiding and improving the care provided to this section of the population, particularly in the context of basic healthcare, which focuses on the promotion and protection of health. Therefore, further studies should be conducted to identify the determinant factors of self-assessments of health status, with a view to the assessment of this indicator becoming a part of routine activity for elderly patients in healthcare facilities.

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