

# Predictors of healthy aging for Brazilian elderly

## Abstract

Healthy aging is a continuous process of learning and personal fulfillment with the objective of autonomy and independence for the elderly. This study proposed to identify the level healthy aging of Brazilians elderly using a simplified form. Ninety-eight community active elderlies from a city in Eastern Amazonia, Brazil, mean age 73.1 ( $\pm 9.1$ ) were evaluated and submitted to study. Canonical discriminant analysis with Lambda de Wilks test were used to validate the score of health aging in three levels, with a significance of 5%. The most important factors in the construction of the healthy aging indicator for this sample of elderly Brazilians were perception of health ( $p < 0.001$ ), perception of quality of life ( $p < 0.001$ ), family relationship ( $p < 0.001$ ) and falls ( $p = 0.001$ ). To concluded, thirteen questions was able to identify healthy elderly. The predictors of healthy aging for this sample of elderly Brazilians were health and positive quality of life, good family support and not having fallen in the last year.

**Keywords:** aged, aging, elderly, questionnaires, healthy aging score.

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## Introduction

Healthy aging is a continuous process of learning and personal fulfillment with the objective of autonomy and independence for the elderly. Different dimensions should be considered in this assessment, such as physical and mental health, independence and autonomy in activities of daily living, participation and social support, social interaction and family support and economic autonomy.<sup>1,2</sup>

However, in less developed countries and regions, resources for long-term evaluations, examinations and follow-up are deficient. This study proposed to identify the level healthy aging of Brazilians elderly using a simplified form.

## Material and methods

We conducted a prospective research approved by Ethical Committee (number 05573218.5.0000.0018) of Universidade Federal do Sul e Sudeste do Pará developed from 2019. Ninety-eight community active elderlies from a city in Eastern Amazonia, Brazil, mean age 73.1 ( $\pm 9.1$ ) were evaluated and submitted to study.

We constructed an offline questionnaire with 13 simple questions in a scale format to measure the healthy aging level of elderly Brazilians, in less than 10 minutes using Microsoft Excel. A score was calculated to classify the elderly in healthy aging: good, moderate, bad. Healthy aging indicates self-perceived health and positive quality of life; be functionally active in daily and instrumental activities without cognitive impairment; be able to walk at least 3 blocks without assistance (good mobility); not having known acute or chronic diseases; consume less than three medications; do not smoke or actively drink, have good community participation and adequate family support.

To measure self-perceived health, quality of life and family support, we used a direct question with 5-point scale (very bad, bad, regular, good and very good). Mobility level was assessed by a single question "Are you able to walk three blocks without assistance?" (yes, no). The presence or absence of chronic or acute diseases known to the elderly was measured by a question with a dichotomous answer (yes, no). The number of falls in last year and number of medications

in use was measured at 0, 1, 2, 3 or more. The functional limitation was investigated by two questions: "How many daily activities (bathing, dressing, feeding, walking, getting out of bed) do you have any difficulties to perform or do you need help?" and "How many more complex activities (preparing to iron your clothes) do you have any difficulty doing or need help?". The possible answers are: none, 1, 2, 3, 4 or all. The elderly person's perception of their cognitive status will be assessed by the question "Have you had any memory problems, forgetfulness in the last year?" (yes, no) and for the emotional state it will be used "Do you feel sad, tired, depressed?" (yes, no). To measure frequency of alcohol intake, we used an question: "On average, how many days a week have you been drinking alcohol (examples: beer, wine, liquor, cachaça)?" whose answers are: none, less than 1 day a week, 1 day a week, 2 to 3 days a week, 4 to 6 days a week and every day. Smoking habit was assessed on an ordinal scale since never smoked and currently smokes one or more cigarettes a day. To measure community participation we used the question "In the last year, did you participate in any community activity to ask for any benefits for your neighborhood/city?" (yes, no).

We also investigated socioeconomic characteristics: age; sex (male, female); marital status (married, separated, single, widowed); education (illiterate, literate); home arrangement (lives with partner, lives with relatives/parents, living alone).

We used Statistical Package for the Social Sciences software version 19 (SPSS) to processed the analyses. Canonical discriminant analysis with Lambda de Wilks test were used to validate the score of health aging in three levels, with a significance of 5%. The objective of discrimination is to maximize the variance between and within groups and to verify the efficiency of the overall correct classification of the model.<sup>3</sup>

## Results & discussion

Most of the elderly were female (68.4%), aged between 60 and 73 years (51.0%), with at least 4 years of study. Forty-four (44.9%) elderly people were married, 33 (33.7%) widowed, 12 (12.2%) divorced and only nine persons (9.2%) were single. A large percentage of the elderly lived with their partners (40.8%) or with relatives (45.9%).

Of the total sample, 40 (40.8%) elderly people were classified as having good healthy aging, 39 (39.8%) as moderate and 19 (19.4%) as poor.

The answers of the elderly to 13 questions about predictors of healthy aging are shown in Table 1. In the canonical discriminant analysis (Figure 1), the test to measure the global significance demonstrated that the first function explains in 91.5% the division of the score into three levels of healthy aging with statistically significant significance ( $p < 0.001$ ) with 85% correlation validating the separation between levels.

**Table 1** Distribution of frequencies about predictors of healthy aging

Variables	n	%
<b>Health perception</b>		
Too bad	2	2,0
Bad	5	5,1
Regular	48	49,0
Good	40	40,8
Very good	3	3,1
<b>Quality of life perception</b>		
Too bad	1	1,0
Bad	1	1,0
Regular	30	30,6
Good	62	63,3
Very good	4	4,1
<b>Community participation</b>		
Yes	83	84,7
No	15	15,3
<b>Relationship with family</b>		
Too bad	4	4,1
Regular	17	17,3
Good	48	49,0
Very good	29	29,6
<b>Dependence on ADL</b>		
0	3	3,1
1	2	2,0
3	3	3,1
4	8	8,2
5	82	83,7
<b>Dependence on IADL</b>		
0	3	3,1
1	3	3,1
3	3	3,1
4	15	15,3
5	74	75,5

Table continue

Variables	n	%
<b>Cognitive deficit</b>		
Yes	54	55,1
No	44	44,9
<b>Mobility</b>		
Yes	23	23,5
No	75	76,5
<b>Depression</b>		
Yes	35	35,7
No	63	64,3
<b>Falls</b>		
0	6	6,1
1	6	6,1
2	12	12,2
≥3	74	75,5
<b>Chronic or acute illness</b>		
Yes	72	73,5
No	26	26,5
<b>Use of medications</b>		
1-5	13	13,3
6-10	70	71,4
≥11	15	15,3
<b>Alcoholic ingestion</b>		
None	1	1,0
1 day a week	6	6,1
2-3 days a week	91	92,9
<b>Smoke</b>		
never smoked	3	3,1
smoked, but now stopped	37	37,8
smokes occasionally (less than 1 per day)	53	54,1
No information	5	5,1

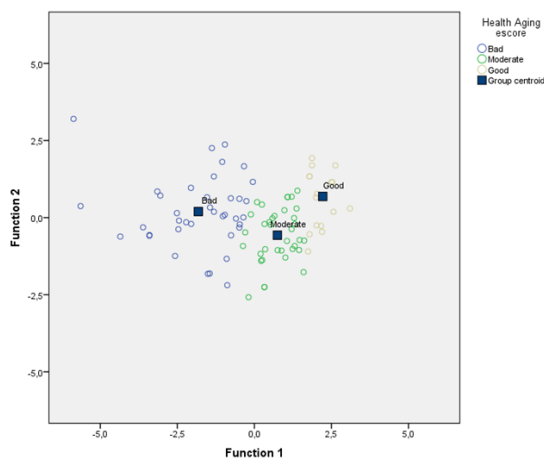
ADL, basic activities of daily living; IADL, instrumental activities of daily living

Different instruments have been proposed to measure healthy aging.<sup>4-8</sup> This study is innovative, as one of the first to propose a specific method of analysis to measure healthy aging in a sample of elderly Brazilians in the Eastern Amazon.

The most important factors in the construction of the healthy aging indicator for this sample of elderly Brazilians were perception of health ( $p < 0.001$ ), perception of quality of life ( $p < 0.001$ ), family relationship ( $p < 0.001$ ) and falls ( $p = 0.001$ ).

Most studies on family support relate to care for the elderly with dementia,<sup>9</sup> depression<sup>10</sup> and chronic diseases.<sup>11</sup> Our results show the value of the family at all times of aging, with one of the most important factors for healthy aging.

Quality of life, physical services, cognitive functions, metabolic and physiological health, psychological well-being and social well-being are the most frequently used domains in studies on healthy aging.<sup>12,13</sup> A prevention program reduced the risk of falls and improved gait and dynamic balance in a sample of elderly Brazilians,<sup>14</sup> in Korea,<sup>15</sup> and in Swedish.<sup>16</sup> Therefore, it is essential to invest in fall prevention programs and actions that value health, well-being and quality of life in aging.



**Figure 1** Canonical discriminant functions based on the health aging level of older people.

Our results indicate that few questions were effective predictors of healthy aging, which can be complemented by more sophisticated tests when necessary. The main limitation of this study is the sample size. On the other hand, it is justified that longitudinal studies with the elderly are expensive and that funding for this type of study in the Amazon region is still unusual.

## Conclusion

To concluded, thirteen questions was able to identify healthy elderly. The predictors of healthy aging for this sample of elderly Brazilians were health and positive quality of life, good family support and not having fallen in the last year.

We suggest other studies with probabilistic samples with complementary clinical examinations may better validate the questions created by this form.

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## Conflicts of interest

The author declares have no conflict of interest about the publication of this paper.

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