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 elders from a city in Eastern Amazonia, Brazil, mean age 73.1 (±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.

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.  

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 0573218.5.0000.0018) of Universidade Federal do Sudeste do Pará developed from 2019. Ninety-eight community active elders from a city in Eastern Amazonia, Brazil, mean age 73.1 (±9.1) were evaluated and submitted to study.

We constructed an offline questionaire 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, forget fullness 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, iterate); 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.  

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%).

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

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

Different instruments have been proposed to measure healthy aging. Different instruments have been proposed to measure healthy aging.4–8 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,9 depression10 and chronic diseases.11 Our results show the value of the family at all times of aging, with one of the most important factors for healthy aging.

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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.\(^{12,13}\) A prevention program reduced the risk of falls and improved gait and dynamic balance in a sample of elderly Brazilians,\(^{14}\) in Korea,\(^{15}\) and in Swedish.\(^{16}\) 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](image_url)  
**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.

**References**

1. Wentian Lu, Hynek Pikhart, Amanda Sacker. Domains and Measurements of Healthy Aging in Epidemiological Studies: A Review. *Gerontologist*. 2019 Jul;59(4):e294–e310.
2. Matthew D L O’Connell, Megan M Marron, Robert M Boudreau, et al. Mortality in relation to changes in a healthy aging index: the health, aging, and body composition study. *J Gerontol A Biol Sci Med Sci*. 2019;74(5):726–732.
3. Hair JF, Black WC, Bahin JB, et al. Multivariate data analysis. Upper Saddle River: Prentice-Hall; 2009.
4. Carrasco M, Martínez G, Foradori A, et al. Identificación y caracterización del adulto mayor saludable. *Rev Med Chil*. 2010; 138:1077–1083.
5. Lu W, Pikhart H, Sacker A. Domains and measurements of healthy aging in epidemiological studies: a review. *Gerontologist*. 2019;59(4):e294–310.
6. Campos ACV, Ferreira EF e, Vargas AMD, Gonçalves LHT. Healthy aging profile in octogenarians in Brazil. *Rev Latino-Am Enfermagem*. 2016;24:e2724.
7. Gonçalves J, Gomes MI, Fonseca M, et al. Selfie aging index: an index for the self-assessment of healthy and active aging. *Front Med (Lanusanne)*. 2017 Dec 22;4:236.
8. Michel JP, Graf C, Ecarnot F. Individual healthy aging indices, measurements and scores. *Aging Clin Exp Res*. 2019;31(12):1719–1725.
9. Boltz M, Kuznik A, Resnick B, et al. Reducing disability via a family centered intervention for acutely ill persons with Alzheimer’s disease and related dementias: protocol of a cluster-randomized controlled trial (Fam-FFC study). *Trials*. 2018;17;19(1):496.
10. Li C, Jiang S, Zhang X. Intergenerational relationship, family social support, and depression among Chinese elderly: A structural equation modeling analysis. *J Affect Disord*. 2019;248:73–80.
11. Zulfirri R, Sabrini F, Herlina. Sociodemographic characteristics and psychosocial wellbeing of elderly with chronic illnesses who live with family at home. *Enferm Clin*. 2019;29(1):34–37.
12. DeokJu K. Correlation between physical function, cognitive function, and health-related quality of life in elderly persons. *J Phys Ther Sci*. 2016;28(6):1844–1848.
13. Campos ACV, Ferreira e Ferreira E, Vargas AM, et al. Aging, Gender and Quality of Life (AGEQOL) study: factors associated with good quality of life in older Brazilian community-dwelling adults. *Health Qual Life Outcomes*. 2014;12:166.
14. Taguchi CK, Beserra GS, Santos RVS, et al. Prevention program for fallings in elderly. *MOJ Gerontol Ger*. 2020;5(4):110–111.
15. Jung Y, Lee K, Shin S, et al. Effects of a multifactorial fall prevention program on balance, gait, and fear of falling in post-stroke inpatients. *J Phys Ther Sci*. 2015;27(6):1865–1868.
16. Stenhagen M, Ekström H, Nordell E, et al. Falls in the general elderly population: a 3- and 6-year prospective study of risk factors using data from the longitudinal population study ‘Good ageing in Skane’. *BMC Geriatr*. 2013;13:81.