

Prevalence and associated factor with frailty syndrome in the Brazilian elderly attended in primary care facilities: a cross-sectional study

Ankilma do Nascimento Andrade Feitosa^{1,2}, Sheylla Nadjane Batista Lacerda^{2,3}, Elisangela Vilar de Assis^{3,4}, Luiz Carlos de Abreu³, Francisco Winter dos Santos Figueiredo¹, Fernando Luiz Affonso Fonseca⁵, Fernando Adami¹

¹Laboratório de Epidemiologia e Análise dos Dados, Centro Universitário ABC (CUABC) – Santo André (SP), Brazil.

²Faculdade Santa Maria (FSM) – Cajazeiras (PB), Brazil.

³Laboratório de Delineamento de Estudos e Escrita Científica, CUABC – Santo André (SP), Brazil.

⁴Universidade Federal de Campina Grande (UFCG) – Cajazeiras (PB), Brazil.

⁵Laboratório de Análises Clínicas da Faculdade de Medicina do ABC (FMABC), Santo André (SP), Brazil.

ABSTRACT

Introduction: Frailty is a multidimensional syndrome that increases the vulnerability in the elderly, decreasing physiological reserves, intensifying the functional decline, being associated with numerous physical changes, determining greater risks to the elderly's health. **Objective:** To analyze the association between frailty and sociodemographic conditions of the elderly met in primary care facilities in the city of Cajazeiras, northeastern Brazil. **Methods:** A cross-sectional study, conducted in July 2015, with 823 elderly people through semi-structured questionnaire containing the proposed frailty criteria by Linda Fried and colleagues, and analyzed using SPSS version 21. The Chi-Square test was used to assess the association between variables, considering $p < 0.05$ as statistically significant. The sociodemographic data were collected using an instrument created by the authors. **Results:** The prevalence of frailty was 23.8% and is associated with older age groups (70-90 years) and older people who did not attend school (25.5%), and the main criterion of frailty found among the elderly was "slow walk" (71.7%). **Conclusion:** The frailty in elderly from Northeastern Brazil is associated with higher age and illiteracy.

Keywords: aging; aged; frail elderly.

INTRODUCTION

Aging is an evident phenomenon in developed countries and, in Brazil, it has occurred in an accelerated way. According to the Brazilian Institute of Geography and Statistics (IBGE), in a population projection disclosed in 2013, the increased relative participation of economic growth development was accentuated¹.

As age advances, the body suffers physiological and non-physiological changes that can be aggravated by behaviors adopted during the life and by the lifestyle that elderly people live currently, making them more likely to develop diseases and syndromes, such as the Frailty Syndrome (FS). FS is considered a clinical syndrome that increases with

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Corresponding author: Francisco Winter dos Santos Figueiredo – Laboratório de Epidemiologia e Análise dos Dados – Centro Universitário Saúde ABC – Avenida Lauro Gomes, 2000 – Sacadura Cabral – CEP: 09615-085 – Santo André (SP), Brazil – E-mail: winterfigueiredo@gmail.com

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age, and causes reduction in efficiency and in abilities to perform important activities of daily living². According to Fried and colleagues, the signs and symptoms inherent to this syndrome are: non-intentional weight lost, exhaustion, decreased grip strength, slow walk and low physical activity³.

Fhon *et al.*⁴ affirm that the frailty is an inevitable consequence of aging, and is related with the different processes of noncommunicable chronic diseases, constituting as a multidimensional syndrome that intensifies the vulnerability in the elderly. This Syndrome deteriorates physiological reserves and promotes functional decline associated with innumerable physical changes. Moreover, it negatively affects the aging process, enlarging the number of people with disability, the demand for healthcare and the costs of health services⁵.

Knowing that the FS is related to age increase and the possible influence between FS and social and demographic factors, which are the factors associated with FS prevalence? To find this possible association, this study analyzed the association between frailty and social demographic conditions of the elderly that live in a city in northeastern Brazil.

METHODS

Study design

Cross-sectional study performed in 2018 with data collected in 2015. The participants were 823 elderly people (aged 60 years or more) met in the primary care facility UBS (*Unidade Básica de Saúde*) in the city of Cajazeiras, located in the countryside of Paraíba State, northeastern Brazil. This number comprises the totality of elderly people met by the UBS of study.

Eligibility criteria

All the elderly registered in the UBS were identified. The elderly who were temporarily or permanently bedridden, or that had some serious disorder that would prevent locomotion and communication, were excluded from this study because they could not perform the tests proposed by the frailty instrument.

Data collection instrument

To analyze the elderly's frailty, the instrument proposed by Fried and colleagues⁶ was used, which assesses five aspects: i) non-intentional weight loss; ii) exhaustion; iii) muscle weakness; iv) low physical activity level and; v) slow walk. The collections were performed in the UBS where the elderly were met.

Non-intentional weight loss was evaluated by the self-report of the elderly' answer to the question: "In last year, did you lose more than 4.5 kg unintentionally, this is, without diet or exercise)? If the answer was yes, the elderly met the frailty criteria for this item.

Exhaustion was evaluated by fatigue self-report according to items 7 ("I felt that everything I did was an effort") and 20 ("I could not get going"), of the 20 scale items about mood, somatic symptoms, interactions with other people and motor operations of the depression scale of Center for Epidemiological Studies CES-D. The answers of the CES-D are as Likert scale rarely or none of the time=0, some or a little of the time=1, occasionally or a moderate amount of time=2, most or all of the time=3. The elderly that answered 2 or 3 in any of the two questions met the frailty criteria for this item.

Muscle weakness was measured by grip strength of the dominant hand with Camryna digital dynamometer, stratified by gender and body mass index, as suggested by Fried and colleagues⁶. The low level of physical activity was measured by a weekly expenditure of energy in kcal, based on the self-report of activities and physical exercises performed, according to the Minnesota Leisure Time Activity Questionnaire⁵.

The slow walk (s) was measured by the gait speed (indicated in seconds) to walk the distance of 4.6 meters, stratified by gender and height, as suggested by Fried *et al.*⁶. The elderly traveled a distance of 8.6 meters, of which the two initial and the last two meters were not considered for the calculation of the time spent on gait, due to acceleration and deceleration periods. The elderly received a verbal command to start the test. The subject should use his/her usual footwear and assistive device for gait (when necessary), walking at his/her usual speed. Three measures were made, and are showed in seconds, considering their average.

According to this instrument, the elderly that did not present any of the five criteria were considered as not frail; those who presented one or two, were pre-frail, and those that had three or more criteria were classified as frail.

In relation to the sociodemographic data, an instrument created by the authors was used, containing the following variables: gender, age group, marital status, educational level, income and number of people living with the elderly.

Statistical analysis

Absolute and relative frequencies were used to describe the sociodemographic characteristics and the elderly frailty. Chi-square test was performed to analyze the association between sociodemographic characteristics and frailty. The Confidence Interval adopted was 95%. The p-values were considered statistically significant when <0.05. The program used was the Statistical Package for the Social Sciences (SPSS 21).

Ethics

All participants agreed to participate in this study. Illiterate participants agreed to participate by putting their fingerprint on the consent form. The research was developed in accordance with

the ethical criteria of researches involving human beings, with the approval of the Research Ethics Committee of the Faculdade de Medicina do ABC, number 236.687.

RESULTS

Table 1 shows the number of subjects that took part in this research (823 elderly people), most of them aged between 60 and 70 years (49.4%), female (60.6%, n=499), married or in a stable union (50.7%, n=417), who did not attend school (66.5%), with income of one minimum wage (57%, n=460) and who lived with more than one person at home (81.9%, n=676), whose frailty prevalence was 23.8%.

According to the percentages of frailty conditions shown in Table 1, 8.1% of the elderly in the sample were considered not frail; 68.1% were regarded as pre-frail; and 23.8%, as frail.

Table 2, which describes the frailty components of the elderly, reveal that most of the participants presented frailty as slow walk

(71.7%, n=588), muscle weakness (66.7%, n=549) and exhaustion assessed by the fatigue self-report (28.3%, n=233).

In Table 3, there is an association of frailty only with age group and educational level (p<0.001 and p<0.001, respectively). The elderly aged from 70 to 90 years presented as frailer than those in other age groups, with 31% in the age group from 70 to 79 years and 34% in the age group from 80 to 90 years. Furthermore, the elderly that did not attend school presented a higher proportion of frailty than those who attended, with 25.5% and 20.4%, respectively.

Table 2: Description of frailty components in the elderly. Cajazeiras-PB, northeastern Brazil, 2018.

Frailty Components	n (%)
Non-intentional weight loss	44 (5.3)
Exhaustion assessed by fatigue self-report	233 (28.3)
Muscle Weakness	549 (66.7)
Low levels of physical activity	89 (10.8)
Slow walk	588 (71.7)

Table 1: Sociodemographic characteristics of the elderly met in primary care facilities. Cajazeiras-PB, northeastern Brazil, 2018.

Characteristics	n	%
Gender		
Female	499	60.6
Male	324	39.4
Age Group		
60-70 years	407	49.4
70-80 years	294	35.7
80-90 years	100	12.2
Over 90 years	22	2.7
Marital Status		
Widow(er)	248	30.1
Divorced	108	13.1
Married or Stable Union	417	50.7
Unmarried	40	4.9
Others	10	1.2
Educational Level		
Attended School	275	33.5
Can read, but did not attend school	37	4.4
Signs the name	200	24.3
Cannot sign the name	311	37.8
Income		
Below 1 Wage	14	1.7
1 Wage	460	55.9
2 Wages	309	37.5
3 Wages	40	4.9
Number of people that live together with the elderly		
One	147	17.9
More than one	676	82.1
Frailty Profiles		
Not frail	67	8.1
Pre-frail	560	68.1
Frail	196	23.8

Table 3: Association between frailty profiles and socioeconomic conditions of the elderly met in primary care facilities. Cajazeiras-PB, northeastern Brazil, 2018.

Characteristics	Frailty			p*
	Not Frail (%)	Pre-Frail (%)	Frail (%)	
Age Group				
60-70 years	47 (11.5)	296 (72.7)	64 (15.7)	<0.001
70-80 years	16 (5.4)	187 (63.6)	91 (31.0)	
80-90 years	4 (4.0)	62 (62.0)	34 (34.0)	
Over 90 years	0 (0.0)	15 (68.2)	7 (31.8)	
Gender				
Female	43 (8.6)	345 (69.1)	111 (22.2)	0.290
Male	24 (7.4)	215 (66.4)	85 (26.2)	
Marital Status				
Widow(er)	15 (6.0)	171 (69.0)	62 (25.0)	0.640
Divorced	10 (9.3)	71 (65.7)	27 (25.0)	
Married or Stable Union	41 (9.8)	283 (67.9)	93 (22.3)	
Unmarried	1 (2.6)	28 (71.8)	10 (25.6)	
Others	0 (0.0)	7 (70.0)	3 (30.0)	
Educational Level				
Attended School	35 (12.7)	184 (66.9)	56 (20.4)	<0.001
Did not attend School	32 (5.8)	376 (68.6)	140 (25.5)	
Income				
Below 1 Wage	4 (28.6)	6 (42.9)	4 (28.6)	0.080
1 Wage	32 (7.0)	319 (70.0)	105 (23.0)	
2 Wages	24 (7.0)	203 (66.1)	80 (26.1)	
3 Wages	5 (13.2)	26 (68.4)	7 (18.4)	
Number of people that live with the elderly				
One	6 (4.1)	104 (70.7)	37 (25.2)	0.145
More than one	61 (9.0)	456 (67.5)	159 (23.5)	

*Chi-square test, p<0.05.

DISCUSSION

The analysis of the association between frailty and sociodemographic conditions in the elderly in northeastern Brazil unveiled that: i) the prevalence of frailty among the elderly was 23.8%; ii) slow walk was the component in which the elderly presented more frailty; (iii) higher prevalence of frailty occurred in the elderly aged between 70 and 90 years and; iv) smaller proportion of frailty among the elderly that attended school.

The prevalence of frailty among the elderly found in this study may be related to the influence of regional diversities, such as different lifestyle. Other studies estimated the prevalence of frailty in the elderly around the country. Reis Júnior,⁷ in a study with the elderly in Bahia, northeastern Brazil, found that 23.8% of the elderly presented with frailty, whereas a research performed in Brasília, Midwestern Brazil, found prevalence of 31%.⁸ Additionally, in southeastern Brazil, this prevalence varies from 31% in Belo Horizonte⁹ to 36.9% in the elderly that lived in the city of São Paulo¹⁰.

The regional difference of the elderly in the age group over 60 years may also be a determinant factor, since life expectancy varies between Brazilian regions and older individuals showed greater chances of frailty due to the aging process, which causes losses and changes in all body systems, in both structural as functional aspects¹¹.

There is a well-known strong association between frailty and age¹², caused by factors that can be more pronounced than other during the physiological aging process¹¹, the frailty can also be influenced by extrinsic factors, such as the schooling.

In Brazil, the elderly still have a schooling considered low, illustrated by the 2010 Census data, in which 30.7% had less than one year of instruction, and the rate of Brazilian illiteracy for the elderly was 26.2%, representing a high illiteracy index, which is associated with difficult access to school, mainly out of big metropolis¹³.

Several studies observed that the elderly can show different schooling levels according to the regions where they live^{14,15}. For example, the elderly living in the southern region showed higher schooling levels when compared to the southeastern region, which can be related to the culture regarding work present in the countryside¹⁶.

The higher proportion of frailty among the elderly that did not attend school and are older causes them to become more vulnerable to physical, psychological and financial violence. However, the association between the elderly living in regions far from big centers and schooling still represents an unanswered gap.

Because of this greater vulnerability, the functional disability of frail elderly ends up being considered a predictive factor of mortality among the elderly. A study with 245 elderly people exposed that this situation can be prevented and/or reversed with greater promotion of technology interaction, exercises and, therefore, psychosocial well-being¹⁷.

Performing the measurements in a single moment, restricting the data and making them punctual, not allowing for the follow-up and temporality, limits the results found. On the other hand, the sample size of this study is one of the largest and most representative of those made in northeastern Brazilian. Moreover, in the site of study, the interregional differences are more pronounced, with difficult access to information and health, low socioeconomic conditions and cultural differences, which make the present study pioneer.

Analyzing the factors related to frailty in the elderly according to the frailty criteria proposed by Linda Fried uncovered that older age groups and illiteracy were associated with frailty.

Frailty syndrome is a challenge in the aging process. When associated with illiteracy, it hinders communication and exchange of information between health professionals and patients. Therefore, health professionals need to be qualified and trained to be able to handle this population and help decrease and/or stabilize the FS among the elderly.

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