

# Frailty Assessment and its Association with Sociodemographic and Health Characteristics in Community Elderly

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## Abstract

**Background:** Frailty assessment in the elderly and its relationship to sociodemographic and health characteristics.

**Method:** Quantitative study, descriptive and cross-sectional study, conducted between April to July 2014, at two Family Health Units in Natal, Rio Grande do Norte. The sample consisted of 203 elderly. The data collection procedure occurred through a structured interview, which used two instruments.

**Results:** The average age of the participants was 68.59 years; among them, 83 (40.89%) did not show weakness, 45 (22.17%) were apparently vulnerable and 75 (36.94%) were frail. The weakness associated with low education, widowhood, heart disease, diabetes mellitus, osteoporosis, respiratory disease, urinary tract infection, depression, six classes of drugs (antidiabetic, antidepressant, anxiolytic, and antacid against osteoporosis) and fall episode.

**Conclusions:** We conclude that assessment of frailty is important to detect the risk and/or embrittlement process already installed in the elderly.

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## Introduction

Frailty is one of the most studied aspects of aging, highlighted in recent years in the national and international scenes [1].

### Keywords

Elderlies. Health of the Elderly.  
Frail elderly.

It is characterized as a syndrome that decreases energy reserve and resistance to stress situations in the individual, resulting in the decline of physiological systems and the efficiency of homeostasis when faced with variations in health status [2, 3].

The frailty syndrome results from the interaction of biological, psychological and social factors throughout the life history, being considered a public health problem, as it relates to negative health outcomes such as functional incapacity, dependence, falls, fractures, institutionalization, chronic diseases, hospitalization and mortality of the elderly [4, 5].

The frail elderly, according to the National Policy for Health of the Elderly (PNSPI), are considered as a group of greater vulnerability to health problems and functional disabilities [1].

According to a research carried out at a geriatric outpatient clinic, between 10 and 25% of the studied elderly population had some clinical condition that could lead to frailty [6], such as the symptoms of unintentional weight loss, weakness, fatigue, low level of physical activity and walking speed decrease [4, 7, 8].

The risk factors for the frailty are the female gender, advanced age, low income, low educational level, non-accessibility to health services, presence of chronic diseases, polypharmacy and sedentary lifestyle [2, 8, 9].

Canadian researchers studied a clinical form to detect frailty for the elderly and developed the Edmonton Frail Scale (EFS). EFS contains nine domains to assess fragility: cognition, functional performance, mood, functional independence, drug use, social support, nutrition, general health, and continence. In Brazil, that scale was culturally adapted and validated; EFS is considered of easy application to health professionals [5].

Therefore, health professionals should seek early assessment of frailty in the elderly, along with social and health aspects, as a way to prevent, treat and rehabilitate the elderly population.

Thus, the frailty process in the elderly population requires investigation in order to identify possible aspects of prevention, and to improve the elderly's quality of life. In this context, the objective was to evaluate the frailty in the elderly and its relation with the sociodemographic and health characteristics.

## Methods

This is a quantitative, descriptive and cross-sectional study, carried out in two Family Health Units (FHU) in the city of Natal, Rio Grande do Norte. Data collection occurred between April and July 2014. The sample consisted of 203 elderly people who used the FHU services during the period of data collection.

For the selection of the elderly, the following inclusion criteria were adopted: being 60 years old or more; being enrolled in the FHU and agreeing to participate in the study, by signing the Informed Consent Form (ICF). There was exclusion of individuals who had severe cognitive and sensory deficits that compromised communication.

The data collection procedure occurred through a structured interview, which used two instruments: 1) Form with sociodemographic and health aspects; 2) EFS.

The sociodemographic and health variables were gender, age, education, marital status, income, retirement, social support, heart disease, hypertension, encephalic vascular accident (EVA), diabetes mellitus (DM), cancer, osteoporosis, respiratory diseases, urinary tract infection, depression, drug class, physical activity, fall episode, smoking habits, alcohol habits, and body mass index (BMI).

EFS includes nine domains: cognition, general health, functional independence, social support, medication use, nutrition, humor, continence, and functional performance. The scores for the classification of frailty are: 0-4 no frailty, 5-6 apparently vulnerable, 7-8 slight frailty, 9-10 moderate frailty, 11-17 severe frailty. In order to facilitate the analysis,

frailty scores were grouped, considering the cut-off point as 7 for the single group of frail elderly (mild, moderate and severe), resulting in three groups: non-frail, apparently vulnerable and frail.

Statistical analysis was performed using the Statistical Package for Social Science for Windows (SPSS), version 20. Descriptive statistics were applied for the data analysis, by means of the distribution of absolute and relative frequency, mean and standard deviation. The comparison of socio-demographic and health variables with frailty was performed using Chi-Square or Fisher's Exact tests. The level of statistical significance was 5%, that is,  $p < 0.05$ .

The Research Ethics Committee of the Federal University of Rio Grande do Norte (UFRN) approved the opinion, under No. 562.327, and Certificate of Presentation for Ethical Assessment (CAAE): 25573313.9.0000.5537, according to Resolution 466/2012 of the National Health Council (CNP).

## Results

Among the 203 interviewed elderly, there was predominance of the following characteristics: 149 (73.40%) were women, 123 (60.60%) were between 60 and 69 years old, 100 (49.26%) had between one and five years of education, (46.80%) were married, 122 (60.10%) had an income of up to one minimum wage, 157 (77.34%) were retired and 144 (70.94%) did not participate in a group of social support.

Regarding the degree of frailty, 83 (40.89%) did not present frailty, 45 (22.17%) were apparently vulnerable and 75 (36.94%) were frail (mild, moderate and severe).

Regarding the health variables, 136 (67.00%) were hypertensive, 161 (79.31%) did not practice physical activity, 108 (53.20%) had smoking habits and 96 (47.29%) were obese.

Moreover, among the variables, the main classes of drugs used by the elderly were antihypertensive, 129 (63.55%), anti-diabetic, 47 (23.15%), antilipe-

mic, 37 (18.23%), against osteoporosis, 38 (18.72%) and anti-inflammatory, 39 (19.21%).

In the comparison of variables, there was a significant association with the presence of frailty and low education ( $p=0.013$ ), widowhood ( $p=0.008$ ), heart disease ( $p=0.016$ ), DM ( $p=0.043$ ), osteoporosis ( $p < 0.001$ ), respiratory diseases ( $p=0.011$ ), urinary infection ( $p=0.012$ ), depression ( $p < 0.001$ ); the five classes of drugs anti-diabetic ( $p=0.016$ ), anti-depressant ( $p < 0.001$ ), anxiolytic ( $p=0.025$ ), antacids ( $p=0.025$ ) and against osteoporosis ( $p=0.000$ ) (**Table 1**).

**Table 1.** Association of the variables with the non-frail, apparently vulnerable and frail classification of the studied elderly, Natal, Rio Grande do Norte, 2014.

Variable	Non-frail		Apparently vulnerable		Frail		P value
	n	%	n	%	n	%	
Education							
Never went to school	12	21.82	17	30.91	26	47.27	0.013
Less than 1 year	00	0.00	01	33.33	02	66.66	
1 - 5 years	46	46.00	15	15.00	39	39.00	
6 - 10 years	25	60.98	10	24.39	06	14.64	
More than 11 years	00	00.00	02	50.00	02	50.00	
Marital Status							
Married	43	45.26	28	29.47	24	25.27	0.008
Single	10	30.30	09	27.27	14	42.42	
Divorced	10	58.82	02	11.76	05	29.41	
Widower	20	34.48	06	10.34	32	55.17	
Heart Diseases							
Yes	11	24.44	08	17.78	26	57.78	0.016
No	72	45.57	37	23.42	49	31.01	
Diabetes Mellitus							
Yes	15	28.85	12	23.08	25	48.07	0.043
No	68	45.03	33	21.85	50	33.11	
Osteoporosis							
Yes	22	24.44	18	20.00	50	55.56	<0.001*
No	61	53.98	27	23.89	25	22.12	
Respiratory Diseases							
Yes	14	25.00	13	23.21	29	51.79	0.011*
No	69	46.94	32	21.77	46	31.29	

Variable	Non-frail		Apparently vulnerable		Frail		P value
	n	%	n	%	n	%	
Urinary Infection							
Yes	27	29.67	23	25.57	41	45.06	0.012*
No	56	50.00	22	19.64	34	30.36	
Depression							
Yes	17	25.00	12	17.65	39	57.35	<0.001*
No	66	48.89	33	24.44	36	26.66	
Class of Drugs							
Anti-diabetic							
Yes	13	27.66	11	23.40	23	48.94	0.016*
No	70	44.87	34	21.79	52	33.34	
Antidepressant							
Yes	02	16.67	00	00.00	10	83.34	<0.001
No	81	42.41	45	23.56	65	34.03	
Anxiolytic							
Yes	05	23.81	02	9.52	14	66.68	0.025*
No	78	42.86	43	23.63	61	33.52	
Antacid							
Yes	03	27.27	00	0.00	08	72.72	0.025*
No	80	41.67	45	23.44	67	34.90	
Against Osteoporosis							
Yes	04	10.53	07	18.42	30	71.05	0.00
No	79	47.88	38	23.03	48	29.09	
Fall Episode							
Yes	29	30.85	18	19.15	47	50.00	0.01
No	54	49.54	27	24.77	28	25.69	

\*: Fisher's Exact Test. Note: n=203

## Discussion

The study demonstrated that the frailty may associate with some socioeconomic and health factors. Among the surveyed elderly, the female gender prevailed and the age group ranged from 60 to 69 years. There was a similar result in studies that aimed to investigate the frailty [1, 6-15]. The large number of women in the surveys can be justified because they are more attentive to health, seek health services frequently, expose themselves to different risks and have better quality of life [10, 11, 13].

There was no significant differences between the presence of frailty and gender and age, but stu-

dies commonly show the relationship of frailty in women and in the eldest elderlies [3, 4, 8, 10, 13, 15, 16]. Thus, frailty syndrome may increase with aging, 10% to 25% above 60 years old, and 46% above 80 years old [10]. However, frailty is not synonymous with advanced chronological age, since it relates to the decline of abilities to perform daily activities [11].

Regarding socioeconomic variables, there was an association between education, marital status and frailty, corroborating, firstly, four studies in which the elderly with low educational level have a greater chance of being frail [12, 13, 15, 16]. On the other hand, individuals with lower levels of education and with low income tend to adopt, more often, a lifestyle that is harmful to health, mainly due to lack of access to and clarification of information [15].

When considering the marital status, widowhood associated with frailty. Widowhood can lead the elderly to isolation and neglect with their own health, generating physical, psychological and behavioral consequences [17].

In the study, elderly people who did not present frailty prevailed. This result may be due to the place of study, a FHU, since independent people with functional capacity preserved seek most frequently FHUs. Others also had similar percentages [2, 4, 7, 8, 10, 12, 13], diverging from other researches that worked with the same object, but in the hospital context [3, 6, 11], as well as at a Long-Term Permanence Institution for the elderly (LTPI) [16, 18], where there was a greater predominance of frailty in the participants, and where there are elderly individuals with comorbidities, cognitive deficits and functional decline [11].

Regarding health characteristics, hypertension, non-practice of physical activity, smoking habits and obesity prevailed. Although the results do not directly associate with the frail elderly in this study, such data serve as an alert for health professionals and services to carry out preventive and rehabilita-

tion measures, since they are predictive variables for other diseases and disabilities.

Obesity compromises the performance of instrumental activities of daily living, exerting effects on the progression of both functional disability and chronic diseases as well as the risk of mortality [9, 19]. Thus, practicing physical activity is an effective non-pharmacological method against overweight to preserve mobility, decrease functional decline and prevent cardiovascular and bone diseases [7, 8, 19].

In addition, the cumulative adverse effects of chronic diseases, along with the aging process, increases the risk of adverse health events, thus making the elderly more prone to becoming frail due to the clinical outcomes they may possibly present [5, 18].

Although frailty does not always relate to the consequences of chronic diseases in the elderly, or vice versa, they may associate with each other, indicating a high risk for events that are harmful to health [18]. Through the results, the frailty associated with heart disease, diabetes mellitus, osteoporosis, respiratory diseases, urinary tract infection and depression. Six studies found similar results, in which half of the results related frailty to heart diseases [2, 10, 12, 19, 20].

Two studies corroborate the previous result. The first one, performed at a LTPI in the city of Fortaleza, considered that 85% of the frail elderly group presented chronic diseases [18]; the second one pointed out that elderly who had two or more diseases are more likely to present frailty [11].

Depression and the use of antidepressants had a strong association with frailty. According to the literature, frail elderly individuals presented 2.6 times greater odds for depressive symptoms [2]. The increasing trend of depressive symptoms relates to health conditions, such as: inactivity, weight loss, exhaustion and reduced level of physical activity [2, 19]. One of the means to combat depression is the participation of the elderly in social support groups, since those services provide self-knowledge,

self-esteem, communication, a sense of belonging to a group, self-confidence before society and the family, protecting them from the onset of emotional and physical illness [21]. In the present study, the elderly's non-participation prevailed, but there was no relation between depression and frailty.

Regarding the use of drugs by the studied elderly, there was an association between frailty and some classes: anti-diabetic, antidepressant, anxiolytic, antacid and against osteoporosis. Similar studies also found the same result [8, 18]. According to the literature, frailty increases the need for and quantity of prescription drugs, such as the aforementioned classes [18].

The increased number of drug use is due to the increase in chronic diseases and sequelae accompanying the advancing age [22]. Therefore, the more drugs the elderly ingested, the greater the risk of drug interaction, side effects, difficulties in administration and forgetting of schedules, reducing the therapeutic effect [1, 8].

Although the antihypertensive did not have a significant difference, that class was the most prevalent in the present study. In another research, for example, the drugs most commonly used by the elderly were also antihypertensive [8].

Another health problem present and with significant difference was the fall episode, similar to studies that had the same results [2, 7, 19]. That process results from the decline of the musculoskeletal system that leads to the reduction of muscle mass, resulting in decreased strength, mobility, balance and tolerance to exercise [8]. The inability to perform activities of daily living, comorbidities, difficulty in locomotion and advanced age are risk factors that can lead to falls, generating consequences such as fractures, dependence, fear of walking, functional decline, hospitalization, institutionalization, increased morbidity and mortality [2, 7]. In this context, the fall can trigger and/or accelerate the frailty [14].

## Conclusions

The results of the study demonstrated that the fragility associated with some sociodemographic and health characteristics, such as low education, widowhood, heart disease, diabetes mellitus, osteoporosis, respiratory diseases, urinary tract infection, depression, the five classes of drugs and the fall. They may be risk factors for the development or progression of the syndrome.

Health professionals are responsible for assessing the process of frailty in the elderly, which is why they should provide health education activities and support to that population, as well as other activities that stimulate their active participation and/or provide preventive or rehabilitation measures. Therefore, every population, regardless of age, must understand that process and seek to acquire healthy habits through living conditions.

The use of instruments to assess fragility may provide positive implications for the elderly and for different life contexts. Thus, it is relevant to use them to detect the risk and/or the process of the already-installed frailty in the elderly, providing the development of preventive actions and/or treatment for the elderly population.

Due to the cross-sectional design, there was no causal relationship between sociodemographic and health conditions with fragility. Nevertheless, the presented results are of great importance to support future studies that apply interventions in the elderly population in different scenarios.

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