


Assessment of frailty in community-dwelling older adults by age group and different instruments

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ABSTRACT

Objective: To analyze frailty in community-dwelling older adults by age group, comparing the degree of agreement and correlation between the EFS and IVCF-20 instruments. **Methods:** This is a cross-sectional study nested in a population-based cohort, with probabilistic, cluster, and two-stage sampling. The first stage considered the census tract as the sampling unit; while the second determined the number of households according to the population density of elderly individuals. The Kappa statistic analyzed the degree of agreement and Pearson's coefficient evaluated the correlation between the instruments. **Results:** A total of 394 community-dwelling elderly were allocated, with a predominance of females (66.7%) and 65 to 69 years of age (26.4%). The prevalence of frailty was higher among the age group of 90 years and over, being 44.4% in both the IVCF-20 and the EFS. There was a higher prevalence of frailty in the elderly aged between 60 and 79 years and slightly higher between 85 and 89 years when using EFS. The Kappa statistic showed a low agreement index (0.399) between the instruments in the age group between 65 and 69 years, while in the age group aged 90 years or older, there was a strong agreement (Kappa 0.775). The IVCF-20 and EFS instruments showed strong agreement and showed greater coherence in the assessment of frailty in the long-lived elderly.

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Conclusion: The IVCF-20 instruments and the EFS showed moderate to strong agreement and positive correlation. In the age groups between 80 and 85 years and 90 years and over, the prevalence of frailty was the same for both instruments, which demonstrates the strong association between frailty and advanced age.

Keywords: Aging, Elderly, Frailty, Frail Elderly, Primary Health Care.



INTRODUCTION

Population aging, evidenced worldwide, especially in Brazil, is expanding considerably and rapidly, causing important changes in the way society is established (Alexandrino et al., 2019). In addition to social, physiological, and psychological changes, this process can trigger multiple syndromes, including frailty, a state of multidimensional change, where physical, psychological, and social factors can cause an increase in the vulnerability of the elderly, resulting in adverse outcomes such as decreased strength, endurance, and physiological function, as well as falls, fractures, hospitalization, disability, and death (Rodrigues et al., 2018; Manfredi et al., 2019).

Frailty Syndrome is related to different risk factors, and there is a consensus on its wide variability of aspects and conditions, including sociodemographic, clinical, lifestyle-related and biological domains, such as advanced age, female gender, ethnicity, access to health care, low education, low socioeconomic status/social vulnerability, isolation and/or loneliness, obesity, malnutrition, depression, cognitive deficit, multimorbidity, smoking, excessive alcohol consumption, and physical inactivity (Tavares et al., 2022).

Recent studies show that frailty has a significant impact on the lives of older adults, their families, and health services (Duarte et al., 2018). Therefore, identifying frail older adults at risk of frailty is of fundamental importance, being a public health priority at all levels of health care (Melo et al., 2022). In the context of Primary Health Care (PHC), the identification of factors associated with frailty in the elderly has the potential to reduce the impacts on the health system through public policies that organize an integrated care model centered on this portion of the population (Maia et al., 2020).

The detection of Frailty Syndrome can be performed through the observation of risk factors and appropriate assessment instruments (Oliveira et al., 2021).

The main tool used to identify the frail elderly is the Comprehensive Geriatric Assessment (AGA), which has an average duration of 60 to 90 minutes and should be applied by a specialized geriatric-gerontological team, in which several scales or instruments are used. Although it allows a global and broad diagnostic process, involving the patient and his/her family, its use in the context of primary care is unfeasible due to the long duration and high volume of care, presenting an unsatisfactory cost-benefit ratio in public health (Moraes et al., 2016; Rolfson et al., 2006).

The instruments that have stood out in the literature for the assessment and screening of frail older adults are the Clinical-Functional Vulnerability Index-20 (IVCF-20) and the Edmonton Frail Scale (EFS), which are among the four most used in relation to clinimetric properties, according to a systematic review that addressed studies from several countries, including Brazil (Faller et al., 2019).



The IVCF-20 has a high degree of validity and reliability, and is viable as a screening instrument in primary care that identifies the elderly with frailty (elderly at risk of frailty and frail elderly) (Moraes et al., 2016). While EFS is a brief, valid and reliable tool (Fabrício-Wehbe et al., 2009; Faller et al., 2019). Both are easy to handle and quick to apply, even by non-geriatric professionals (Fabrício-Wehbe et al., 2009; Faller et al., 2019; Moraes et al., 2016).

Although the literature offers different instruments for assessing frailty, there are few studies that address the comparison and investigate the agreement between them. Such an investigation is relevant because the lack of agreement between the frailty assessment instruments and the inconsistency in their measurement can be a significant source of bias when describing frailty outcomes.

The objective of this study, therefore, is to analyze frailty in community-dwelling older adults by age group, comparing the EFS and IVCF-20 instruments regarding the degree of agreement and correlation.

METHODS

This study is part of a broad project called "Frailty in the elderly: a longitudinal study", developed with the purpose of evaluating the health conditions of community-dwelling older adults in a medium-sized municipality in Minas Gerais, Southeastern Brazil, which has a population of approximately 400 thousand inhabitants and represents the main regional urban center.

This is a cross-sectional study nested in a population-based and household cohort, in which the sampling was probabilistic, by clusters and in two stages. The first data collection is termed the "baseline," while the subsequent collection is termed the "first wave" of the study.

For the sample calculation at baseline, the estimated population of 30,790 elderly people (17,663 women and 13,127 men) living in the urban region was considered, according to the Brazilian Institute of Geography and Statistics (IBGE), confidence level of 95%, conservative prevalence of 50% and sampling error of 5%. As it was a cluster sampling, the number obtained was multiplied by a correction factor and design effect (deff) of 1.5% and increased by 15% for possible losses, with the minimum number of elderly people defined as 656 people.

The inclusion criteria were: being 60 years of age or older, living in the allocated household, and agreeing to participate in the study. Elderly people who were not available to participate in at least three visits, on different days and times, even with prior scheduling, were considered losses. As an exclusion criterion, we considered people over 60 years of age who had not participated in the first data collection and institutionalized elderly.

In the first stage, the census tract was considered as the sampling unit; The neighborhoods, streets and blocks were identified on maps of the census tracts of the urban area of the city. A total of



42 census tracts were randomly selected from among the 362 urban tracts of the city, according to IBGE data.

In the second stage, the number of households allocated was determined according to the population density of elderly people aged 60 years or older, and the sectors with the highest number of elderly people had more households allocated, in order to produce a more representative sample.

Data collection at baseline was carried out between May and July 2013, at the elderly person's home, and 685 elderly people aged 60 years or older were allocated to the study. The interviewers were trained and calibrated according to the Kappa agreement measure (0.8). They went through the census tracts from a previously defined point in each tract to conduct the interviews. In order to define the household to be investigated, the selected sector was visited from its starting point, visiting the households alternately. In the household visited where the elderly person was visited, they were invited to participate in the study; If there were none, the next household was selected, following the criterion of alternate households. If more than one elderly person lived in the household, the oldest one was selected.

In order to continue the investigation, the first wave of the study (second collection) was carried out after an average period of 42 months, from May 2013, between November 2016 and February 2017. At this stage, the home of all the elderly interviewed at baseline was considered eligible for the second interview (first wave).

In the first collection (base year), 685 elderly people were interviewed, of which 54 died, 78 elderly people changed their residence and could not be located, 67 elderly people were not found at home after three visits on alternate days and times, and 92 refused to participate. Thus, there were a total of 394 elderly people who participated in the second collection of the research.

According to the orientation of the data collection instruments, the questions in the questionnaire were answered with the help of family members or companions for the elderly who were unable to answer (Moraes et al., 2016; Rolfson et al., 2006).

The instruments used in this study to assess frailty were the Clinical-Functional Vulnerability Index-20 (IVCF-20) and the Edmonton Frail Scale (EFS). The IVCF-20 consists of 20 questions distributed in eight sections: age (1 question), self-perception of health (1 question), functional disabilities (4 questions), cognition (3 questions), mood (2 questions), mobility (6 questions), communication (2 questions) and multiple comorbidities (1 question); Its score ranges from 0 to 40 and the final score from 0 to 6 points indicates an elderly person at low risk of clinical-functional vulnerability; from 7 to 14, moderate risk; and 15 or more, high risk, potentially fragile (Moraes et al., 2016). The EFS evaluates nine domains: cognition, general health status, functional independence, social support, medication use, nutrition, mood, continence, and functional performance, investigated by 11 items. Its maximum score is 17 and represents the highest level of



fragility. The scores for frailty analysis are: 0-4, no frailty; 5-6, seemingly vulnerable; 7-8, mild frailty; 9-10, moderate frailty; 11 or more, severe frailty (Fabrício-Wehbe et al., 2009).

The results of the frailty condition were dichotomized into two levels: no frailty (final score <15) according to the IVCF 20 assessment, which includes robust elderly people at risk of frailty and with frailty final score ≥ 15 (Ribeiro et al., 2022). On the other hand, the EFS was considered to be without frailty with the final score ≤ 6 , which includes "non-frail" and "vulnerable" elderly people and in the group with frailty (final score >6) which included elderly people with "mild", "moderate" and "severe" frailty (Moraes et al., 2016; Rolfson et al., 2006).

The sociodemographic and economic variables, as well as the characteristics of morbidity and health-related care analyzed were dichotomized into sex (male or female), age group (60 to 64, 65 to 69, 70 to 74, 75 to 79, 80 to 84, 85 to 89 and 90 years and over), marital status (with or without a partner), family arrangement (living alone or accompanied), schooling (up to four years of schooling or five or more years of schooling), literacy (can read or not), own income (yes or no), monthly family income (up to one minimum wage or more than one minimum wage), religious practice (yes or no), presence of a caregiver (yes or no), presence (yes or no) of self-reported chronic morbidities (high blood pressure, diabetes mellitus, heart disease, neoplasia, osteoarticular disease, osteoporosis, pulmonary embolism, stroke, emphysema, asthma), falls in the last 12 months (yes or no), medical visit in the last 12 months (yes or no), hospitalization in the last 12 months (yes or no). Self-perceived health and frailty were also considered independent variables. Self-perception of health was assessed using the question "How do you? Would you rate your state of health?" and, for analysis, a similar study was carried out that attributed the answers "Very good" and "Good" as a positive perception and a negative perception to the sum of the answers "Regular", "Poor" and "Very Poor" (Carneiro et al., 2020).

The data were categorized by age group and a descriptive analysis of the frequency distribution of the independent variables was performed. The prevalence of frailty was also estimated for the two instruments. The Kappa statistic was applied to verify the agreement between the instruments, considering the dichotomization of frailty (frail vs. non-frail) and, to analyze this result, the interpretation proposed by Landis and Koch (Figueiredo et al., 2009) was used. The correlation between the IVCF-20 and EFS instruments was evaluated using Pearson's coefficient, considering the total scores. A final significance level of 5% ($p < 0.05$) was considered for all analyses. The collected information was analyzed using the *Statistical Package for the Social Sciences* (SPSS), version 20 (SPSS for Windows, Chicago, USA).

The research project was submitted to the Research Ethics Committee, according to the parameters of Resolution No. 466/2012 of the National Health Council/Ministry of Health, and was approved by means of Substantiated Opinion No. 1,629,395. The interview was conducted with the



patient's or family's own authorization, after proper guidance and formal consent, through the Free and Informed Consent Form, contemplating ethical aspects and ensuring the secrecy and confidentiality of information in all its stages.

RESULTS

For this study, 394 community-dwelling elderly were allocated, with a predominance of females (66.7%) and the age group of 65 to 69 years (26.4%). Most of the elderly did not have a caregiver (88.3%), had a low level of education (74.9%), had up to 4 years of schooling, had an income equal to or greater than one minimum wage (74.1%) and most lived without a partner (50.5%). Among the elderly females, most were between 65 and 69 years old (29.3%). The majority of those with up to 4 years of schooling were between 75 and 79 years old (23.1%) and among those who received an income equal to or greater than one minimum wage, the majority belonged to the age group between 65 and 69 years old (28.8%). Of the elderly who did not have a caregiver, most were between 65 and 69 years old (29.3%), while most of those who had a caregiver (23.9%) were between 80 and 84 years old. Tables 1 and 2 present the characterization of the population studied, with all data categorized by age group.

Table 1. Sociodemographic and economic characterization of community-dwelling older adults, by age group (N=394). Montes Claros, MG, 2017.

Independent Variables	Age range in years							
	60-64 n (%)	65-69 n (%)	70-74 n (%)	85-79 n (%)	80-84 n (%)	85-89 n (%)	≥ 90 n (%)	
Gender								
Male	9 (6,9)	27 (20,6)	34(26,0)	27(20,6)	20(15,3)	7(5,3)	7 (5,3)	
Female	28(10,6)	77 (29,3)	46(17,5)	53(20,2)	31(11,8)	17(6,5)	11 (4,2)	
Marital status								
With companion	19 (9,7)	63 (32,3)	43(22,1)	40(20,5)	17 (8,7)	9(4,6)	4 (2,1)	
No companion	18 (9,0)	41 (20,6)	37(18,6)	40(20,1)	34(17,1)	15(7,5)	14 (7,0)	
Family Snatch								
Resides alone	6 (12,0)	11 (22,0)	9(18,0)	10(20,0)	9(18,0)	2(4,0)	3 (6,0)	
Doesn't Reside Alone	31(9,0)	93 (27,0)	71(20,6)	70(20,3)	42(12,2)	22(6,4)	15 (4,4)	
Schooling								
Up to 4 years	22 (7,5)	65 (22,0)	65(22,0)	68(23,1)	35(11,9)	23(7,8)	17 (5,8)	
≥ 5 years	15 (15,2)	39 (39,4)	15(15,2)	12(12,1)	16(16,2)	1(1,0)	1 (1,0)	
Can read								
Yes	34 (11,3)	88 (29,3)	63(21,0)	55(18,3)	36(12,0)	17(5,7)	7(2,3)	
No	3 (3,2)	16 (17,0)	17(18,1)	25(26,6)	15(16,0)	7(7,4)	11(11,7)	

Religious practice								
Yes		36 (9,4)	100 (26,2)	77(20,2)	77(20,2)	50(13,1)	23(6,0)	18(4,7)
No		1 (7,7)	4 (30,8)	3(23,1)	3(23,1)	1 (7,7)	1(7,7)	0(0,0)
Own income								
Yes		25 (7,0)	88 (24,8)	77(21,7)	76(21,4)	48(13,5)	23(6,5)	18(5,1)
No		12 (30,8)	16 (41,0)	3 (7,7)	4(10,3)	3 (7,7)	1(2,6)	0(0,0)
Monthly household income								
≤ 1 minimum wage		10 (9,8)	20 (19,6)	22(21,6)	20(19,6)	14(13,7)	9 (8,8)	7(6,9)
≥1 minimum wage		27 (9,2)	84 (28,8)	58(19,9)	60(20,5)	37(12,7)	15(5,1)	11(3,8)
Have a caregiver								
No		35 (10,1)	102 (29,3)	72(20,7)	73(21,0)	40(11,5)	18(5,2)	8(2,3)
Yes		2 (4,3)	2 (4,3)	8(17,4)	7 (15,2)	11(23,9)	6(13,0)	10(21,7)

Source: Prepared by the authors (2024)

Table 2. Characterization of morbidity and health-related care of community-dwelling older adults, by age group (N=394). Montes Claros, MG, 2017.

Independent Variables	Age range in years							
	60-64 n (%)	65-69 n (%)	70-74 n (%)	75-79 n (%)	80-84 n (%)	85-89 n (%)	≥ 90 n (%)	
Hypertension								
Yes	25 (8,9)	72 (25,6)	56 (19,9)	59 (21,0)	36 (12,8)	20 (7,1)	13 (4,6)	
No	12 (10,6)	32 (28,3)	24 (21,2)	21 (18,6)	15(13,3)	4 (3,5)	5 (4,4)	
Diabetes								
Yes	11(11(12,2)	23 (25,6)	18 (20,0)	21 (23,3)	10 (11,1)	5 (5,6)	2 (2,2)	
No	26 (8,6)	81 (26,6)	62 (20,4)	59 (19,4)	41 (13,5)	19 (6,3)	16 (5,3)	
Heart problems								
Yes	9 (8,2)	21 (19,1)	22 (20,0)	24 (21,8)	16 (14,5)	9 (8,2)	9 (8,2)	
No	28 (9,9)	83 (29,2)	58 (20,4)	56 (19,7)	35 (12,3)	15 (5,3)	9 (3,2)	
Tumor malignant - CA								
Yes	2 (5,3)	7 (18,4)	8 (21,1)	5 (13,2)	8 (21,1)	4 (10,5)	4 (10,5)	
No	35 (9,8)	97 (27,2)	72 (20,2)	75 (21,1)	43 (12,1)	20 (5,6)	14 (3,9)	
Osteoarticular Disease								
Yes	20 (10,6)	46 (24,3)	36 (19,0)	42 (22,2)	24 (12,7)	12 (6,3)	9 (4,8)	
No	17 (8,3)	58 (28,3)	44 (21,5)	38 (18,5)	27 (13,2)	12 (5,9)	9 (4,4)	
Osteoporosis								
Yes	14 (9,7)	33 (22,8)	28 (19,3)	29 (20,0)	21 (14,5)	11 (7,6)	9 (6,2)	
No	23 (9,2)	71 (28,5)	52 (20,9)	51 (20,5)	30 (12,0)	13 (5,2)	9 (3,6)	
Pulmonary embolism								
Yes	1 (7,1)	0 (0,0)	4 (28,6)	2 (14,3)	2 (14,3)	2 (14,3)	3 (21,4)	
No	36 (9,5)	104(27,4)	76 (20,0)	78 (20,5)	49 (12,9)	22 (5,9)	15 (3,9)	
Cerebrovascular accident								
Yes	3 (10,3)	7 (24,1)	8 (27,6)	4 (13,8)	3 (10,3)	2 (6,9)	2 (6,9)	
No	34 (9,3)	97 (26,6)	72 (19,7)	76 (20,8)	48 (13,2)	22 (6,0)	16 (4,4)	
The Truth - DPOC								
Yes	2 (6,9)	5 (17,2)	5 (17,2)	9 (31,0)	6 (20,7)	0 (0,0)	2 (6,9)	
No	35 (9,6)	99 (27,1)	75 (20,5)	71 (19,5)	45 (12,3)	24 (6,6)	16 (4,4)	

Asma								
Yes		3 (10,3)	5 (17,2)	5 (17,2)	5 (17,2)	6 (20,7)	2 (6,9)	3 (10,3)
No		34 (9,3)	99 (27,1)	75 (20,5)	75 (20,5)	45 (12,3)	22 (6,0)	15 (4,1)
Self-perception Health								
Positive		14 (7,5)	54 (28,9)	36 (19,3)	39 (20,9)	33 (17,6)	5 (2,7)	6 (3,2)
Refusal		23 (11,1)	50 (24,2)	44 (21,3)	41 (19,8)	18 (8,7)	19 (9,2)	12 (5,8)
Left in the last 12 months								
Yes		13 (10,6)	17 (13,8)	26 (21,1)	31 (25,2)	19 (15,4)	11 (8,9)	6 (4,9)
No		24 (8,9)	87 (32,1)	54 (19,9)	49 (18,1)	32 (11,8)	13 (4,8)	12 (4,4)
Medical consultation in the last 12 months								
Yes		35 (9,7)	96 (26,7)	75 (20,8)	77 (21,4)	41 (11,4)	23 (6,4)	13 (3,6)
No		2 (5,9)	8 (23,5)	5 (14,7)	3 (8,8)	10 (29,4)	1 (2,9)	5 (14,7)
Hospitalization in the last 12 months								
yes		4 (7,0)	8 (14,0)	16 (28,1)	16 (28,1)	5 (8,8)	5 (8,8)	3 (5,3)
No		33 (9,8)	96 (28,5)	64 (19,0)	64 (19,0)	46 (13,6)	19 (5,6)	15 (4,5)

Source: Prepared by the authors (2024)

Among the clinical characteristics, arterial hypertension was the most reported disease, followed by osteoarticular disease. Most of those with these conditions were between 65 and 69 years old, and 25.6% of hypertensive patients and 24.3% of those with osteoarticular disease were in this age group. In addition, most of those who reported negative self-perception of health (24.2%) and who reported medical consultation in the last 12 months (26.7%) were also aged 65 to 69 years. However, the age group of 85 to 89 years is the one with the highest prevalence of elderly people with hypertension (83.3%), negative self-perception of health (79.2%) and the one who had the highest number of medical appointments in the last 12 months (95.8%).

Regarding the prevalence of frailty, the increased risk of this condition was associated with age in both instruments, being more prevalent in long-lived elderly, aged 80 years or older. The prevalence of frailty was higher among the age group of 90 years and over, being 44.4% for both the IVCF-20 and the EFS, in the age group between 85 and 89 years the prevalence was 25.0% for the IVCF-20 and 29.2% for the EFS, and in the age group between 80 and 84 years the prevalence of frailty was 27.5% for both instruments. The analysis of the agreement and correlation between the instruments for the classification of frailty is evidenced by age group, as shown in Table 3.

Table 3. Analysis of agreement for the classification of frailty, according to the Clinical-Functional Vulnerability Index-20 (IVCF-20) and the *Edmonton Frail Scale (EFS)* in community-dwelling older adults, by age group (N=394). Montes Claros, MG, 2017.

IVCF-20	Edmonton Frail Scale (EFS)				Total	Kappa	Pearson
	No fragility		Fragility				
(60-64 years)	(n)	(%)	(n)	(%)			
No fragility	27	81,8	6	18,2	33		
Fragility	0	0	4	100	4		
						0,493	0,811
(65-69 years)	(n)	(%)	(n)	(%)			
No fragility	87	89,7	10	10,3	97		
Fragility	2	29,6	5	71,4	7		
						0,399	0,693
(70-74 years)	(n)	(%)	(n)	(%)			
No fragility	55	82,1	12	17,9	67		
Fragility	3	23,1	10	76,9	13		
						0,461	0,748
(75-79 years)	(n)	(%)	(n)	(%)			
No fragility	56	81,2	13	18,8	69		
Fragility	1	9,1	10	90,9	11		
						0,494	0,759
(80-84 years)	(n)	(%)	(n)	(%)			
No fragility	34	91,9	3	8,1	37		
Fragility	3	21,4	11	78,6	14		
						0,705	0,688
(85-89 years)	(n)	(%)	(n)	(%)			
No fragility	5	83,3	1	16,7	6		
Fragility	2	11,1	16	88,9	18		
						0,684	0,590
(≥ 90 years old)	(n)	(%)	(n)	(%)			
No fragility	7	87,5	1	12,5	8		
Fragility	1	10,0	9	90,0	10		
						0,775	0,730

Source: Prepared by the authors (2024)

The Kappa statistic showed a low agreement index (0.399) between the instruments in the age group between 65 and 69 years, and moderate (0.461 - 0.494) between the instruments in the age groups between 60 and 64, 70 to 74 and 75 to 79 years. Pearson's coefficient, on the other hand, indicated a moderate to strong correlation (0.693 - 0.811) between the instruments applied to these same age groups. Among the long-lived elderly, aged 80 years or older, the Kappa statistic showed a strong agreement index (0.684 - 0.775), while Pearson's coefficient ranged from 0.590 to 0.730, indicating a moderate to strong correlation between the instruments. In the age group equal to or greater than 90 years, there was a strong agreement (Kappa 0.775) and a strong correlation between the instruments (Pearson 0.730).



DISCUSSION

This study found that the IVCF-20 and EFS instruments were equivalent in detecting the prevalence of frailty, however, there was a higher prevalence of frailty in the elderly aged between 60 and 79 years and slightly higher between 85 and 89 years, when using EFS. This finding differs from a study that compares frailty in long-lived elderly people by the IVCF-20 and EFS, where the prevalence of frailty in the long-lived elderly was slightly higher when using the IVCF-20 (Freitas et al., 2023). However, this result is in agreement with other studies in which the identification of frailty was higher when EFS was used (Carneiro et al., 2020; Ribeiro et al., 2022). This discrepancy between the prevalences can be explained by the difference between some components of the two scales and, in addition, similar components are approached differently. EFS uses the clock test to assess "cognition," while IVCF-20 addresses memory through word recall. The clock test requires knowledge of numbers, and the low level of schooling among the elderly evaluated may compromise the result. Thus, poor performance in this test, which increases the prevalence of frailty, may be related to difficulties not necessarily linked to a cognitive deficit (Carneiro et al., 2020; Fabrício-Wehbe et al., 2009).

The prevalence of frailty in the elderly aged 80 to 84 years was 27.5% for both the IVCF-20 and the EFS, and 44.4% in the elderly aged 90 years or older, for both instruments. These data reveal that long-lived patients aged 80 years or older are proportionally more frail, which demonstrates the association between advanced age and frailty, regardless of the instrument, corroborating the results found in other studies (Fried et al., 2001; Marques et al., 2023; Neri et al., 2013). During the aging process, cellular oxidative stress accumulates over the years that induces changes at the cellular and systemic level and resulting in several adverse conditions that increase over the years and provide the condition of fragility. (Melo et al., 2014).

The results also show that the condition of not having a partner was also associated with frailty. Among those who did not have a partner, the age groups of long-lived elderly, aged 80 years or older, is proportionally higher, reaching 77.8% in the age group of 90 years and over.

According to a study carried out with elderly people living in the urban area of the city of Uberaba (Minas Gerais), the condition of pre-frailty was associated with the absence of a partner, a result similar to that found in pre-frail and frail Mexican elderly. This finding presupposes that the frailty syndrome, through its complex interaction between clinical and social factors, can be compromised to the detriment of the rupture and/or absence of social ties, since the marital status is a component of the social support network of the elderly (Pegorari, Tavares, 2014; Sánchez-García, 2013).

With regard to clinical alterations, arterial hypertension was the most reported disease (71.3%). In another study that analyzes the coefficient, associated factors, and causes of mortality in



community-dwelling older adults, the prevalence of hypertension was 70.9% (Boitrago et al., 2021). A similar result was also found in a study that evaluates the prevalence and factors associated with frailty in older adults assisted by the Mais Vida Reference Center for Elderly Health Care in the north of Minas Gerais, where the prevalence of this condition was 76.9% (Carneiro et al., 2017). Systemic arterial hypertension (SAH) is the main NCD among the Brazilian elderly. Changes in the cardiovascular system, promoted by aging, may cause a greater tendency for frailty to worsen due to the cyclical accumulation of deleterious effects on health determined by the two conditions. In addition, it explains, in part, the significant increase in this condition in people over 60 years of age (Feitosa Filho et al., 2019).

Regarding the agreement between the IVCF-20 and EFS instruments, although the Kappa statistic shows a low agreement index (0.399) between them in the age group between 65 and 69 years, there was a moderate agreement (0.461 - 0.494) for the age groups between 60 and 64, 70 to 74 and 75 to 79 years. In addition, Pearson's coefficient indicated a moderate to strong correlation (0.693 - 0.811) between the instruments applied to these same age groups. Among the long-lived elderly, aged 80 years or older, the Kappa statistic showed a strong agreement index (0.684 - 0.775), while Pearson's coefficient ranged from 0.590 to 0.730, indicating a moderate to strong correlation between the instruments. In the age group equal to or greater than 90 years, there was a strong agreement (Kappa 0.775) and a strong correlation between the instruments (Pearson 0.730). This comparison between the IVCF-20 and EFS instruments, analyzed by age group, showed a predominantly moderate to strong agreement and a positive and significant correlation, confirming previous studies (Carneiro et al., 2020; Freitas et al., 2023; Marques et al., 2023; Ribeiro et al., 2022).

When analyzing the age groups comprised by long-lived older adults, the IVCF-20 and EFS instruments showed strong agreement, demonstrating greater coherence in the assessment of frailty, confirming a recent study that compares the scores of such instruments among community-dwelling older adults aged 80 years or older, considering the prevalence and degree of agreement (Freitas et al., 2023).

One of the limitations of this study is that the cross-sectional design does not allow the establishment of a causal relationship. In addition, some independent variables were self-reported, so there may be some divergence between the actual and the reported data. Despite these limitations, this study includes a sample selected in a probabilistic manner, with a very significant number of community-dwelling older adults. In addition, standardized instruments validated among Brazilian older adults and with measurable and comparable methods were used.



CONCLUSION

The IVCF-20 instruments and the EFS showed agreement and positive correlation, predominantly moderate to strong. The prevalence of frailty was higher and slightly higher when EFS was used in the age groups between 60 and 79 years and 85 and 89 years, respectively, which may be related to the assessment of the "cognition" dimension by this instrument.

In the age groups between 80 and 85 years and 90 years and over, the prevalence of frailty was the same for both instruments, which demonstrates the strong association between frailty and advanced age.

The study indicates that age is a preponderant factor in the occurrence of frailty; Therefore, it is necessary for health professionals to have a more accurate look, planning their actions and care not only by population group, but also by age stratification within this population.



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