

Frailty in older adults in the city of São Paulo: Prevalence and associated factors

Fragilidade em idosos no município de São Paulo: prevalência e fatores associados

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ABSTRACT: *Introduction:* Frailty is a preventable and reversible syndrome characterized by a cumulative decline of physiological systems, causing greater vulnerability to adverse conditions. *Objective:* To describe the prevalence of frailty among older adults and analyze its associated factors and progression. *Method:* This is a longitudinal study that used the Health, Well-being, and Aging Study (*Saúde, Bem-Estar e Envelhecimento* – SABE) database of 2006 and 2010. Five components identified the frailty syndrome: weight loss; fatigue; decreased strength, low physical activity, and reduced walking speed. Older adults were classified as “pre-frail” (1-2 components) and “frail” (3 or more). We used a hierarchical multiple multinomial regression to analyze associated factors. *Results:* Out of the total number of older adults ($n = 1,399$), 8.5% were frail, and the associated factors were age, functional impairment, cognitive decline, hospitalization, and multimorbidity. In four years, 3.3% of non-frail and 14.7% of pre-frail older adults became frail. *Conclusion:* Identifying the prevalence of frailty and its associated factors can help to implement adequate interventions early to improve the quality of life of older adults.

Keywords: Aged. Aged, 80 and over. Frail elderly.

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RESUMO: *Introdução:* Fragilidade é uma síndrome evitável e reversível caracterizada pelo declínio cumulativo dos sistemas fisiológicos, causando maior vulnerabilidade às condições adversas. *Objetivos:* Descrever a prevalência de fragilidade entre os idosos, analisar os fatores associados e a evolução da síndrome. *Método:* Estudo longitudinal que utilizou a base de dados do Estudo Saúde, Bem-Estar e Envelhecimento (SABE), nos anos de 2006 e 2010. A síndrome de fragilidade foi identificada por cinco componentes: perda de peso; fadiga; redução de força, de atividade física e de velocidade de caminhada. Os idosos foram classificados como “pré-frágeis” (1-2 componentes) e “frágeis” (3 ou +). Utilizou-se regressão multinomial múltipla hierárquica para análise dos fatores associados. *Resultados:* Do total de idosos (n = 1.399), 8,5% eram frágeis tendo como fatores associados idade, comprometimento funcional, declínio cognitivo, hospitalização e multimorbidade. Em quatro anos, tornaram-se frágeis 3,3% dos idosos não frágeis e 14,7% dos pré-frágeis. *Conclusão:* A identificação da prevalência e dos fatores associados à fragilidade pode ajudar a implementar intervenções adequadas precocemente, de modo a garantir melhorias na qualidade de vida dos idosos.

Palavras-chave: Idoso. Idoso de 80 anos ou mais. Idoso fragilizado.

INTRODUCTION

Identifying, assessing, and treating frail older people tend to be the focus of attention in Geriatrics and Gerontology in this century. This condition is highly prevalent among long-lived older adults, a group that is growing fast in this population. The effective care of these people and the prevention of the syndrome are directly related to the training of qualified professionals in adequate numbers, and with enough resources, recognizing that the assistance given to this group requires special skills and a higher intervention time¹.

Frailty is a clinical syndrome characterized by decreased strength, endurance, and physiological function, which increase the individual's vulnerability to greater dependence and/or dying². Simple and fast screening tests have been developed and validated to allow the identification of frail people since the syndrome is preventable or treatable^{2,3}.

The frailty physiopathological process results from changes in several mechanisms and biological systems culminating in the disruption of the homeostatic balance^{4,5}. In general, the imbalance of multiple systems can lead to an overall decline in the ability of the organism as a whole in tolerating stressors, thus increasing the risk of adverse outcomes associated with frailty⁶⁻⁹.

Such changes could cause a downward spiral of functional decline. Fried et al.⁴ proposed a unique and well-defined pathogenetic mechanism as a decreasing energy cycle whose clinical manifestations would increase as frailty worsened. This cycle (Figure 1) had clinical signs such as decreased strength, fatigue, reduced walking speed, low physical activity, and weight loss^{4,5,10}. The presence of one or two phenotype components evidenced a high risk of developing the syndrome (pre-frail), and three or more components indicated frail older adults⁴. This construct can identify older people with a high risk of disability, falling, hospitalization, fracture, and death^{9,11,12}.

of older adults from cohorts A and B, in 2006, totaling 1,399 subjects. We excluded 14 individuals who had no information about frailty components. The participant older adults had a follow-up after four years to evaluate the progression of the frailty syndrome.

The frailty syndrome was identified based on the phenotype proposed by Fried et al.⁴, which consists of five components:

- unintentional weight loss: we used the question “In the past three months, have you lost weight without following a diet?”. Older adults who reported losing over 3 kg scored in this criterion;
- self-reported fatigue: based on two questions from the Center for Epidemiological Studies – Depression (CES-D), validated for Brazilian older adults²⁴: a) “In the past week, how often have you felt that everything you have done demanded a great effort?”; b) “In the past week, how often have you felt that you could not handle your things?”. The answers to both questions were: 0 = rarely or never (< 1 day), 1 = part of the time (1–2 days), 2 = a moderate amount of time (3–4 days), or 3 = all the time. Older adults who answered “2” or “3” in at least one of the two questions scored positively in this component;
- decreased strength: we used the handgrip strength, measured by a dynamometer. The older adults who scored in this component were in the lowest quintile of distribution, stratified by gender and body mass index quartile (Chart 1);

Chart 1. Cut-off points adopted to operationalize the frailty phenotype. SABE Study. São Paulo, 2006.

Components	Operational Definition
Decreased strength	20% with lower handgrip strength values, according to gender and BMI (kg/m ²): <i>Men</i> <ul style="list-style-type: none"> • Strength ≤ 21.0 kg for BMI ≤ 23.12 kg/m² • Strength ≤ 25.5 kg for BMI 23.12 – 25.5 kg/m² • Strength ≤ 30.0 kg for BMI 25.6 – 28.08 kg/m² • Strength ≤ 27 kg for BMI > 28.08 kg/m² <i>Women</i> <ul style="list-style-type: none"> • Strength ≤ 14.0 kg for BMI ≤ 23.8 kg/m² • Strength ≤ 17.0 kg for BMI 23.9 – 27.1 kg/m² • Strength ≤ 20.0 kg for BMI 27.2 – 30.8 kg/m² • Strength ≤ 23.0 kg for BMI > 30.8 kg/m²
Slow walking speed	<i>Men</i> <ul style="list-style-type: none"> • > 5.0 seconds for height ≤ 1.66 m • > 5.0 seconds for height > 1.66 m <i>Women</i> <ul style="list-style-type: none"> • > 6.0 seconds for height ≤ 1.53 m • > 5.0 seconds for height > 1.53 m
Low level of physical activity	20% with lower calorie expenditure, according to gender <i>Men</i> 390.5 kcal <i>Women</i> 478.15 kcal

- slow walking speed: obtained by the three-meter walking test, part of the Short Physical Performance Battery Assessing Lower Extremity Function²⁵. The older adults who scored in this component were in the highest quintile of distribution, stratified by gender and median height value (Chart 1);
- low level of physical activity: we used the International Physical Activity Questionnaire (IPAQ) filled with self-reported information about walking, moderate activities (light cycling, swimming, dancing, light aerobic exercises, playing recreational volleyball, carrying light weights, working on household, backyard, or garden tasks – sweeping, vacuuming, tending the garden), and vigorous activities (running, aerobic exercises, playing soccer, fast cycling, using a treadmill, playing basketball, working on heavy household, backyard, or garden tasks, and carrying heavy weights).

First, we calculated the time spent (minutes) in performing each activity and curtailed values above 180 minutes. Next, each activity was classified in metabolic equivalent (MET), with walking valuing 3.3 METs; moderate activities, 4.0 METs; and vigorous activities, 8.0 METs. The total of METs performed weekly was estimated by the sum of each type of activity multiplied by time (minutes), number of days, and MET value. Lastly, the calorie expenditure consisted of the total MET of activities multiplied by the division of the older adult's weight by 60. The estimate of weekly calorie expenditure was stratified into quintiles according to gender, scoring in this criterion the older adults classified in the lowest quintile (Chart 1).

We considered “*non-frail*” the older adults who showed none of the five phenotype components, “*pre-frail*” those who presented one or two components, and “*frail*” the ones with three or more components⁴.

Independent variables included:

- sociodemographic and economic characteristics: gender, age, years of schooling, marital status (with or without a partner), living alone, and reported income sufficiency;
- health conditions: multimorbidity, cognitive decline, depression symptoms, functional impairment, and falling and hospitalization in the past year.

We considered multimorbidity the report of two or more chronic diseases such as hypertension, diabetes, cancer, chronic pulmonary disease, heart disease, stroke, joint disease, and osteoporosis. The Mini-Mental State Examination (MMSE) assessed the cognitive state of older adults, considering decline a result ≤ 18 points⁴. The brief version of the Geriatric Depression Scale evaluated depression symptoms, assuming a cut-off point equal to or greater than 6²⁶.

Functional impairment was identified by the reported difficulty in performing at least one of the basic activities of daily living (ADLs) – feeding, bathing/showering, dressing, toileting, transferring, and ambulating – or instrumental activities daily living (IADLs) – managing finances, using transportation, shopping, using the telephone, and taking medicines.

For the analysis, we used the χ^2 test with Rao-Scott correction, taking sample weights into account for estimates with population weights. The hierarchical multiple multinomial analysis evaluated the factors associated with frailty. We adopted a distal-proximal orientation, starting with sociodemographic and economic characteristics (Block 1), followed by variables related to health conditions of older adults (Block 2), considering a significance level of 5%. The software Stata[®], version 11 analyzed the data.

The Committee for Ethics in Research (*Comitê de Ética em Pesquisa – COEP*) of the School of Public Health at Universidade de São Paulo approved the SABE Study in 2006 and 2010.

RESULTS

The sample comprised 1,399 older people who had full data related to frailty, representing 1,019,243 older adults living in the city of São Paulo. In this group, 59.4% were females, 58.9% were 60 to 69 years old, 57.3% reported having a partner, 38.8% stated they had four to seven years of schooling, and 55.1% declared that their income was insufficient for their needs.

Over half of the population reported having two or more diseases (55.8%), with the prevalence of hypertension (62.5%). Part of them showed a cognitive decline (9.4%), depression symptoms (14.2%), and difficulty in performing ADLs (13.2%) and IADLs (45.6%).

The prevalence rates related to frailty components were: 25.2% of decreased handgrip strength, 20.0% of low physical activity, 17.0% of reduced walking speed, 13.2% of fatigue, and 7.8% of unintentional weight loss.

The analysis of cognitive decline revealed statistically significant differences in all components assessed, except weight loss. Non-frail older adults corresponded to 50.0% of the population, pre-frail to 41.5%, and frail to 8.5%, and the proportion of frail older adults was higher among those with decline (38.9%) when compared to those without decline (5.3%) (Table 1). Among frail older adults, 54.7% had multimorbidity and ADL impairment (Figure 2).

The analysis of different ages (Table 2) indicated that the proportion of frailty components increased according to age group and presented statistically significant differences, except for weight loss. The prevalence of frailty was 4.1% for sexagenarians, 8.4% for septuagenarians, 28.0% for octogenarians, and 55.9% for nonagenarians and centenarians.

We found a higher proportion of frail older adults among individuals without a partner (11.7%), the illiterate (15.4%), those with multimorbidity (12.1%), depression symptoms (13.8%), functional impairment in ADLs (36.0%) and IADLs (16.8%), who fell (10.5%), and were hospitalized (26.3%) (Table 3).

The factors associated with pre-frailty and frailty were age (≥ 80 years), functional impairment, cognitive decline, and hospitalization in the year prior to the interview. Perceived income insufficiency and fall were associated only with the pre-frail condition. Older adults who reported multimorbidity had a higher chance of presenting frailty (Table 4).

After four years of follow-up, 71.3% of these older adults were reinterviewed, 11.8% died, 16.6% were not found, and 0.3% were institutionalized. The proportion of deaths among

Table 1. Distribution (%) of older adults according to frailty components and cognitive decline. City of São Paulo, 2006 (n = 1,399).

	Total sample (n = 1,399)	No cognitive decline (n = 1,185)	Cognitive decline (n = 214)	p-value
Low physical activity				
No	80.0	83.0	49.3	0,000
Yes	20.0	17.0	50.7	
Handgrip strength				
Normal	74.8	79.2	30.6	0,000
Decreased	25.2	20.8	69.4	
Walking speed				
Normal	83.0	86.9	45.0	0,000
Reduced	17.0	13.1	55.0	
Weight loss				
No	92.2	92.7	88.0	0.080
Yes	7.8	7.3	12.0	
Fatigue				
No	86.8	88.3	68.0	0.0000
Yes	13.2	11.7	32.0	
Number of components				
0	50.0	53.7	14.5	0.0000
1	28.7	29.6	20.8	
2	12.8	11.4	25.8	
3	6.9	4.8	27.2	
4	1.3	0.5	9.3	
5	0.3	0.0	2.4	
Frailty categories				
No	50.0	53.7	14.5	0.0000
Pre-frail	41.5	41.0	46.6	
Frail	8.5	5.3	38.9	
Total	100.0	100.0	100.0	

non-frail, pre-frail, and frail older adults was 6.0, 13.1, and 39.8%, respectively. The percentage of institutionalized pre-frail and frail older adults was 0.5% and 1.3%, respectively.

The analysis of components of the syndrome in 2010 indicated that 36.0% of older adults demonstrated a low level of physical activity, 25.9% showed decreased muscle strength, 23.4% presented reduced walking speed, 9.9% declared fatigue, and 7.0% reported unintentional weight loss. The prevalence of frailty increased to 9.8%. Progression to frailty was 3.3% among the non-frail and 14.7% among the pre-frail. On the other hand, 27.8% of older adults classified as pre-frail and 9.7% considered frail in 2006 reverted to the condition of non-frail in 2010 (Figure 3).

DISCUSSION

The prevalence of frailty among non-institutionalized older adults was 8.5% and was associated with age, functional impairment, cognitive decline, hospitalization, and multimorbidity.

Authors found a wide variation in prevalence of frailty – 6.9 to 21% for the frail state and 33 to 55% for the pre-frail state. This variability can be justified by the lack of consensus regarding the definition of the syndrome²⁷. However, a systematic review on Frailty Phenotype found a mean prevalence of frail older people of 13.6% (95%CI 13.2 – 14.0) and pre-frail of 33.5% (95%CI 32.9 – 34.1)²⁸.

In Brazil, the Study on Frailty in Brazilian Older Adults (*Estudo sobre Fragilidade em Idosos Brasileiros – FIBRA*) assessed a convenience sample of 3,478 older adults

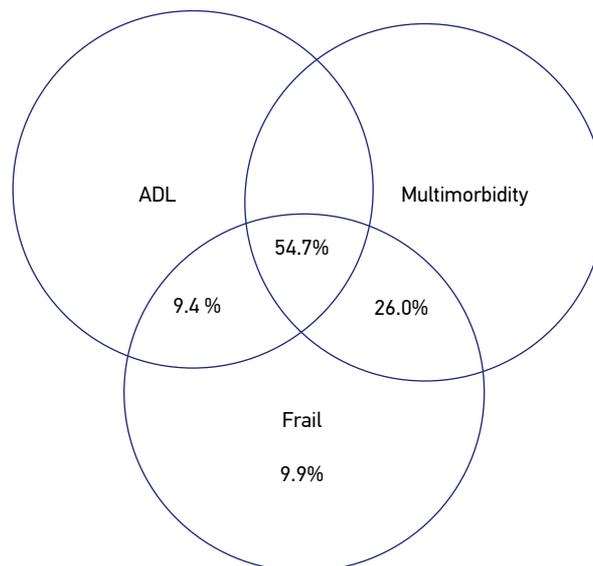


Figure 2. Venn diagram representing the overlap between frailty and impairment in basic activities of daily living (ADL) and multimorbidity (≥ 2 diseases). City of São Paulo, 2006 (n = 1,399).

(65 years and older) in seven Brazilian cities and found 9.1% of frail, 51.8% of pre-frail, and 39.1% of non-frail individuals²⁹. In 2009, the SABE Study conducted in the city of São Paulo evaluated 433 long-lived older adults (age ≥ 75 years) and classified 37% of them as frail³.

Table 2. Distribution (%) of older adults according to sociodemographic, economic, health, frailty, and age group characteristics. City of São Paulo, 2006.

Variables	Age group (years)				p-value
	60 to 69	70 to 79	80 to 89	90 and older	
	%	%	%	%	
Sociodemographic, economic, and health characteristics					
Gender (<i>female</i>)	56.5	61.9	66.3	77.9	0.012
Marital status (<i>without partner</i>)	32.9	50.9	69.2	92.5	
Perceived income insufficiency (<i>Yes</i>)	58.2	52.4	44.1	50.4	0.029
Lives alone (<i>Yes</i>)	10.0	15.8	25.0	11.7	0.000
Multimorbidity (<i>Yes</i>)	49.1	66.2	65.2	57.1	0.000
Depression symptoms (<i>Yes</i>)	14.1	13.5	17.9	7.7	0.463
Difficulty with at least 1 ADL [†] (<i>Yes</i>)	7.4	15.2	34.4	66.4	0.000
Difficulty with at least 1 IADL [‡] (<i>Yes</i>)	35.4	53.1	76.4	92.7	0.000
Fell in the past year (<i>Yes</i>)	25.0	31.8	38.5	32.4	0.002
Hospitalized in the past year (<i>Yes</i>)	6.7	11.8	18.2	27.2	0.000
Frailty					
Low physical activity (<i>Yes</i>)	12.7	23.7	45.8	70.6	0.000
Decreased handgrip strength (<i>Yes</i>)	18.6	27.4	51.8	82.3	0.000
Reduced walking speed (<i>Yes</i>)	10.4	16.7	49.0	75.8	0.000
Weight loss (<i>Yes</i>)	6.4	9.5	11.2	4.6	0.076
Fatigue (<i>Yes</i>)	11.9	13.9	20.3	12.6	0.020
Categories					
Non-frail	58.6	44.7	20.4	8.5	0.000
Pre-frail	37.3	46.9	51.6	35.6	
Frail	4.1	8.4	28.0	55.9	
Total	58.9	30.0	9.6	1.5	

[†]ADL: basic activities of daily living; [‡]IADL: instrumental activities of daily living.

Table 3. Distribution (%) of older adults according to sociodemographic, economic, and health characteristics. City of São Paulo, 2006 (n = 1,399).

Variables	Frailty categories			p-value
	Non-frail	Pre-frail	Frail	
	%	%	%	
Gender				
Male	51.8	41.5	6.7	0.268
Female	48.7	41.6	9.7	
Marital status				
With partner	53.7	40.2	6.1	0.002
Without partner	44.9	43.4	11.7	
Schooling (years)				
Illiterate	35.0	49.6	15.4	0.000
1–3	47.1	42.5	10.4	
4–7	53.3	40.5	6.2	
8 or more	59.2	35.7	5.1	
Lives alone				
No	51.1	40.3	8.6	0.139
Yes	43.2	49.3	7.5	
Multimorbidity				
No	60.6	35.4	4.0	0.000
Yes	41.5	46.4	12.1	
Depression symptoms				
No	57.8	38.4	3.7	0.000
Yes	25.2	61.0	13.8	
Difficulty with at least 1 ADL†				
No	56.0	39.7	4.3	0.000
Yes	10.1	53.9	36.0	
Difficulty with at least 1 IADL‡				
No	62.2	33.3	1.5	0.000
Yes	31.8	51.4	16.8	
Fell in the past year				
No	54.5	37.8	7.7	0.000
Yes	38.5	51.0	10.5	
Hospitalized in the past year				
No	52.6	40.8	6.6	0.000
Yes	25.0	48.7	26.3	
Total	50.0	41.5	8.5	

†ADL: basic activities of daily living; ‡IADL: instrumental activities of daily living. Source: SABE Study, 2006.

Silva et al.³⁰ assessed older adults who participated in a Community Center in the city of Campina Grande/PB and the prevalence of frail older people was 6%, and pre-frail was 71.1%. Augusti et al.³¹ analyzed 306 older adults (≥ 65 years) living in the inland of São Paulo and found 21.5% of frail, 71.5% of pre-frail, and 6.0% of non-frail individuals.

In the present study, older adults with cognitive decline showed a higher prevalence of frailty and pre-frailty. Studies have demonstrated that the mean MMSE score is lower among the frail, negatively impacting the health of older adults, which can accelerate the frailty process^{32,33}. Chen et al.³³ underline that frailty and pre-frailty are reversible and deserve effective interventions to interrupt the progression of the syndrome.

The literature has consolidated that the prevalence of frailty significantly increases among long-lived older adults, corroborating the results found in this study. Fried et al.⁴ identified frailty in 3.9% of older adults aged 65 to 74 years, 11.6% among those aged 75 to 84 years, and 25% in individuals aged 85 years or older. Collard et al.²⁸ also identified a higher prevalence of frailty among older adults aged 80 to 84 years (15.7%) and in those older than 84 years of age (26.1%).

Table 4. Factors associated with frailty and pre-frailty in older adults. City of São Paulo, 2006 (n = 1,399).

Variables	aRRR	95%CI	p-value
Pre-frail*			
Age (80 years or older)	2.77	1.87 – 4.12	0.000
Perceived income insufficiency	1.47	1.07 – 2.02	0.016
Difficulty with at least 1 ADL†	3.20	1.81 – 5.66	0.000
Difficulty with at least 1 IADL‡	1.87	1.32 – 2.64	0.001
Cognitive decline	2.10	1.11 – 3.98	0.023
Fell in the past year	1.56	1.15 – 2.13	0.005
Hospitalized in the past year	2.05	1.13 – 3.71	0.019
Frail**			
Age (80 years or older)	5.35	2.54 – 11.24	0.000
Difficulty with at least 1 ADL†	8.97	4.41 – 18.22	0.000
Difficulty with at least 1 IADL‡	5.70	1.45 – 22.37	0.013
Cognitive decline	7.37	3.41 – 15.91	0.000
Hospitalized in the past year	3.68	1.89 – 7.16	0.000
Reported multimorbidity	2.70	1.34 – 5.40	0.006

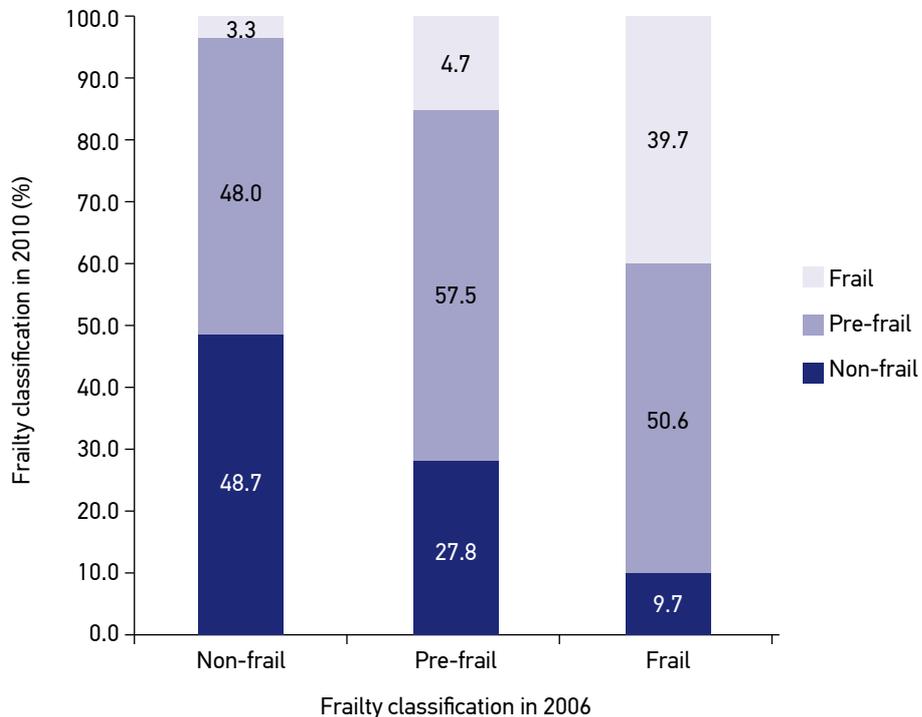
*Model adjusted for gender, schooling, and multimorbidity; **model adjusted for gender, schooling, perceived income sufficiency, and fall; †ADL: basic activities of daily living; ‡IADL: instrumental activities of daily living; aRRR: adjusted relative risk ratio.

In a study conducted in various Brazilian localities, evaluating older adults aged 60 years and older, the prevalence of frailty corresponded to approximately 9% of the total population, but this number increased in older age groups – 11.8% for those aged 75 to 79 years, and 19.7% for those aged 80 years and older, results close to the ones found in this study²⁹. Sánchez-García et al.³⁴ evaluated 1,252 older adults in Mexico City and found that the proportion of frail individuals was 1.8% among 60- to 69-year-olds, 7.7% among 70- to 79-year-olds, and 22.8% among those aged 80 years and older.

The research findings indicate that older adults who fell in the previous year had higher chances of pre-frailty. Frailty and falls can be bidirectionally related. In the same way that falling could lead older adults to frailty, frailty could lead them to fall^{4,35}. The association between fall and frailty can cause other health issues such as reduced functional capacity and hospitalization, worsening the quality of life of older adults³⁶.

Another factor associated with pre-frailty was the report of income insufficiency. Studies have shown that higher incomes have a positive effect on frailty since purchasing power can provide and reflect a higher degree of psychophysical well-being and, consequently, less dependence in activities of daily living^{4,37-39}.

This study associated older adults hospitalized in the previous year with pre-frailty and frailty. A systematic review showed a significant relationship between frailty and a higher



Source: SABE Study, 2006–2010.

Figure 3. Progression of older adults according to frailty classification. City of São Paulo (SP), 2006–2010 (n = 823) (p= 0.000).

risk of hospitalization²⁸. Avila-Funes et al.⁴⁰ monitored 6,030 French older adults, and, during the four years of follow-up, 30.2% of frail, 23.5% of pre-frail, and 20.5% of non-frail individuals had at least one hospitalization, regardless of their cognitive state.

This study associated multimorbidity with frailty, as did other studies^{20,41}. Bergman et al.⁴² believe in the probability that the frailty preceding the onset of chronic disease is only its subclinical and not diagnosed manifestation.

Frailty is not synonymous with multimorbidity and disability; each one has specific care needs for older adult patients¹¹. The concept of frailty provides a foundation that departs from approaches based on organs and diseases to adopt one of integration based on health. Some studies suggest that increased vulnerability might precede the onset of chronic diseases^{42,43}.

In the follow-up, we found that the frailty condition had worsened for most older adults – among individuals classified as non-frail at the beginning of the study, less than 50% remained in this group after four years.

Despite not being a condition inherent only to normal aging, frailty can progress as a result of physiological changes, regardless of diseases or incapacity, such as sarcopenia and anorexia related to aging. However, in most cases, frailty settles in more quickly or worsens with the presence of chronic diseases that accelerate the process of losing endurance to stressors. The data revealed in the present study corroborates this fact, given that 48.7% of non-frail participants remained in this category, despite their age, which demonstrates that frailty is not necessarily a condition inherent to normal aging – relatively healthy individuals can remain non-frail as they grow old.

In addition, another important result found was the fact that a significant part of the population reversed the development of the syndrome in the follow-up period. Among older adults considered frail at the beginning of the study, almost 51% changed their condition to pre-frail, that is, improved in one or more components. Most older adults classified as pre-frail at the beginning of the study remained in this condition, but approximately 28% moved to the non-frail group, that is, these individuals no longer scored in any component of the syndrome.

The longitudinal study *Progetto Veneto Anziani*, conducted with 2,925 individuals in Italy, revealed that among frail older adults approximately 40% died, and 26.5% returned to a pre-frail condition. Among non-frail subjects, 50% remained in this group, 26.7% became pre-frail, 6.3% progressed to frail, and 17.0% died. Out of pre-frail individuals, 12.3% reverted to non-frail, 20.7% became frail, and 36.4% continued in the same state³⁹.

This finding is important as it corroborates the assertion of researchers in the area who claim that frailty is a reversible syndrome, that is, with targeted preventive and recovery actions, it is possible to revert some of the components shown and reduce the risk of frailty^{4,32,44}.

Effective interventions, such as physical activities, physiotherapy exercises, and adequate diet, not only can restrain the progress of the syndrome but reverse it after its establishment. Regular physical activity reduces the risk of frailty and promotes health benefits, including improved quality of life and reduced risk of chronic diseases^{45,46}. Regarding adequate diet, the Study on Nutrition and Cardiovascular Risk Factors (*Estudio de Nutrición y*

Riesgo Cardiovascular – ENRICA), developed in Spain during two years, with 2,614 older adults, showed associations between higher intake of animal protein and reduced risk of slow walking speed, and between higher intake of monounsaturated fatty acids and lower risk of unintentional weight loss⁴⁷.

Lastly, the findings of this study can provide information about older adults with a high risk of disability and worse prognosis, and help to identify reversible risk factors.

CONCLUSION

The results of this study show that half of the older adults were frail or in the process of becoming frail and that the syndrome was associated with advanced age, functional impairment, multimorbidity, and cognitive decline.

Identifying the prevalence of frailty and its associated factors is important for the development of healthcare policies since this syndrome is predictable and preventable. Implementing adequate interventions can contribute to the treatment and reversal of the syndrome, which could improve the quality of life of older adults and delay adverse events.

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