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Níveis de fragilidade de idosos e sua associação com as características sociodemográficas

# Frailty levels of elderly people and their association with sociodemographic characteristics

Níveis de fragilidade de idosos e sua associação com as características sociodemográficas

Niveles de fragilidad de ancianos y su asociación con las características sociodemográficas

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**Abstract**
**Objective:** Verify the association between frailty in the elderly and sociodemographic characteristics.
**Methods:** Cross-sectional population-based study, involving 555 elderly assigned to the Family Health Strategies in the urban region of a city in the Northwest of Rio Grande do Sul/ Brazil. The data were collected between April and December 2015, using an interview with sociodemographic characteristics and assessment of frailty according to Fried's criteria: unintentional weight loss in the past year, grip strength; gait speed, level of physical activity and self-referred fatigue. Descriptive and analytic statistics were used.
**Results:** It was evidenced that, in the older and female elderly, the prevalence of frailty is higher. An association between marital status and housing was observed when analyzed in relation to sex; in addition, when the frailty components were observed, fatigue was associated with sex. In the bivariate and multivariate analysis, relating frailty with the sociodemographic variables, it was verified that age influences frailty. Also, the prevalence of frailty in the study population surpasses that in other Brazilian studies.
**Conclusion:** The results appoint aspects related to family care and support for the elderly, which are that necessary as old age advances. Despite the importance of incorporating this care and support into the health teams' routine for all elderly assigned to the coverage area of the Family Health Strategy, based on our results, elder and female elderly who live alone should receive priority in primary health care.

**Resumo**
**Objetivo:** Verificar a associação da fragilidade de idosos com as características sociodemográficas.
**Métodos:** Estudo transversal de base populacional, com 555 idosos adscritos as Estratégias Saúde da Família da área urbana de um município do noroeste do Estado do Rio Grande do Sul/ Brasil. Os dados foram coletados de abril a dezembro de 2015, por entrevista com caracterização sociodemográficas e avaliação da fragilidade conforme critérios de Fried: perda de peso não intencional no último ano, força de preensão; velocidade da marcha, nível de atividade física e fadiga autorreferida. Utilizou-se estatística descritiva e analítica.
**Resultados:** Evidenciou-se que nos idosos mais velhos e do sexo feminino a prevalência de fragilidade é maior. Observou-se associação entre estado civil e moradia quando analisado em relação ao sexo; também, quando observado os componentes da fragilidade a fadiga mostrou associação com o sexo. Na análise bivariada e multivariada, relacionando fragilidade com as variáveis sociodemográficas constata-se que a idade influencia na fragilização. Ainda, destaca-se que a prevalência de fragilidade na população do presente estudo está acima de trabalhos de referência nacional.
**Conclusão:** Resultados apontam para questões relativas ao cuidado, apoio e suporte ao idoso por seus familiares, tão necessários com o avanço da velhice. Não obstante da importância de que isso seja incorporado na rotina das equipes de saúde para todos os idosos adstritos a área de cobertura de Estratégia de Saúde da Família com base em nossos resultados idosos mais velhos, do sexo feminino, e que residem sozinhos devem ser priorizados na atenção básica.

**Resumen**
**Objetivo:** Verificar la asociación de la fragilidad de ancianos con las características sociodemográficas.
**Métodos:** Estudio transversal de base poblacional, con 555 ancianos adscriptos a las Estrategias Salud de la Familia del área urbana de municipio del noreste de Rio Grande do Sul/Brasil. Datos recolectados de abril a diciembre de 2015 por entrevista con caracterización sociodemográfica y evaluación de fragilidad según criterios de Fried: pérdida de peso no intencional en el último año, fuerza de prensión; velocidad de marcha, nivel de actividad física y fatiga autorreferida. Se utilizó estadística descriptiva y analítica.
**Resultados:** Se evidenció que en ancianos mayores de sexo femenino, la prevalencia de fragilidad es mayor. Se observó asociación entre estado civil y residencia analizándoselos en relación al sexo. En el análisis bivariado y multivariado, relacionando fragilidad con las variables sociodemográficas, se constata que la edad influye en la fragilización. También se destaca que la prevalencia de fragilidad en la población del presente estudio es superior a la de trabajos de referencia nacional.
**Conclusión:** Los resultados indican cuestiones relativas al cuidado, apoyo y soporte al anciano de sus familias, tan necesarios en la vejez. Más allá de la importancia de que ello sea incorporado en la rutina de los equipos de salud para todos los ancianos adscritos al área de cobertura de la Estrategia Salud de la Familia, según nuestros resultados, los ancianos mayores, de sexo femenino y que residen solos, deben priorizarse en la atención básica.

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## Introduction

Frailty in the elderly is defined as a multifactorial clinical syndrome, characterized by decreased energy reserves and reduced resistance to stressors, conditions that result from the cumulative decline of the physiological systems associated with aging, which results in a state of greater vulnerability.[1,2]

In this sense, the increase in the elderly population represents the need for new perspectives on health. Interferences in the aging process, such as illness, accidents and emotional stress, can trigger pathologies or weaknesses that require assistance and follow-up by teams working in Primary Health Care (PHC). It is important that these professionals provide care in a comprehensive manner and recognize the environment these subjects are inserted in.[3]

Taking into account the growth of the Brazilian elderly population, accompanied by a three-year increase in life expectancy at birth in the last decade, specific initiatives for the elderly population have become necessary. In Brazil, it is estimated that, in the year 2020, there will be 21.2 elderly people per 100 people of working age, which could reach 51.9 in 2050 according to projections of the Brazilian Institute of Geography and Statistics (IBGE).[4] According to data from IBGE, the population of the city in the most recent census was 82,563 inhabitants and 11,490 elderly, representing 13.9% of the population; 4,917 (42.8%) men and 6,573 (57.8%) women.[4] The relative growth of the elderly population, by age group, was significant, especially in the age group of 80 years or older, which presented an increase by 69.4%.[5]

Aging is complex, and its concept and approach need to accompany this complexity. It can be defined as a sequential, individual, cumulative, irreversible, universal, non-pathological process of deterioration of a mature organism, proper to all members of a species, so that time makes it less able to cope with the environmental stress and thus increases its possibility of death.[6]

Studies that identify frailty have been developed in several countries, such as Germany where, even with the third largest population of people aged 60 years old or more in the world, the prevalence of frailty is lower when compared to other European countries.[7] In Portugal, a study demonstrates a prevalence of 34.9% of frail elderly in a sample of 339 participants.[8] In Brazil, in Belém do Pará, 23% of the elderly who participated in the study were frail,[9] against 8.7% in Minas Gerais.[10]

As Rio Grande do Sul is the second Brazilian state with the largest proportion of elderly people (13.5%),[4] it is fundamental to establish criteria that permit the identification of elderly people who are in the subclinical condition of the syndrome and, therefore, eligible for preventive interventions. In addition, it is also important to identify those people where the syndrome has established, who require interventions that delay or reduce its effects, in order to preserve the autonomy and independence of the elderly longer.[6]

In this perspective, the diagnosis of frailty in the elderly in an interior city in the State of Rio Grande do Sul provides parameters to think and act in the aging process. Therefore, the objective of this study was to verify the association of the elderly's frailty levels with their sociodemographic characteristics.

## Methods

This study is part of the research "The health of the elderly in primary care", executed at *Universidade Regional do Noroeste do Estado do Rio Grande do Sul - Unijuí*. This is a cross-sectional, analytic, population-based survey; carried out in a medium-sized city located in the Northwest of the State of Rio Grande do Sul - Brazil, 2015. The study population consists of elderly people, aged 60 years and over, both sexes, assigned to twelve Family Health Strategies (FHS) in the urban area of the city.

The data of the Basic Care System were used as the basis for the sample calculation.[11] The total number of elderly persons enrolled in FHS in the urban area during the period was 5,269; 2,203 (41.8%) were male and 3,056 (57.9%) were female.

To estimate the sample size, we defined a tolerable sampling error of 5%, statistical power of 80% and representativeness close to the aging rate of the

city; reaching 738 elderly individuals with a 14% representativeness; we opted for non replacement.[12]

Elderly patients who underwent surgical procedures in a hospital environment within a period of less than 30 days were excluded from the study. Elderly who were but whose caregiver answered the research instrument, were included in the study. If the caregiver had less than 30 days of time with the elderly, who was in no physical and/or mental, they were excluded. To identify these conditions, the following aspects were observed: capacity to speak and understand simple questions of temporal and spatial orientation, such as (name, age, where (s) he lives, day of the week and year); and individuals who had caregivers with less than 30 days of time with the elderly.

Elderly in these conditions were included because we considered that these are the most sick and frail elderly; and caregivers with more than 30 days of time with the elderly because they were more familiar with the elderly's disease history. Due to the physical disabilities of the bedridden elderly, anyone in this condition was classified as "frail". The research team collected the data at the home of the elderly.

After applying the inclusion and exclusion criteria and considering valid answers, we obtained 555 elderly people. The reasons for loss were: seven recent hospitalizations; two deaths; 22 changed address. Ninety refused to participate and, in 62 questionnaires, not all questions had been answered.

The selection of the elderly was carried out using the stratified proportional sampling technique. This technique divides the population into subgroups according to certain characteristics, such as age group, selecting a random sample from each of these strata. In this study, each FHS corresponded to a stratum and the proportionality of the sexes was respected for the draw of the elderly.

To obtain the variables of interest, we used an instrument developed by the researchers (structured interview / anamnesis) and functional physical evaluation. To characterize the sociodemographic profile of the population, a structured interview was conducted, containing the following information: age, sex, marital status, personal income and educational level. To assess the frailty, Fried's criteria

were used:[1] unintentional weight loss in the last 12 months, gait speed, grip strength; level of physical activity; and self-reported fatigue, a model used by the FIBRA study.[13] They were categorized as: Frail (elderly individuals with three or more frailty criteria, pre-frail (elderly individuals with one or two frailty criteria, Non-frail (elderly who did not present any of the frailty criteria).

Unintentional weight loss in the previous year was obtained by asking the elderly if unintentional weight loss occurred in the previous 12 months; and if so, the amount in kilograms of the loss was questioned. A weight loss of 4.5 kilograms or 5% of body weight was used as a cut-off point.[1] Hand grip strength was evaluated using an E-Clear EH101 dynamometer, placed in the dominant hand of each elderly. Low grip strength was considered as levels located among the lowest 20% of the distribution of means of the tree attempts made, mean values being adjusted by sex and BMI (Kg/m2).[14]

The gait speed was measured by timing the time in seconds that each elderly person takes to walk 4.6 meters, in usual steps. Slow gait speed was indicated by the highest 20% of the time the elderly spent to cover the 4.6 meter stretch, with averages of the three attempts adjusted by the median height for men and for women. Low gait speed was indicated by the highest 20% (80th percentile) of the time the elderly spent to cover 4.6 meters.[13-16]

And the level of physical activity was identified based on items from the Minnesota Leisure Time Activity Questionnaire.[16] Seniors were considered active if they performed 120 minutes per week on vigorous physical exercises and/or sports, equal to values greater than 6 Metabolic Equivalent MET); which is the energy expenditure calculated indirectly by the instrument; or those who accumulate more than 150 minutes per week on physical exercise and sports of moderate intensity (from ≥ 3 MET to ≤ 6 MET). For the level of physical activity component, it was established that elderly who scored below the 1st quintile were classified as low calorie expenditure or inactive.[15]

And Fatigue was evaluated using questions drawn from the CES-D (Center for Epidemiological Studies - Depression),[16] based on the following

questions: (1) do you feel that you had to make an effort to do normal tasks?(2) are you unable to carry out your activities?. [16-19]

The data obtained were analyzed using Statistical Package for the Social Sciences (SPSS) (version 18.0). Descriptive and analytical statistical tools were used, considering the nature of the variable, quantitative or qualitative. Descriptive statistics were used for central tendency, dispersion and variability measures. For the analytical statistics of quantitative variables, the non-parametric test to compare means for independent samples (Mann-Whitney test) was used.

A bivariate analysis (chi-square test) was performed and the prevalence ratio (PR) was calculated with a 95% confidence interval. Multivariate analysis was used to determine the contribution of each covariate to the frailty. Therefore, binary logistic regression was applied, using the Wald method based on two categories: Prefrail/frail and non-frail elderly. Statistical significance was set as p <0.05.

The study received approval from the Research Ethics Committee (CEP) of *Universidade Regional do Noroeste do Estado do Rio Grande do Sul* (UNIJUI), registered under consolidated opinion 961.205/2015. Participants signed two copies of the Free and Informed Consent From (TCLE).

## Results

The mean age of the study participants was 71.1 ± 8.3 years, with a minimum age of 60 and a maximum of 102 years. The majority was female (60.9%); in both sexes, the predominant age group was 60 to 70 (51%); low education, 65.0% did not complete primary education and the illiteracy rate was 10.8%; family income between one and three minimum wages (66.7%); and married (64%); and among widowers, women were the majority.

When inquiring about whom the elderly lives with, the majority lives with the spouse; there are more men living with spouses than women; and more women living with children than men. Table 1, the analytical statistics of sociodemographic characteristics according to sex are displayed.

**Table 1.** Sociodemographic characteristics of elderly assigned to the FHS

| Variables | | Female n(%) | Male n(%) | p-value* |
|---|---|---|---|---|
| Age range | <80 years | 282(62.3) | 171(37.7) | 0.169 |
| | ≥80 years | 56 (54.9) | 46(45.1) | |
| Education** | Primary education (-) | 294(61.6) | 183(38.4) | 0.334 |
| | Secondary education (+) | 43(55.8) | 34(44.2) | |
| Family income | Up to 3 minimum wages | 268(61.6) | 167(38.4) | 0.515 |
| | ≥ 3 minimum wages | 70(58.3) | 50(41.7) | |
| Marital status | Single/divorced/widowed | 149(74.5) | 51(25.5) | <0.001 |
| | Married | 189(53.2) | 166(46.8) | |
| Lives | Single | 57(72.2) | 22(27.8) | 0.027 |
| | With companion | 281(59.0) | 195(41.0) | |

*Chi-square test; **Primary education (-) includes elderly who are illiterate and who have not finished primary education; Secondary education (+) includes elderly who have finished secondary education or not and elderly who have finished higher education or not

Regarding the frailty classification, the prevalence of this condition was 98 (17.7%); 252 (45.4%) were prefrail; and 205 (36.9%) presented no frailty. Observations by sex evidence that the frequencies do not show substantive differences. The prevalence of female frailty was 61 (18.0%) and prefrailty 159 (47%). The prevalence of male frailty was 37 (17.1%) and prefrailty 93 (42.9%). In the analytical statistics, no association between frailty and sex was observed (p = 0.217).

Among the frailty components, it was observed that fatigue was the most prevalent criterion among the elderly in the study (31.89%); the prevalence of the other components ranged from 14.9% (weight loss) to 18% (muscle weakness). Analyzing the frailty components according to gender, the only association observed was for the fatigue variable. The details of the frequency distribution are displayed in table 2.

**Table 2.** Frequency distribution of frailty components, their classification, association in the elderly population assigned to the FHS

| Frailty components | Female n(%) | Male n(%) | Total n(%) | p-value* |
|---|---|---|---|---|
| Weight loss | 52(15.4) | 31(14.3) | 83(14.95) | 0.723 |
| Fatigue | 126(37.3) | 51(23.5) | 177(31.89) | 0.001 |
| Muscle weakness | 62(18.3) | 38(17.5) | 100(18.02) | 0.804 |
| Slow gait | 59(17.5) | 40(18.4) | 99(17.84) | 0.769 |
| Low level of energy expenditure | 60(17.8) | 33(15.2) | 93(16.76) | 0.434 |

EE=energy expenditure

Table 3, the bivariate and multivariate analysis between the group of frail/prefrail and non-frail elderly is shown. The analyses evidenced a statistically significant difference for age.

**Table 3.** Frequency distribution of frailty and association according to sociodemographic data of the elderly population assigned to FHS

| Variables | Frail n(%) | Non-frail n(%) | *Bivariate Analysis PR (95% CI) | p-value | **Multivariate Analyses PR (95% CI) | p-value |
|---|---|---|---|---|---|---|
| **Age** | | | | | | |
| ≥80 years | 85 (83.3) | 17 (16.7) | 3.54 (2.04- 6.17) | 0.001* | 3.58 (2.03 -6.29) | 0.001* |
| <80 years | 265(58.5) | 188(41.5) | | | | |
| **Sex** | | | | | | |
| Female | 220(65.1) | 118(34.9) | 1.24 (0.87-1.77) | 0.217 | 1.30 (0.89 -1.88) | 0.164 |
| Male | 130(59.9) | 87(40.1) | | | | |
| **Living alone** | | | | | | |
| Yes | 52 (65.8) | 27(34.2) | 1.15 (0.69 -1.89) | 0.583 | 1.10 (0.61 -1.97) | 0.736 |
| No | 298 (62.6) | 178 (37.4) | | | | |
| ***Marital Status** | | | | | | |
| Single(+) | 135(67.5) | 65 (32.5) | 1.35 (0.93 -1.94) | 0.104 | 1.07 (0.70 -1.65) | 0.733 |
| Married | 215(60.6) | 140(39.4) | | | | |
| ****Education** | | | | | | |
| Primary Ed. (-) | 306(64.2) | 171(35.8) | 1.34 (0.82-2.18) | 0.237 | 1.08 (0.64 -1.85) | 0.753 |
| Second. Ed. (+) | 44 (57.1) | 33 (42.9) | | | | |
| **Family Income** | | | | | | |
| ≤ 3 MW | 282(64.8) | 153(35.2) | 1.40 (0.93-2.12) | 0.101 | 1.36 (0.87 -2.14) | 0.174 |
| > 3 MW | 68 (56.7) | 52 (43.3) | | | | |

*Chi-square test; PR= prevalence ratio; **Logistic regression. ***Single(+) includes divorced and widowed participants;****Primary education (-) includes elderly who are illiterate and who have not finished primary education; Secondary education (+) includes elderly who have finished secondary education or not and elderly who have finished higher education or not

## Discussion

The study evidenced the predominance of elderly in the age group of 60 to 79 years, with a mean age of 71.1 ± 8.3 years. As for age, the result found is similar and permits a comparative analysis with the populations in the FIBRA Project, carried out with 3,478 elderly people from seven Brazilian cities selected by convenience, which is a reference study on frailty and involves Brazilian elderly.[13] Also in a study carried out with elderly people attended by Social Service Referral Centers in the city of São Paulo (Brazil), the most prevalent age group was 60 to 79 years. Nevertheless, elder elderly present the highest prevalence of frailty.[20] Also, in a longitudinal study in Germany, increasing age was associated with frailty.[21]

In this study, 83.3% of elder elderly presented frailty while, in the elderly under 80 years old, this condition was present in 58.5%. Studies have shown that age and frailty are directly related to the understanding of the aging process and, consequently, the decline of physical-functional capacity.[22]

Population-based surveys have corroborated the identification of frailty in elder elderly, but with prevalence differences. In a study involving long-living community-based elderly in a city in Rio Grande do Sul (Brazil), which also used Fried's criteria[1] to assess frailty, a prevalence of 58% of frailty was identified, but it should be noted that 42% of the elderly were already in prefrailty conditions.[23]

On the other hand, the survey carried out with elderly people from a city in Bahia (Brazil) showed that the mean age of the research population was 72.32 years and that 16.9% of the elderly presented weaknesses.[24] Another aspect evidenced in our study is that the female population presented a higher prevalence of frailty. Findings from Brazilian[8,24] and international studies[7] support this finding.

Studies show that the greater number of elderly women when compared to the number of men is a reality, which is called feminization of old age,[20,25-27] and deserves special attention. One cannot interpret that the fact that women live longer means that they have a good quality of life and desirable health conditions. At least thus far, studies show that these variables are not positively associated.

Differences in body composition between the sexes explain the association between frailty and the female sex though. Women have a lesser amount of muscle mass and, with aging, they have a higher risk of sarcopenia, which is a loss of muscle mass that interferes with functional physical capacity and constitutes a condition intrinsic to frailty.[28] With regard to sociodemographic characteristics, in this study, married elderly prevailed, which is frequent in developed regions.[14] Another relevant finding was the presence of female widowhood, a condition inherent in the feminization of old age.[25]

Regarding education, the illiteracy index presented lower results than those found in other Brazilian studies with similar characteristics.[8,13,14] A study involving elderly from five Social Service Referral Centers in the city of São Paulo (Brazil), located in regions considered vulnerable, evidenced that about 38.3% had one to four years of study and presented frailty.[20]

The low educational level of the respondents was due to the time when the elderly were in the

school stage, when education was informal and not compulsory, which did not facilitate the access to school.[27]

In relation to income, most of the elderly reported a family income from one to three minimum wages, which corroborates the profile of the elderly in another study.[14] Education and family income are social determinants that may interfere in frailty, the socioeconomic condition being related to individuals' style and quality of life.[13]

As far as the elderly people's place of residence is concerned, the largest percentage resides with the spouse, as opposed to a study that compared sociodemographic data of the elderly population in Brazilian cities, in which the highest indices of elderly people living with spouses figure around 30%. Among the sample of elderly men, this index increases, as approximately 73.7% live with the spouse. This evidence is important for the health area, as being married seems to positively influence on the health condition, with countless biopsychosocial variables that interfere in this condition.[14]

The frequency of elderly women living with children is higher than that of elderly men in the same condition. This aspect may be related to greater female longevity. One could suppose that, based on the large number of widows in the study, after losing their companions, these start to live with their children. The data collection instrument did not address the reasons making the women live with their children though.

The results of non-frail elderly patients corroborate a study involving 316 elderly people in a home-based and population-based epidemiological survey, in which the average percentage of non-frail elderly was 39.1%, a result close to that found in this study. Literature findings show prevalence rates of prefrail (61.8%) and frail elderly (16.9%).[24]

Studies have shown that frail and prefrail elderly correspond to approximately half of the studied populations.[27,29] In this study, this sum surpasses 60% of the population, which demands preventive actions to postpone the frailty.

Specific precautions for prefrailty conditions are necessary in order to contribute to the postponement or mitigation of the effects of the es-

tablishment of the frailty syndrome and preservation of autonomy and functional independence.[6] Preventive actions are also necessary to postpone the occurrence of adverse responses resulting from the onset of the syndrome as much as possible,[6] as well as to manage frailty early.[29]

Preventive actions include the adoption of healthier lifestyles, associated to regular physical activity, which minimize the effect of aging, as they maintain and improve the levels of muscle strength and acts indirectly in the prevention of physical frailty problems.[29]

Among the frailty components, following the trend of a Brazilian study,[16] fatigue was the most present component in the elderly, especially among the elderly women. It should be highlighted that, in a comparative study conducted in Brazilian cities, the means for this component were lower.[13] In addition to fatigue, the most prevalent components in the study were: low manual grip strength and slow gait.

In comparison with data from the international literature, a difference is observed in the prevalence of the frailty components. In the Women's Health and Aging Study and in the Cardiovascular Health Study,[1] the most prevalent weakness criteria were slowness, manual grip weakness and low level of physical activity. Differences in genetic and sociodemographic characteristics can explain these variations in the prevalence of frailty and its individual components.[16]

In comparison with data from the Brazilian literature[13,14] and international literature,[8] we observed a difference in the prevalence of the frailty components. The main components associated with frailty according to the study are: age, female sex, black race/skin color, cardiovascular diseases, number of associated comorbidities, depressive symptoms, body mass index and smoking.[22] The factors that are not associated with frailty were education, income, cognitive function and alcohol, although these data cannot be generalized, as the literature points out these relationships.

As a limitation of this study, we can cite the cross-sectional methodological design, which does not permit showing the causes and consequences of the association between the variables of interest, nor

establishing the relative risk. The non-replacement of the sample can also be considered a limitation, which may have generated response frequencies inferior to 5% in some categories, reducing the statistical power. Furthermore, the study did not identify whether the widowed or unmarried male elderly had partners or not, remaining limited to the question about the marital status.

## Conclusion

The results showed that, in the elder and female elderly, the prevalence of frailty is higher. An association was observed between marital status and housing when analyzed with regard to sex; also, when the frailty components were observed, fatigue showed an association with sex. In the bivariate and multivariate analysis, relating frailty to the sociodemographic variables, it is verified that age influences frailty. Another important aspect in our study is that the prevalence of frailty in this population surpasses that in Brazilian reference studies. Frailty is considered a complex condition with biopsychosocial determinants. Our results point to issues related to family care and support for the elderly, that necessary as old age advances. Despite the importance of incorporating this into the routine of the health teams for all the elderly people assigned to the coverage area of the FHS, based on our results, elderly, female elderly living alone should be prioritized in primary health care. In this scenario, it is important for the health teams to be alert to elderly with these characteristics, so as to intervene early, and to prevent the establishment of frailty. Therefore, it is important for the health teams to assess the elderly people's functional physical conditions and use the evaluation outcomes to plan health actions aimed at this population group, with a view to maintaining autonomy and functional independence. Implications for practice: The results can underlie the organization of care, aiming for a comprehensive health care model, closer to their homes, as well as forwarding to evaluation and rehabilitation centers with expertise in geriatrics.

## Collaborations

Gross CB, Kolankiewicz ABC, Schmidt CR and Berlezi EM contributed to the project design, data analysis and interpretation, relevant critical review of the intellectual content and final approval of the version for publication.

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