Chapter 138

Sarcopenia, falls and mistreatment in the context of fragile Elderly Syndrome: A bibliographic literature review

https://doi.org/ 10.56238/devopinterscie-138

Isabella Muniz Biancardi
Medical student at the Faculty of Medical Sciences of Pará (FACIMPA)

Izabella Rodrigues Carneiro
Medical student at the Faculty of Medical Sciences of Pará (FACIMPA)

Joaquim Junior Barros Carneiro
Medical student at the Faculty of Medical Sciences of Pará (FACIMPA)

Jullya Passarelli Ferreira da Silva
Medical student at the Faculty of Medical Sciences of Pará (FACIMPA)

Sheylla Rodrigues Soares Brandao
Medical student at the Faculty of Medical Sciences of Pará (FACIMPA)

Vitor Eduardo Morais Vinhal
Medical student at the Faculty of Medical Sciences of Pará (FACIMPA)

Samhuel Freitas da Silva
Medical student at the Faculty of Medical Sciences of Pará (FACIMPA)

Marqueyd Araujo Barros
Medical student at the Faculty of Medical Sciences of Pará (FACIMPA)

José Walter Lima Prado
Professor of the Medicine course at the Faculty of Medical Sciences of Pará (FACIMPA)

ABSTRACT
The frail elderly syndrome originates from the decline of the physiological functions of the elderly. Among these patients, there is a decrease in physical activities, weight loss, reduced mobility speed, and reduced cognitive functions. Currently, there is a higher prevalence of pre-frail elderly. However, with the aging of the population, an increase in frail elderly is expected. Therefore, sarcopenia, the risk of falls, and the abuse suffered with physical and psychological violence must be studied, to understand how they help in the degeneration of the functionality of the elderly. In this sense, the objective of this work is to analyze studies that have as their research object the influence of reduced muscle mass, falls, and abuse on the quality of life of frail elderly people. For this, a high-sensitivity search was performed in databases (Lilacs via the Virtual Health Library (VHL), Medline via Pubmed and Cochrane Library) using descriptors linked to the frailty syndrome of the elderly. As a result, 3,398 studies were found, of which 20 studies from eight countries were included with a total sample of 6,782 participants. It was identified that sarcopenia increases with age, stabilizing at age 80 and being more common in women, institutionalized elderly and hospitalized elderly. Regarding falls, they are the most common clinical variable in frail elderly people, being a common history in most of them. Abuse has been the subject of few studies, but it is concluded that elderly men and depression are the biggest victims of physical and verbal violence.

Keywords: Frailty, Frail elderly, Health of the elderly.

1 INTRODUCTION

The frail elderly syndrome is one of the most important geriatric syndromes to be studied. Despite not having a consensual definition, this syndrome should be understood as a decline in musculoskeletal, neuroendocrine and immunological functions in the elderly. In this context, the interaction of biological, social and psychological factors is impaired, leading the elderly to a greater state of vulnerability (FILHO et al., 2020).

Frailty in the elderly tends to appear in those of advanced age, who evolve with chronic systemic diseases - such as diabetes mellitus - with depression, neoplasms, weight changes and a state of dementia. Another aggravating factor is the state of loneliness and institutionalization, as long-lived elderly people who live in shelters do not receive adequate care, aging with various health problems. In addition, elderly people with acute infections, such as COVID-19, who require hospitalization for several days also have risk factors for the development of the syndrome (HUBBARD et al., 2020).

Given this context, to be classified as a frail elderly person, the patient must meet Fried's frailty criteria. Among these criteria, there is low physical activity, reduced grip strength, complaints of weakness or exhaustion, reduced gait speed and unintentional weight loss. Thus, the presence of three of these criteria classifies the elderly as frail, while the presence of one or two criteria defines them as pre-frail (SANTOS et al., 2015).

As the population ages, the number of elderly people at risk of frailty is expected to increase. At the end of the 2000s, an attempt was made to quantify the prevalence of frailty among elderly Brazilians based on a study in 17 cities. It was noticed that 49% were considered pre-frail. Another finding was the increase in frailty in elderly people over 80 years old (OLIVEIRA et al., 2020).

In this sense, it is observed that sarcopenia, falls and social and psychological aspects, such as abuse, are risk factors for the presence of frailty syndrome in the elderly (FLUETTI et al., 2018). Not only that, these clinical aspects interact with each other and impair the clinical condition of older people. Therefore, this study aims to analyze studies that address the effects of the presence of these particularities in elderly people with frailty.

2 METHODS

Search strategy

Potential studies were identified through a comprehensive search. The bibliographic review was carried out in the following databases: Lilacs via Virtual Health Library, Medline via Pubmed, and Cochrane. There was no language restriction. The search strategy involved crossing selected keywords based on Medical Subject Headings (Mesh) and Health Sciences Descriptors (Decs):

LILACS

"idoso fragil" or "idoso debilitado" or "idoso dependente" or "idosos debilitados" or "anciano frágil" or "adultos mayores débiles" or "anciano debil" or "anciano dependiente" or "anciano fragilizado" or "frail elderly" or "frail elder" or "frail elders" or "frail older adult" or "Functionally Impaired Elderly"

PUBMED

("Frail elderly"[All Fields] OR ("Frail elderly"[MeSH Terms] OR ("frail"[All Fields] AND "elderly"[All Fields]) OR "Frail elderly"[All Fields] OR ("adult"[All Fields] AND "frail"[All Fields] AND "older"[All Fields])) OR "adults frail older"[All Fields] OR ("Frail elderly"[MeSH Terms] OR ("frail"[All Fields] AND "elderly"[All Fields]) OR "Frail elderly"[All Fields] OR ("elder"[All Fields] AND "frail"[All Fields])) OR "elderly frail"[All Fields] OR "elderly functionally impaired"[All Fields] OR "elders frail"[All Fields] OR "Frail Elder"[All Fields] OR "Frail Elders"[All Fields] OR "Frail Older Adult"[All Fields] OR "Frail Older Adults"[All Fields] OR "functionally impaired elderly"[All Fields] OR "functionally impaired elderly"[All Fields] OR "older adult frail"[All Fields] OR "older adults frail"[All Fields]) AND ((y_5[Filter]) AND (ffrft[Filter]) AND (fft[Filter]) AND (medline[Filter]))

COCHRANE

#1 - ("Frail elderly" OR "Adult, Frail Older" or "Adults, Frail Older" or "Elder, Frail" or "Elderly, Frail" or "Elderly, Functionally-Impaired" or "Elders, Frail" or "Frail Elder" or "Frail Elders" or "Frail Older Adult" or "Frail Older Adults" or "Functionally Impaired Elderly" or "Functionally-Impaired Elderly" or "Older Adult, Frail" or "Older Adults, Frail"):ti,ab,kw" (Word variations have been searched)

Inclusion criteria

Observational studies carried out with human beings over 60 years of age and have been carried out in the last 5 years, as a way of updating the theme and that deal with the clinical situations of sarcopenia, falls and abuse associated with the frail elderly syndrome.

Exclusion criteria

Studies with the following characteristics were excluded: non-observational studies, samples composed of people under 60 years of age, studies carried out before the year 2017, studies in which the methodology was not written, as well as books, letters from the editor and reports of cases.

Data extraction

The material obtained in the data search was exported to the Rayyan® platform and is shown in Figure 1. The first screenings, selection by title and abstract, were carried out by three independent researchers, selecting possible articles to be included in the final compilation. Regarding data extraction,

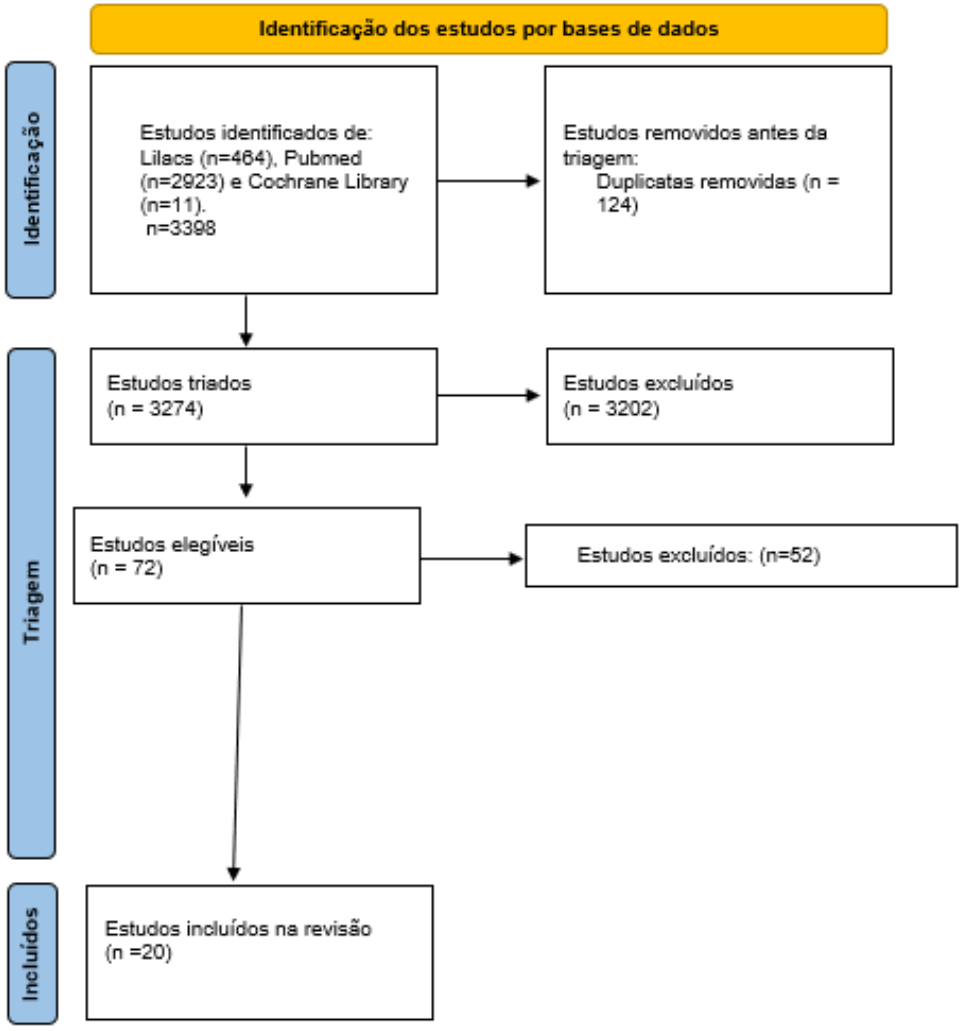
two independent researchers used a Microsoft Excel® spreadsheet to record the following: study data (authors, journal name, country and year of publication) and methodological information (design, sample size, clinical situation analysis of frail elderly syndrome and instruments used to assess them).

3 RESULTS

Selection and evaluation of studies

The initial search resulted in 3,398 studies found in the databases, among which 124 were duplicates that were removed, leaving a sample of 3,274 studies. After title and abstract screening, 3202 studies were removed. Thus, the remaining studies were screened based on the inclusion criteria, so that 20 studies were included in the qualitative analysis (Figure 1).

Figure 1 – Flowchart of selection of studies that analyzed the frail elderly syndrome.



Subtitle: Identification of studies by database
Identified studies from Lilcas (n=464), Pubmed (n=2923) and Cochrane Library (n=11)
n=(3398)
Studies removed from screening (n=124)
Screened studies (n=3274) - Excluded studies (n=3202)
Eligible studies (n=72) - Excluded studies (n=52)
Studies included in the review (n=20)
Included / Screening / Identification

Characteristics of the included studies

20 studies formed the final sample, 12 from Brazil, two from Japan, one from Colombia, one from Chile, one from Indonesia, one from Norway, one from Spain and one from Ireland. The total population analyzed was 6,782 participants. All participants in the selected studies were over 60 years of age. Table 1 presents the characteristics of the included studies.

Table 1 – Characterization of included studies (n=20).

Author	Years	Country	Kind of study	Instrument	clinical situation	Sample (n)
Carneiro, J. et al	2017	Brasil	Transversal	*Edmonton Frail Scale*	Fall	360
Barbosa; Mansur; Colugnati	2017	Brasil	Transversal	Modelo de Fried	Fall	424
Duarte, G. et al	2018	Brasil	Transversal	Modelo de Fried	Fall	56
Fluetti, M. et al.	2018	Brasil	Transversal	Tilburg FrailtyIndicator	Fall	80
Freitas & Soares	2019	Brasil	Transversal	Índice de Vulnerabilidade Clínico-Funcional-20	Fall	307
Lino, V. et al	2019	Brasil	Transversal	Escala de Independência em Atividades de Vida Diária	Mistreatment	135
Giacomini; Fhon; Rodrigues	2020	Brasil	Transversal	Escore de Risco de Queda, Edmonton Frail Scale, Tilburg Frailty Indicator e Groningen Frailty Indicator	Fall	261
Marques, M. et al	2020	Brasil	Transversal	Índice de Barthel	Fall and sarcopenia	92
Díaz, D. et al.	2020	Colombia	Transversal	Índice de Barthel	Sarcopenia	155
Lopes, A. et al	2020	Brasil	Transversal	Índice de Katz	Sarcopenia	60
Concha-Cisternas, Y. et al.	2020	Chile	Transversal	*Grip Strength Test*	Sarcopenia	244
Chini, L. et al	2021	Brasil	Transversal	*Edmonton Frail Scale*	Fall	854
Mello, B. et al	2021	Brasil	Transversal	*Minnesota Leisure Activity Questionnaire*	Sarcopenia	407
Tamura Y. et al	2018	Japão	Transversal	Grupo de trabalho asiático para sarcopenia	Sarcopenia	323
Connolly, K. et al	2021	Irlanda	Transversal	*Strength, Assistance with walking, Rise from a chair, Climb stairs and Falls*	Fall	134
Bustos, A. et al	2022	Espanha	Transversal	*Frailty Trait Scale-5*	Sarcopenia	1.538
Widajanti, N. et al	2020	Indonésia	Transversal	Questionário	Sarcopenia	308
Mori; Tokuda	2019	Japão	Transversal	Índice de Barthel	Sarcopenia	331
Bjerkmo, L.	2021	Noruega	Qualitativo	Entrevista	Fall	8
Belisário, M. et al.	2018	Brasil	Transversal	Escala de tática de conflito	Mistreatment	705

4 DISCUSSION

The findings of this review demonstrate that sarcopenia, falls and abuse are prevalent and negative clinical situations in the prognosis of the elderly. It was noticed that these alterations are more pronounced in older elderly people, such as those over 80 years old, in more dependent elderly people and in those who live in shelter institutions. It should be noted that care for the elderly is never too late to be carried out properly, significantly interfering in the quality of life of these individuals. An important point is that the variables analyzed here – sarcopenia, falls, abuse – while being risk factors for frailty in the elderly, are also situations that can appear or worsen in frail elderly.

It appears that frailty begins to show clinical signs from the age of 65 on average (CARNEIRO et al., 2017). However, it is the elderly over 80 who already have advanced frailty. A study by Freitas & Soares (2019), carried out in Brazil, found severe frailty in elderly people with an average age of 81.67 years. Within this group of elderly people, more than half had already suffered falls and showed signs of sarcopenia. Advancing age makes the elderly begin to eat less food, causing low energy, low protein intake and low vitamin D intake. which decreases the quality of life of octogenarians (MORI; TOKUDA, 2019).

Sarcopenia was evaluated in the context of a frail elderly syndrome in nine of the 20 studies selected to integrate the sample. Most of the studies used assessment scales already validated internationally, with the Barthel Index being one of the most frequently used instruments. Sarcopenia is demonstrated in frail elderly people with the presence of decreased muscle strength, reduced muscle mass, mobility difficulties, reduced mobility speed and decreased calf circumference on physical examination (CONCHA-CISTERNAS et al., 2020; CONNOLLY et al., 2021; MARQUES et al., 2020; TAMURA et al., 2018).

One way of measuring sarcopenia is the mean grip strength. Concha-Cisternas et al. (2020), in a study with 244 elderly people, demonstrated that this variable depends on the gender and strength of the elderly person. For example, the average grip strength in 60-year-old men was 34.7 kg, while in 90-year-old men it was 28.8 kg. Concerning women, the mean grip strength at age 60 was 22.1 kg, decreasing to 17.2 kg at age 90. It was found that the reduction in the handgrip strength of the elderly is around 20.6% with advancing age (MELLO et al., 2021).

Sarcopenia is directly dependent on the clinical situation of the individual. Thus, hospitalized elderly people are often the ones who develop more severe sarcopenia (DÍAZ et al., 2020). Patients in intensive care units tend to have muscle weakness and there was a worsening of the reduction in muscle mass in those who required mechanical ventilation and sedation, this clinical condition being more observed in women (LOPES et al., 2020).

Tamura et al. (2018), in a study with 323 elderly people, found that sarcopenia stabilizes after the age of 80. However, it is worth pointing out that the development of sarcopenia can be avoided and, consequently, the worsening of the frail elderly syndrome. A study carried out with 1,538 people over 65 years of age demonstrates that the transition from pre-frailty to frailty was more frequent in sarcopenic people than in non-sarcopenic people. At the same time, improvement in pre-frailty for the robust elderly,

or those who remained robust, was verified among the elderly without sarcopenia (BUSTOS et al., 2022). Therefore, measures to encourage the practice of physical activity since adulthood, for example, are essential to avoid clinical situations of reduced muscle mass and increased frailty (WIDAJANTI et al., 2020).

Falls were the most evaluated clinical situation among the selected studies. Therefore, it was studied by researchers of different designs, quantitative and qualitative. Through interviews with the elderly, it is noticeable that the fear of falling is common among them, being greater among elderly people who live alone, as they age without assistance, not being able to make adaptations - such as the use of canes, handrails, reduction of grip-free rugs, better lighting in the home – to prevent falls. Therefore, the risk of falling is also a frailty factor that interferes with the social situation of the elderly and the physical environments they inhabit (BJERKMO et al., 2021).

The fall was a clinical history present among the elderly that served as a sample in several studies (BARBOSA; MANSUR; COLUGNATI, 2017; CARNEIRO et al., 2017; CHINI et al., 2021; DUARTE et al., 2019; FLUETTI et al. ., 2018; FREITAS; SOARES, 2019; GIACOMINI; FHON; PARTEZANI RODRIGUES, 2020; MARQUES et al., 2020). The sample of the study carried out by Freitas & Soares (2019) brings an alarming result: of its 51 frail elderly people studied, 50 were at risk of falling. Among the risk factors for falling, there are: female gender, institutionalized elderly and sarcopenia (FLUETTI et al., 2018; GIACOMINI; FHON; PARTEZANI RODRIGUES, 2020; MARQUES et al., 2020). The risk of greater falls in fragile women begins even before the age of 60, at menopause, with the reduction of estrogen and consequent increase in bone fragility (GIACOMINI; FHON; PARTEAZANI RODRIGUES, 2020).

Fluetti et al. (2018) conducted a study with 51 institutionalized elderly, where 75% had frailty syndrome and, among the frail, 42.8% had falls in the last 12 months - with an average of 2.04 falls. The lack of a family caregiver in the environment of long-stay institutions for the elderly can cause them not to eat properly, not to maintain daily physical activity, stimulating the functioning of the muscles, which start to atrophy, thus increasing the occurrence of falls .

The clinical situation of abuse was verified in only two studies of the selected final sample. This can be explained by the fact that it is a delicate topic to be analyzed, which can cause embarrassment in possible elderly people selected for this type of analysis. Research carried out with 135 frail elderly people and their care showed that 30% of the elderly showed signs of having suffered physical or psychological violence and negligence on the part of their caregivers. three times more likely to suffer violence, and depressed elderly people are seven times more likely to be abused by their caregivers – who are usually people with alcohol problems (LINO et al., 2019). In addition, once again institutionalized elderly are the ones who suffer the most. Complaints of aggression in institutions for the elderly were more associated with frail elderly people. The frailty syndrome was associated with higher numbers of physical aggression, verbal aggression or both (BELISÁRIO et al., 2017).

5 CONCLUSIONS

This bibliographical review demonstrated that sarcopenia, falls and abuse are health complications for the elderly population, especially among those with frailty syndrome. Such situations were verified by the selected studies, mainly through internationally validated scales, such as the Barthel Index, the Fried Model and the Edmonton Frail Scale. In general, most studies have shown the harmful effect of sarcopenia to increase the risk of falls, with falls, however, being a common clinical antecedent in a large number of frail elderly people. Among the limitations of this study, mention should be made of the inclusion of few studies that evaluated abuse and its repercussions on the clinical condition of frail elderly people. In addition, the cross-sectional nature of most articles did not allow long-term monitoring of the progressive effects that the situations analyzed may cause in the morbidity and mortality of the elderly. Even so, this study was important for demonstrating that the frail elderly syndrome has interference from social, mental, nutritional aspects, since abandonment by family members and institutionalization are aggravating factors in the advancement of frailty in these individuals.

REFERENCES

BARBOSA, S.; MANSUR, H. N.; COLUGNATI, F. Impactos da Fragilidade sobre desfechos negativos em saúde de idosos brasileiros Impacts of frailty on the negative health outcomes of elderly Brazilians. Rev. Bras. Geriatr. Gerontol, v. 20, n. 6, p. 844–853, 2017.

BELISÁRIO, M. S. et al. Cross-sectional study on the association between frailty and violence against community-dwelling elderly people in Brazil. Sao Paulo Medical Journal, v. 136, n. 1, p. 10–19, 18 dez. 2017.

BJERKMO, L. et al. "Falling off the wagon": older adults' experiences of living with frailty in rural arctic communities. International Journal of Circumpolar Health, v. 80, n. 1, 2021.

BUSTOS, A. et al. Role of sarcopenia in the frailty transitions in older adults: a population-based cohort study. Journal of Cachexia, Sarcopenia and Muscle, v. 13, p. 2352–2360, 2022.

CARNEIRO, J. et al. Fragilidade em idosos: prevalência e fatores associados . Revista Brasileira de Enfermagem, v. 70, n. 4, p. 780–785, 2017.

CHINI, L. et al. Fragilidade em idosos que vivem na comunidade: prevalência e fatores associados. Medicina (Ribeiro Preto), v. 54, n. 3, p. e176705, 2021.

CONCHA-CISTERNAS, Y. et al. Prevalence of low hand grip strength in Chilean older adults. Findings from the national health survey 2016-2017. Revista médica de Chile, v. 148, n. 11, p. 1598–1605, 1 nov. 2020.

CONNOLLY, K. et al. Prevalence of sarcopenia and associated factors in older adults attending a day hospital service in Ireland. European Geriatric Medicine, v. 12, p. 851–862, 2021.

DÍAZ, D. M. et al. Variables associated with frailty in a hospital population in Colombia. Geriatrics, Gerontology and Aging, v. 14, n. 2, p. 114–119, 2020.

DUARTE, G. et al. Relação de quedas em idosos e os componentes de fragilidade. Revista Brasileira de Epidemiologia, v. 21, n. 2, p. e180017, 4 fev. 2019.

FILHO, J. M. et al. Frailty prevalence and related factors in older adults from southern Brazil: A cross-sectional observational study. Clinics, v. 75, p. 1–8, 2020.

FLUETTI, M. T. et al. The frailty syndrome in institutionalized elderly persons. Revista Brasileira de Geriatria e Gerontologia, v. 21, n. 1, p. 60–69, fev. 2018.

FREITAS, F.; SOARES, S. Índice de vulnerabilidade clínico-funcional e as dimensões da funcionalidade em idosos. Rev Rene, v. 20, p. e39746–e39746, 20 maio 2019.

GIACOMINI, S. B. L.; FHON, J. R.; PARTEZANI RODRIGUES, R. A. Frailty and risk of falling in the older adult living at home. ACTA Paulista de Enfermagem, v. 33, 2020.

HUBBARD, R. E. et al. Frailty in the Face of COVID-19. Age and Ageing, v. 49, n. 4, p. 499–500, 1 jul. 2020.

LINO, V. T. S. et al. Prevalência e fatores associados ao abuso de cuidadores contra idosos dependentes: a face oculta da violência familiar. Ciência & Saúde Coletiva, v. 24, n. 1, p. 87–96, 2019.

LOPES, A. et al. Muscle weakness assessment in older intensive care unit patients. Geriatrics, Gerontology and Aging, v. 14, n. 3, p. 166–172, 2020.

MARQUES, M. B. et al. Fatores relacionados à sarcopenia e à capacidade funcional em idosos institucionalizados. Rev Rene, v. 21, p. e43864, 18 ago. 2020.

MELLO, B. et al. Alteração cognitiva e fragilidade física em idosos da atenção secundária à saúde. Revista da escola de Enfermagem da USP, v. 55, p. e03687, 2021.

MORI, H.; TOKUDA, Y. Differences and overlap between sarcopenia and physical frailty in older community-dwelling Japanese. Asia Pac J Clin Nutr, v. 28, n. 1, p. 157–165, 2019.

OLIVEIRA, F. M. R. L. DE et al. Síndrome do idoso frágil: análise conceitual de acordo com Walker e Avant. Revista Brasileira de Enfermagem, v. 73, p. e20190601, 29 jul. 2020.

SANTOS, P. H. S. et al. Perfil de fragilidade e fatores associados em idosos cadastrados em uma Unidade de Saúde da Família. Ciência & Saúde Coletiva, v. 20, n. 6, p. 1917–1924, 2015.

TAMURA, Y. et al. Prevalence of frailty, cognitive impairment, and sarcopenia in outpatients with cardiometabolic disease in a frailty clinic 11 Medical and Health Sciences 1103 Clinical Sciences 11 Medical and Health Sciences 1117 Public Health and Health Services 11 Medical and Health Sciences 1102 Cardiorespiratory Medicine and Haematology. BMC Geriatrics, v. 18, n. 1, 6 nov. 2018.

WIDAJANTI, N. et al. Sarcopenia and Frailty Profile in the Elderly Community of Surabaya: A Descriptive Study. Acta Medica Indonesiana, v. 52, n. 1, p. 5–13, 1 jan. 2020.