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REVIEW

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Fall and its association with the frailty syndrome in the elderly: systematic review with meta-analysis

Queda e sua associação à síndrome da fragilidade no idoso: revisão sistemática com metanálise

Caída y su asociación con el síndrome de la fragilidad en el adulto mayor: revisión sistemática con metaanálisis

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ABSTRACT

Objective: To analyze the prevalence of falls and frailty syndrome and the association between these two syndromes in the elderly population. **Method:** Systematic review, without restriction of dates, in English, Portuguese and Spanish languages, in the databases PubMed, CINAHL, LILACS and in the SciElo virtual library. The association between both variables was extracted from the studies (Odds Ratio and 95% Confidence Intervals). **Results:** The review included 19 studies published between 2001 and 2015. The prevalence of falls in the frail elderly population was between 6.7% and 44%; in the pre-frail, between 10.0% and 52.0%, and in the non-frail, between 7.6% and 90.4%. The association between both variables presented a value of OR 1.80 (95% CI 1.51-2.13). **Conclusion:** There is evidence that falls are associated to the frailty in the elderly. Other factors may influence this association, such as age, sex, data collection instrument of the studies, place where they live and the process of senescence.

DESCRIPTORS

Aged; Accidental Falls; Frail Elderly; Geriatric Nursing; Review.

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INTRODUCTION

The number of people aged 60 years and over has been increasing in many countries. World demographic data show that people over 65 in 1980 were 378 million; In 2010, this number reached 759 million, and in 2050, almost two billion people are expected[1].

During the aging process, the body undergoes systemic changes in organs and tissues, with decreased activity, reduced flexibility, loss of nerve cells, thickening of blood vessels and decreased muscle tone, leading to different geriatric syndromes among them, fall and frailty[2].

The World Health Organization (WHO) defines fall as an involuntary event occurring loss-of-balance bringing the body to the ground or other surface. The highest mortality rates are for people over 60 years[3].

The incidence of falls can affect approximately 20% to 30% of the population aged 60 years or over, annually[4]. The elderly living in the community may suffer 0.7 falls per year, with a range of 0.2-1.6. On the other hand, institutionalized and hospitalized elderly have a higher prevalence of falls[5]. The fall is associated with frailty due to loss of muscle mass, called sarcopenia. In addition to chronic diseases, the consumption of different drugs, especially diuretics or beta-blockers, simultaneously, cognitive deficit and delirium increase the risk of falls[6].

There is no consensus on the concept of frailty syndrome, but it is known to be a state of vulnerability with a poor resolution of homeostasis after a stressor event, which increases the risk of adverse outcomes such as muscle weakness, bone frailty, malnutrition, risk of falls, vulnerability to trauma and infections, unstable blood pressure and decreased functional capacity[7-8].

Thus, considering the importance of the topic and several concepts, a meeting of researchers in the area was held to discuss the concept of frailty, which was defined as "a medical syndrome with multiple causes and contributors that is characterized by diminished strength, endurance, and reduced physiologic function that increases an individual's vulnerability for developing increased dependency and/or death"[6].

Frailty can also be understood as a multidimensional syndrome, which must be holistically assessed, determined or modified by biological, psychological and social factors of complex etiology. It is considered an uncomfortable condition, multifactorial and dynamic in nature related to the history or life trajectory of the elderly[9-11].

The prevalence of frailty, according to the phenotype[7], is from 6.9% to 21%. Research showed that, for females, this state was higher, from 6.8% to 22%, and for males, from 4% to 19.2%[12]. Measuring this syndrome, using different models used in Primary Health Care, a prevalence of 4% to 59.1% was found, with populations in Southeastern Europe, Hispanics and African-Americans being the most affected[13].

The association of fall and frailty syndromes deserves to be highlighted, since both have been studied and measured with similar tools, which leads to the development of research for the health professional to make a plan to prevent adverse outcomes, such as functional dependence, hospitalization and death, with the purpose of improving the condition and life expectancy of the elderly. It is understood that fall and frailty syndromes provide the elderly with more risk of vulnerability in their life. In this sense, the scientific evidence may promote a more adequate evaluation for the elderly population.

In this systematic review, the following guiding question was formulated, based on the PICO strategy, that maximizes the retrieval of evidence in the databases and avoids unnecessary searches[14]: *What is the scientific evidence in the prevalence of falls and its association with frailty syndrome in the elderly?*

Thus, in view of these first considerations, the objective of the study was to analyze the prevalence of fall and frailty syndrome in the elderly population and the association between these two syndromes.

METHOD

This is a systematic review of literature, which aims to synthesize the scientific knowledge produced on a specific research topic, with a view to generate new knowledge on the results presented by published research[15-16].

In order to prepare the review, the following steps were taken: 1) Preparation of the protocol; 2) Definition of the question; 3) Search for studies; 4) Selection of studies; 5) Critical appraisal of the studies; 6) Data extraction and 7) Synthesis of studies[17].

In order to include studies in the review, the following criteria were defined: the search was carried out in September 2015, without restriction of dates in Portuguese, English and Spanish; who studied the elderly, 60 years old or older, of both gender, who lived in different contexts. Qualitative, cross-sectional studies, theses, dissertations, book chapters, technical reports, editor's letters and review articles were excluded.

The search was conducted in the National Center for Biotechnology Information (NCBI/PubMed), Cumulative Index to Nursing and Allied Health Literature (CINAHL) Latin American and Caribbean Literature in Health Sciences (LILACS) and the Scientific Electronic Library Online (SciELO), using the following Portuguese descriptors: *Idoso* AND *Idoso fragilizado* OR *Fragilidade* OR *Frágil* AND *Acidentes por quedas* OR *Quedas*; and English, *Aged* AND *80 and over* OR *Elderly* OR *Older people* AND *Frail elderly* OR *Frail* OR *Frailty* AND *Accidental falls* OR *Falls* and in Spanish *Anciano* OR *adulto mayor* AND *Anciano frágil* OR *Frágil* OR *Fragilidad* AND *Accidentes por caídas* OR *caídas*.

The collection of information followed the recommendations of the Pre-requisite Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) checklist, in order to increase the number of publications and to provide more complete and transparent information[18]. There were 496 studies in PubMed, 175 in CINAHL, 39 in LILACS, and nine in SciELO, therefore, 719 publications. Two studies that met the inclusion criteria were added manually, totaling 721 articles.

The titles and abstracts of the studies were then read. The sample was selected by two reviewers, independently and

blindly. When there was doubt or disagreement, a meeting with a third reviewer was needed. Thus, 668 studies were removed, as they did not meet the inclusion and exclusion criteria, and a total of 53 studies were read in full.

At this stage of the review, an instrument was used to extract information from the studies including the following items: identification, study setting, type of publication, methodological characteristics of the study and methodological quality assessment[19]. After the analysis, 25 studies were excluded because they did not affect the association between fall and the frailty syndrome in the elderly, and nine, because they were cross-sectional studies, therefore, 19 studies were selected.

To analyze the information, the statistical package R 3.3.0 was used, from which the prevalence of fall and frailty were extracted, respectively. The analysis and the association figures were performed using Odds Ratio (OR) and 95% Confidence Intervals (CI), associating fall and frailty variables, being analyzed using the Metafor module with a Restricted Maximum Likelihood Estimate (REML), in order to estimate the components of the variance and then to calculate the least squares generalized by the fixed effects of the parameters.

RESULTS

Identification and selection of studies

After being selected, 19 studies met the inclusion criteria for this systematic review (Figure 1).

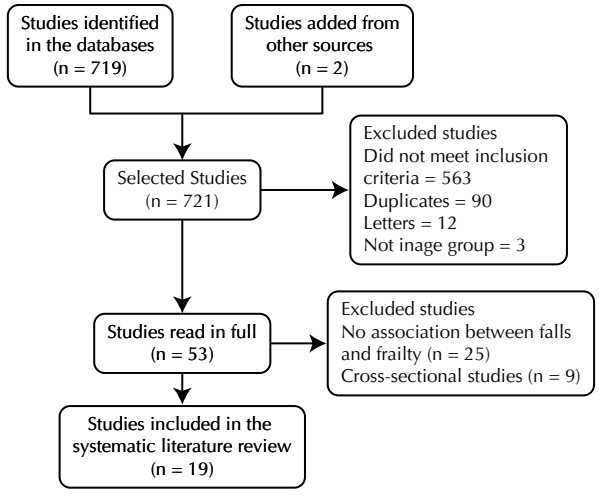

Figure 1 – Flowchart of the different stages of the systematic review, according to the databases PubMed, CINAHL, LILACS and *biblioteca virtual SciELO* – Ribeirao Preto, SP, Brazil, 2001-2015.

The 19 studies analyzed were published between 2001 and 2015 - four in 2013[20-23]; four in 2012[24-27]; three in 2014[28-30]; two in 2011[31-32] and in 2007[33-34]; and one in 2015[35], 2009[36], 2008[37] and 2001[7].

As far as the language is concerned, 18 studies were in English[7,20-24,26-37] and one in Spanish[25]. According to the country of publication, nine studies were carried out in North America[7,20,24-25,31,33-34,36-37]; In Europe, seven[21-23,26-28,32] and in Asia and Australia, three[29-30,35]. As for the publication period, 14 different journals were identified, most notably the Archives of Gerontology and Geriatrics, with three publications[26-27,32], and Archives of Internal Medicine[31,37], BMC Geriatrics[23,28] and Journal of Gerontology[7,33], with two studies each, and the others, one article[20-22,24-25,29-30,34-37].

In relation to the method used, 19 studies were longitudinal - 14 prospective studies[7,20-23,25-28,31-33,36-37] and four retrospective[24,30,34-35] - and one randomized case-control study[29]. From the studies that composes the review, 15 (78.9%) had the lowest mean age of the general elderly sample - 68.33 (SD=6.73)[25] - and the highest, 84.88 (SD=7.3)[21] years old.

The mean number of participants in the studies was 33,260 and ranged from 40[21] to 6,724[33]. The prevalence of falls ranged from 11.0%[33] to 50.0%[34] and frailty from 2.3%[20] to 51.4%[34] in North America. The prevalence of falls was 8.2%[28] to 93.0%[32] and frailty between 8.1%[23] and 75.0%[21] in Europe. The prevalence of falls was 22.0%[30], and the prevalence of frailty was 12.5%[35] to 50.5%[30] in Asia and Australia.

The study also pointed out that 17 (89.4%)[7,20-27,29-31,33-37] used the self-report of the elderly in relation to fall; one study (5.3%) used the hospital registry[28], and another (5.3%), the instrument The Downton Fall Risk Index[32]. With regard to the evaluation of frailty, nine authors (39.2%) used the CHS Index[7,21,23-24,28-29,33,36-37], five (21.7%) the SOF Index at large[26-28,36-37], two (8.7%) the Edmonton Frail Scale[20,30], two (8.7%), the FRAIL index[25,35], other instruments, such as the handgrip strength[31], the LASA Frailty Instrument[21], the CSBA Index[27] and SNAC Instrument[32]. On the other hand, it was observed that four (21.1%) authors used more than one instrument to evaluate the frailty in the elderly, namely: the CHS Index, the SOF Index and the CSBA Index[27-28,36-37] (Table 1).

From the 19 studies, 13 (68.4%) of them used different instruments to evaluate falls and frailty. Among the frail elderly, the lowest prevalence was 6.7%[23], and the highest was 44.0%[26]. In the pre-frail category, the lowest prevalence was 10.0%[37], and the highest was 52.0%[24]. On the other hand, the elderly who fell and were categorized as non-frail, the study showed that the lowest prevalence was 7.6%[28], and the highest was 90.4%[27]. On the other hand, six studies did not highlight the association between the instruments[20-22,29,31-32] (Table 2).

The variation of the estimates between the fall and the frailty of the elderly was broad, the lowest, with OR 1.40 (95% CI, 1.16-1.69)[23], and the highest, with OR 4.68 (95% CI, 1.71-12.84)[28]. In the evaluation of the research included in the review, there was an association between fall and frailty syndrome (OR 1.80, 95% CI, 1.51-2.13), as can be seen in Figure 2. However, some researchers used more than one analysis, so there was a repetition of the citations in the respective figure. It should be noted that there was a variation in the association between fall and frailty between studies, 95% CI, 1.51% -2.13%, and the highest confidence interval was 95% CI, 1.71% 12.84%[28], using the CHS Index scale, and the lowest, 95% CI, 0.77% -1.62%[29], also with the CHS Index. Confidence intervals varied between publications, depending on the population and instruments used in each study.

Table 1 – Estimated fall prevalence and frailty syndrome found in 19 studies of this systematic review – Ribeirao Preto, SP, Brazil, 2001-2015.

Author, year	Population	Age, sex	Method	Instruments	Prevalence
NORTH AMERICA					
Puts et al. (2013)[20]	112 hospitalized elderly	≥ 65 years Women 69,6%	Longitudinal Prospective	Self-report fall Markers proposed by Edmonton Frail Scale	Fall: 19% Frailty: 2.3
Samper-Ternent et al. (2012)[24]	847 community-dwelling elderly	≥ 65 years Women 64,7%	Longitudinal retrospective	Self-report fall CHS Index	Fall: 46.2%; Frailty: 12.3%
León et al. (2012)[25]	4.068 community-dwelling elderly	≥ 60 years Men 54,7%	Longitudinal Prospective	Self-report fall FRAIL index	Fall: 794 participants during follow-up; Frailty: 33.0%
Xue et al. (2011)[31]	352 community-dwelling elderly women	≥ 65 years Research with Women	Longitudinal Prospective	Self-report of fall Gripping force	Fall: 20.0%; Frailty: 3.0%
Ensrud et al. (2009)[36]	3.132 community-dwelling elderly	≥ 65 years Research with Men	Longitudinal Prospective	Self-report of fall SOF Index CHS Index	Fall: 14.0%; Frailty: CHS Index 14.0% frailty and SOF Index 13.0% frailty.
Ensrud et al. (2008)[37]	6.701 community-dwelling elderly women	≥ 65 years Research with Women	Longitudinal Prospective	Self-report fall SOF Index CHS Index	Fall: 11.0%; Frailty: SOF Index 17.0% frailty e CHS Index 16.0% frailty
Ensrud et al, (2007)[33]	6.724 community-dwelling elderly women	≥ 65 years Research with Women	Longitudinal Prospective	Self-report fall CHS Index	Fall: 11.0%; Frailty: CHS Index 16.3% frailty
Nelson et al. (2007)[34]	111 community-dwelling elderly	≥ 75 years Men 50,5%	Longitudinal Retrospective	Self-report fall Vulnerable Elders Survey – VES 13 for frailty	Fall: 50.0%; VES13: 51.4% frailty
Fried et al. (2001)[7]	5.317 community-dwelling elderly	≥ 65 years of both genders most were female	Longitudinal Prospective	Self-report fall CHS Index	Frailty CHS Index 6.92%
EUROPE					
Joosten et al. (2014)[28]	220 hospitalized elderly	≥ 70 years Women 57,3%	Longitudinal Prospective	Report of fall in hospital by nurse CHS Index SOF Index	Fall: 8.2%; Frailty: CHS Index 40.0% frailty e SOF Index 32.5% frailty
Crehan et al. (2013)[21]	40 hospitalized elderly	≥ 65 years Women 77,5%	Longitudinal Prospective	Self-report fall CHS Index	Fall: 62.5%; Frailty: 75.0%
De Vries et al. (2013)[22]	2.310 community-dwelling elderly	≥ 65 Women 51,8%	Longitudinal Prospective	Self-report fall LASA Frailty Instrument	Fall: 32,2%; Frailty: 20,7%
Sheehan et al. (2013)[23]	546 clinic elderly	≥ 60 years Women 68,6%	Longitudinal Prospective	Self-report fall CHS Index	Fall: 346 events in 148 participants; Frailty: 8.1%
Bilotta et al. (2012)[26]	265 geriatrics elderly clinic	≥ 65 years Women 71,0%	Longitudinal Prospective	Self-report fall SOF Index	Fall: 226 in one year follow-up; Frailty: 37,0%
Forti et al. (2012)[27]	1.007 community-dwelling elderly	≥ 65 years Women 55,4%	Longitudinal Prospective	Self-report of fall CSBA Index SOF Index	Fall: 1.462 during follow-up; Frailty: CSBA Index 37.6% frail e SOF Index 11.6% frail
Bravell et al. (2011)[32]	315 community-dwelling elderly	≥ 65 years Women 71,4%	Longitudinal Prospective	The Downton fall risk index (DFRI) SNAC instrument measure frailty	Fall: 93.0% risk of Fall; Frailty: mean 58.8%.
ASIA / AUSTRALIA					
Woo et al. (2015)[35]	815 community-dwelling elderly	≥ 65 years Women 85,4%	Longitudinal retrospective	Self-report of fall FRAIL index	Fall: 56 events during follow-up; Frailty 12.5%
Fairhall et al. (2014)[29]	241 rehabilitation services elderly	≥ 70 years Control group: 78% Women Intervention group: 77% Women	Randomized controlled trial	Self-report of fall CHS Index	Fall: 361 events in follow-up. In both the control and intervention groups, the elderly were frail.
Bennet et al. (2014)[30]	204 hospitalized elderly	≥ 60 years Women 65,0%	Longitudinal retrospective	Self-report of fall Edmonton Frail Scale	Fall: 22.0%; Frailty: 50.5%

Table 2 – The prevalence of falls and the different categories of frailty of the instruments used in 13 studies selected in the systematic review – Ribeirão Preto, SP, Brazil, 2001-2015.

Authors	Instrument	Fall					
		Frail		Pre-frail		Non-frail	
		Nº	%	Nº	%	Nº	%
Woo et al. (2015)[35]	FRAIL Scale	41	19.6	16	35.6	–	–
Bennet et al. (2014)[30]	EFS	32	31.0	–	–	12	12.0
Joosten et al. (2014)[28]	CHS Index	8	9.1	–	–	10	7.6
	SOF Index	5	7.6	–	–	12	11.3
Sheehan et al. (2013)[23]	CHS Index	5	6.7	35	43.3	40	50.0
Forti et al. (2012)[27]	CSBA Index	287	38.7	–	–	454	61.3
	SOF Index	69	9.6	–	–	652	90.4
León et al. (2012)[25]	FRAIL Index	236	32.3	361	29.0	197	26.5
Samper-Ternent et al. (2012)[24]	CHS Index	57	14.5	204	52.0	131	33.4
Bilotta et al. (2012)[26]	SOF Index	57	44.0	36	29.0	26	18.0
Ensrud et al. (2009)[36]	CHS Index	122	28.0	233	14.0	86	9.0
	SOF Index	111	27.0	197	15.0	133	10.0
Ensrud et al. (2008)[37]	CHS Index	211	20.0	323	10.0	200	8.0
	SOF Index	215	19.0	268	11.0	251	8.0
Ensrud et al. (2007)[33]	CHS Index	450	41.0	949	30.0	641	26.0
Nelson et al. (2007)[34]	VES - 13	20	35.1	–	–	7	13.0
Fried et al. (2001)[7]	CHS Index	143	41.0	818	33.0	667	27.0

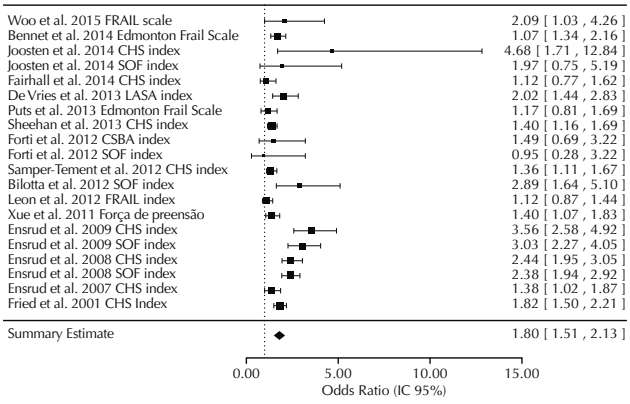

Figure 2 – Association between fall and frailty syndrome in the elderly – Ribeirão Preto, SP, Brazil, 2001-2015.

On the other hand, three researchers[21,32,34] used different tests to verify the association between these two variables, but did not report the confidence interval, as shown in Table 3.

Table 3 – Association of fall and frailty syndrome in the elderly included in the systematic review – Ribeirão Preto, SP, Brazil, 2001-2015.

Authors	Instrument	Type of analysis	*p-value*
Crehan et al. (2013)[21]	Markers of frailty	t test	0.809
Bravell et al. (2011)[32]	CNS questions	Regression analysis	0.12*
Nelson et al. (2007)[34]	VES-13	Correlation coeficient	0.001

* $p < 0.01$

DISCUSSION

Fall leads the elderly to suffer, in addition to physical injuries, psychological changes that can lead to isolation, hospitalization and death. The number of falls has been increasing considerably due to the increase in life expectancy and biological changes associated with aging[3]. This WHO statement can be confirmed in the findings of this study, where, out of the 19 studies evaluated, the highest prevalence of falls was in prospective longitudinal study of 315 elderly people from 11 communities in three Swedens' counties. The results revealed that 93% fell, and 58.8% were frail[32].

In the 19 studies, the highest occurrence of falls was in female, ranging from 55.4%[27] to 85.4%[35], depending on the type of study, setting, population, sample, age group and evaluation instruments. The study by Bilotta et al.[26] showed that, in multiple linear regression, frailty was associated with a high risk of falling (OR 2.01, 95% CI, 1.05-3.83; p = 0.035), but the authors did not report its prevalence. One of the studies[31] reports that one of the hypothesis of data from longitudinal studies with women shows that functional capacity declines with aging. Thus, older women are more likely to become frail and fall more.

Falling is the second leading cause of death from unintentional accidental injury, and an estimated 37.3 million people who fall every year need medical attention. This generates cost with hospitalization and rehabilitation and consequent increase of resources for the family and the elderly. In addition, the groups that are at greater risk of falling are those older than 65 years of age and female[3]. With the aging process, the body undergoes physiological changes, such as joint deformity or swelling, which causes limitation and instability in the range of movement of the lower limbs, changes the balance and walking in the elderly[38]. There is also a decrease in reflexes, automated rhythmic movements and voluntary movements, as well as impairment in the ability of the nervous system to process vestibular, visual and proprioceptive signals responsible for maintaining stability[39].

Approximately 30% of people over 65 years old have walking difficulties, and 20% need help devices[40]. Problems such as vision impairment, orthostatic hypotension, cardiac and pulmonary diseases, and the use of drugs that cause adverse effects contribute to the elderly fall are also highlighted[38].

On the other hand, it was observed that the prevalence of falls ranged from 8.2%[28] to 93.0%[32]. It should be noted that frailty was measured with different measurement instruments, since it is a great challenge for researchers to obtain an instrument that can be considered as a "gold standard" to accurately compare the results[12].

Frailty was evaluated with eight instruments: the CSBA Index[41], with nine items; The SOF Index[37] with three; The CHS Index[7], with five; The LASA Frailty Instrument[42], with nine; The FRAIL Index[43], with five; The Edmonton Frail Scale[11] with nine; The VES-13[44], with 13; and SNAC Instrument[45], with three domains. All scales evaluate the physical aspect, but the LASA Frailty Instrument[42] and SNAC Instrument[45] assess the cognitive aspect, and the Edmonton Frail Scale[11], the social aspect. The lack of consensus on the definition of frail leads researchers to use different instruments to identify the clinical features of this syndrome.

Molecular changes, including genetic variations expressed in oxidative stress with mitochondrial losses, shortening of telomeres, DNA damage and cellular aging, cause a physiological imbalance that leads to a vicious cycle, reducing energy and manifesting itself in the body in slowness, weakness, weight loss, decreased activity and fatigue[46-47].

Likewise, frailty is often related to the presence of anemia, orthostatic hypotension, congestive heart failure, chronic kidney disease, diabetes mellitus, osteopenia, decreased vitamin D and testosterone, altered cognitive status, falls and fractures, HIV infection, ocular diseases, Parkinson's, depression, besides weight loss, sarcopenia, anorexia, polypharmacy and inflammation with increased cytosine production[48-49].

It was verified that frail category presented relevant percentages in different studies. Although these two syndromes are considered important for the evaluation of the functional dependence of the elderly, there are several challenges to be considered in the systematic review on the subject. One of them refers to the type of self-report instrument, and the evaluation of frailty is more related to the physical aspects. The instruments have different cut-off points and definitions, which may present different data regarding the question of each research.

Most studies were conducted by American and European researchers. Thus, the lack of research with elderly people in other countries makes it difficult to compare the prevalence of falls and their association with frailty among groups of different ages, sex and ethnicity.

In the analysis of the prevalence of falls, most authors used longitudinal design, which allows a more realistic follow-up of the occurrence of fall and frailty syndromes and determines the relationship between cause and effect. It is also verified that the publications can be considered recent and come from the frailty model that was initially described in a study[7] and that was associated with physiological indicators, such as unintentional weight loss, exhaustion, energy deficit, slowness and the potential to interact and cause a higher level of frailty in the elderly.

Frailty is a clinical syndrome that leads the elderly to a state of vulnerability, which increases the risk of adverse effects, such as dependence, disability, falls, injuries, acute illnesses, slow recovery, hospitalization, institutionalization in nursing homes and increased mortality[31,50].

After a fall, the elderly stay indoors for a long period of recovery and rehabilitation, which denotes costs for themselves and the health system. On the other hand, some authors[51] report that frailty increases with age, characterized as reserve loss and consequent increase in the risk of distinct events in the health of the most vulnerable population. Stressing events in the elderly in a frail state, such as impaired balance and cognitive status, are strongly associated with falling and delirium[50].

With the demographic transition and the consequent increase in life expectancy, the elderly may present several syndromes resulting from the process of senescence and senility and should have a more detailed evaluation of the health-disease process.

Regarding the limitation of the study, it was verified that the authors used different instruments, but that the researchers were able to identify the fall and its characteristics, to measure frailty and to make the association between them and the other sociodemographic variables in the elderly, besides describing health conditions of the study population. Another aspect to be highlighted is that most of the researches on fall were made through self-report of the elderly, unlike frailty, which was evaluated with different scales of measures, with validity and feasibility to predict cases of frailty.

CONCLUSION

The objective of the study was to analyze the prevalence of falls and the frailty syndrome and the association between them in the elderly population, through a systematic review. Data from the 19 included studies showed a population of 40 to 6,724 elderly, aged over 65 years. The prevalence of falls in the frail elderly ranged from 6.7% to 44%. There was evidence that the fall is associated with the presence of frailty in the elderly. In this review, there was an association of 1.80 (95% CI, 1.51-2.13).

This association between the two variables depends on multiple factors, such as age, sex, data collection instrument, setting, and the elderly senescence process itself. It should be noted that the two syndromes are important to be evaluated and monitored by health professionals, to prevent possible health problems, besides hospitalization and death.

The data of this review contribute to the advancement of the knowledge of the area of Geriatrics, with the longevity of the human being. Therefore, it is necessary to develop proposals for risk prevention for this population.

RESUMO

Objetivo: Analisar a prevalência de quedas e da síndrome da fragilidade e a associação entre essas duas síndromes na população idosa. **Método:** Revisão sistemática, sem restrição de datas, nos idiomas inglês, português e espanhol, nas bases de dados PubMed, CINAHL, LILACS e na biblioteca virtual SciElo. A associação entre ambas as variáveis foi extraída dos próprios artigos (Odds Ratio e os Intervalos de Confiança de 95%). **Resultados:** Foram incluídos na revisão 19 artigos publicados entre 2001 e 2015. A prevalência de queda no idoso frágil esteve entre 6,7% e 44%; nos pré-frágeis, entre 10,0% e 52,0%, e nos não frágeis, entre 7,6% e 90,4%. A associação entre ambas as variáveis apresentou o valor de OR 1,80 (IC 95% 1,51-2,13). **Conclusão:** Há evidências de que a queda está associada à fragilidade do idoso. Outros fatores podem influenciar essa associação, como idade, sexo, instrumento de coleta de dados dos estudos, local onde vive e o próprio processo de senescência.

DESCRITORES

Idoso; Acidentes por Queda; Idoso Fragilizado; Enfermagem Geriátrica; Revisão.

RESUMEN

Objetivo: Analizar la prevalencia de caídas y el síndrome de la fragilidad y la asociación entre ambos síndromes en la población mayor. **Método:** Revisión sistemática, sin restricción de fechas, en los idiomas inglés, portugués y español, en las bases de datos PubMed, CINAHL, LILACS y en la biblioteca virtual SciElo. La asociación entre ambas variables fue extraída de los propios artículos (Odds Ratio y los Intervalos de Confianza del 95%). **Resultados:** Fueron incluidos en la revisión 19 artículos publicados entre 2001 y 2015. La prevalencia de caída en el anciano frágil estuvo entre el 6,7% y el 44%; en los pre frágiles, entre el 10,0% y el 52,0%; y en los no frágiles, entre el 7,6% y el 90,4%. La asociación entre ambas variables presentó el valor de OR 1,80 (IC 95% 1,51-2,13). **Conclusión:** Hay evidencias de que la caída está asociada con la fragilidad del anciano. Otros factores pueden influenciar dicha asociación, tales como edad, sexo, instrumento de recolección de datos de los estudios, sitio en donde vive y el proceso mismo de ancianidad.

DESCRIPTORES

Anciano; Accidentes por Caídas; Anciano Frágil; Enfermería Geriátrica; Revisión.

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