Revista de Enfermagem
do Centro-Oeste Mineiro
2020;10:e3835
DOI: 10.19175/recom.v10i0.3835
www.ufsj.edu.br/recom

RECOM
REVISTA DE ENFERMAGEM DO CENTRO-OESTE MINEIRO

Review Article

A QUALIDADE DO SONO E A FRAGILIDADE EM IDOSOS: REVISÃO INTEGRATIVA

SLEEP QUALITY AND FRAILTY IN ELDERLY PEOPLE: AN INTEGRATIVE REVIEW

LA CALIDAD DEL SUEÑO Y LA FRAGILIDAD EN LOS ANCIANOS: REVISIÓN INTEGRADORA

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RESUMO

Objetivo: Abordar os principais aspectos relacionados à fragilidade e à qualidade do sono em idosos, identificando prevalência, características clínicas, fatores associados e instrumentos de avaliação. **Método**: Trata-se de revisão integrativa da literatura. A busca foi feita nas bases de dados da LILACS, MEDLINE, BDENF, SCOPUS e CINAHL, utilizando os seguintes descritores: idoso fragilizado, transtorno do sono-vigília, com o conector booleano *AND*. Foram identificadas 145 publicações e uma amostra de dez estudos foi obtida. **Resultados**: Foram identificados cinco (50%) artigos que utilizaram a avaliação de fragilidade de Fried e cinco (50%) que utilizaram a PSQI para investigar a qualidade do sono. A prevalência de fragilidade encontrada foi 4,14% e 49,3% entre os idosos da comunidade urbana, rural e Instituição de Longa Permanência para Idosos (ILPI). A prevalência da sonolência diurna entre idosos frágeis foi identificada em seis (60%) artigos. **Conclusão**: As evidências revelam que a fragilidade e a qualidade do sono são independentes, porém potencializam o risco para a mortalidade quando associadas.
Descritores: Idoso fragilizado; Transtornos do Sono-Vigília; Idoso; Sono; Enfermagem.

ABSTRACT

Objective: To address the main aspects related to frailty and quality of sleep in the elderly people, by identifying prevalence, clinical characteristics, associated factors, and assessment tools. **Method**: This is an integrative literature review. The research was made on the databases LILACS, MEDLINE, BDENF, SCOPUS, and CINAHL with the following descriptors: frail elderly people, sleep-surveillance disorder, with the Boolean connector *AND*. 145 publications were identified, out of which a sample of ten studies was used. **Results**: Five (50%) papers that used Fried's frailty assessment were selected, as well as 5 (50%) that used a PSQI to investigate sleep quality. The prevalence of frailty found was 4.14% and 49.3% among the elderly population in urban communities, rural communities, and Long Term Care Facilities (LTCF). The prevalence of daytime sleepiness among the older adults was identified in six (60%) articles. **Conclusion**: Results show that frailty and sleep quality are not related, but they increase the risk of mortality when associated.
Descriptors: Frail Elderly People; Sleep Wake Disorders; Aged; Sleep; Nursing.

RESUMEN

Objetivo: abordar los principales aspectos relacionados con la fragilidad y la calidad del sueño en los ancianos, identificando predominio, características, factores asociados e instrumentos de evaluación. **Método**: esta es una revisión de literatura integradora. Se realizó una búsqueda en las bases de datos de LILACS, MEDLINE, BDENF, SCOPUS y CINAHL, utilizando los siguientes descriptores: anciano frágil, trastorno de vigilancia del sueño, con el operador booleano AND. Se identificaron 145 publicaciones y se utilizó una muestra de 10 estudios. **Resultados**: seleccionamos 5 (50%) artículos que usaron los criterios de fragilidad de Fried y 5 (50%) usaron un PSQI para investigar la calidad del sueño. El predominio de fragilidad encontrada fue del 4,14% y el 49,3% entre los ancianos en las comunidades urbanas, rurales y LTCF. El predominio de somnolencia diurna entre los ancianos se identificó en 6 (60%) de los artículos. **Conclusión**: las evidencias muestran que la fragilidad y la calidad del sueño son independientes, aunque puede aumentar el riesgo de mortalidad cuando ambas están asociadas.
Descriptores: Anciano Frágil; Trastornos del Sueño-Vigilia; Anciano; Sueño; Enfermería.

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How to cite this article:
Nogueira JT, Lopes JLBO, Silva MCS, et al. Sleep quality and frailty in elderly people: an integrative review. Revista de Enfermagem do Centro-Oeste Mineiro. 2020;10:e3835. [Access_____]; Available in:_____. DOI: http://doi.org/10.19175/recom.v10i0.3835

INTRODUCTION

The frailty syndrome in older people is known as a state of physiological vulnerability related to age, produced by the homeostatic reserve and reduced ability of the body to cope with a varied number of negative health outcomes[1]. Among the main risk factors for the syndrome, the presence of comorbidities, loss of body mass, reduced muscle strength, exhaustion and fatigue stand out. [2-3]

Sleep disorder, characterized as unsatisfactory quality or insufficient quantity, is another risk factor for the frailty syndrome that is still little evidenced in studies. Such changes may cause an increase in daytime sleepiness, interruptions in nighttime sleep and behavioral changes [4], in addition to potentiating the complications arising from frailty [5], especially among the elderly people, who have more than one chronic disease. Sleep disorder generates weakness and fatigue[5], which are criteria that define physiological frailty in older people, as well as risk of falling, lack of enthusiasm, mood swings and old age, which are considered as criteria for multidimensional frailty [6]. Thus, the frail elderly person with possible chronic diseases need continuous health care, and the nurse is the professional who is able to provide and to manage this assistance in a qualified and safe way through welcoming, attention, guidance and specific care.

Currently, there is evidence[5,7] that associates frailty with sleep disorder, demonstrating the importance of a comprehensive evaluation of the elderly person, which includes variables for the quality and quantity of sleep. However, for greater dexterity and reliability in the assessment of the frail elder, it is necessary to investigate the best instruments for frailty, as well as for sleep. In addition, it is known that for nursing the evaluation of the elderly person is very important to offer quality and effective care to the individual and his family. This study is justified by the need to understand the existing correlation between the variables of frailty and sleep in old age, in order to contribute for nurses to perform their care based on scientific evidence, from the investigation of the relation of the set of factors that can indicate the elderly person's current state of health regarding the aspects in question.

In view of the nurse's evaluation, which recommends a detailed analysis to validate and to prioritize the elderly person's health needs, articulating scientific evidence on fragility and sleep disorder, in this integrative review, the objective is to address the main aspects related to frailty and quality of sleep in older people. And, consequently, to identify the prevalence of frailty in these people with altered sleep quality, their clinical characteristics and associated factors, and the instruments used to measure frailty and the quality and quantity of sleep.

METHOD

It is an integrative literature review, a method whose objective is to gather and to synthesize results of multiple published researches on a given theme or guiding question, following an order of steps that, in this study, were: identification of the theme of the integrative review; search for the topic in literature; evaluation of studies; analysis of articles, with interpretation of results and synthesis of the analyzed data [8].

The guiding question is as recommended in the PICOT [8]: "What criteria of frailty are associated with poor quality or quantity of sleep in elderly people?" The guiding question is justified as it will support the relation of the set of factors that may indicate the current state of health of the frail and sleepy elderly person, providing scientifically accurate assistance.

Based on the questioning, the articles were searched from January to March 2020. Through Virtual Health Library (VHL), the data were searched on Latin American and Caribbean Literature on Health Sciences (LILACS), Nursing Database (BDENF) and Medical Literature Analysis and Retrieval System Online (MEDLINE), the latter was also consulted by the United State National Library of Medicine National Institute of Health (PubMed). In addition, there were searches in two more independent databases: Cumulative Index to Nursing & Allied Health Literature (CINAHL) and SCOPUS, through the Periodical Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES).

To carry out the searches, combinations with the Health Science Descriptors (DeCS) and Medical Subject Headings (Mesh) were used: "frail elderly", "frail elderly", "sleep wake disorders", employing the Boolean connector "AND".

In the separation of the studies, the following inclusion criteria were established: scientific articles published between 2009 and 2019, available in a complete way and that met the themes: sleep and frailty in elderly people aged 60 or over, of both sexes. The exclusion

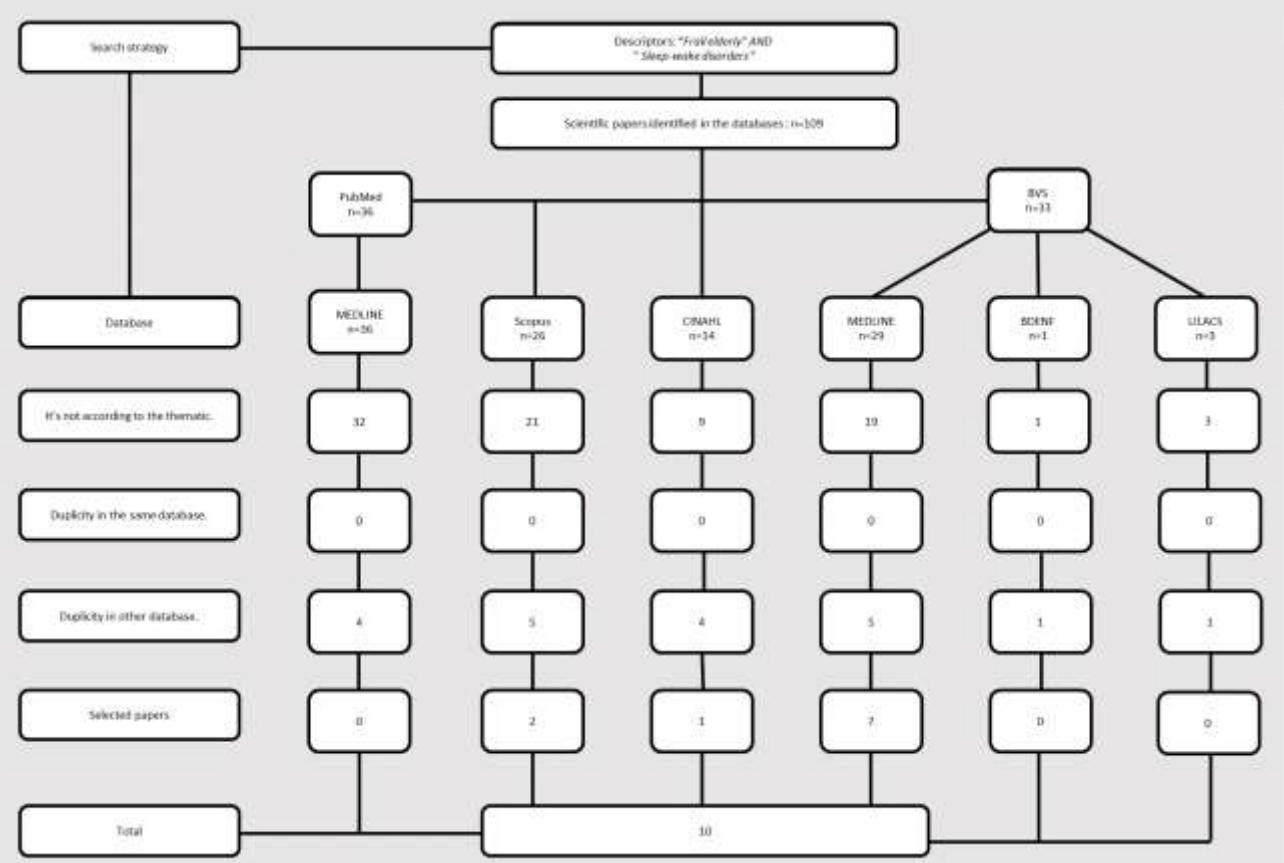
criteria were: opinion scientific papers, dissertations, literature review, videos and editorials.

The selection was made initially by reading the title and abstract, and then the full approach of the article, analyzed according to the inclusion and exclusion criteria. The evaluation of the selected studies happened through careful reading and individual file, using an instrument built with information of interest to researchers, such as databases, identification of authors, aspects of poor quality and quantity of sleep, prevalence of frailty, factors related to frailty, scales for assessing sleep quality and frailty, sample and place of research, place of study and association of frailty with factors related to quality and quantity of sleep.

33 publications were identified on the VHL, three on the LILACS database, one on BDENF and 29 on MEDLINE. 26 articles were found on SCOPUS and 14 publications on CINHAL. Through PubMed, 36 studies were identified, all from MEDLINE. After completing the full reading of the scientific papers, ten papers that met the inclusion criteria were selected. The research steps in databases, selection, analysis of studies and data collection were carried out independently by two researchers. In case of doubt or disagreement, a third reviewer's opinion was requested on the inclusion or not of the study.

The research and data selection process for the integrative review is presented in a flowchart format (Figure 1), containing the selection of studies.

Figure 1 – Flowchart of scientific papers selection. Uruguaiana (RS), Brazil, 2020.



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RESULTS AND DISCUSSION

The data of the publications are presented in a descriptive form, in table format (Figure 2), prepared by the authors, setting out the steps for the organization of the studies. The results are distributed according to the author's name, year of publication, title, country, study location, prevalence of frailty and measurement scales for the clinical condition of frailty and quality and quantity of sleep.

Figure 2 - Articles included in the Integrative Review. Uruguaiana (RS), Brazil, 2020.

Authors, year	Title	Objective	Method/ Place of study	Number and prevalence of frailty	Frailty and sleep assessment scales	Outcome/conclusions	EL*
1- Nakakubo et al., 2019[9]	Association of sleep condition and social frailty in community-dwelling older people	To verify the association between cognitive decline and sleep duration and excessive daytime sleepiness (EDS) in elderly people.	Cross-sectional study. Urban community Japan	495 (11,2%) frail people	Self-report; self-report.	Long sleep duration and EDS have been associated with social fragility; elderly people with both sleep patterns would have a higher risk of progression of social fragility.	L6
2- Tamayo et al., 2017[7]	Sleep Complaints Are Associated With Frailty in Mexican Older Adults in a Rural Setting	To analyze the association between sleep complaints and frailty status.	Cross-sectional studies Rural community Mexico	63 (10,7%) frail people	Fried; Self-report.	Sleep complaints were associated with frailty in older women.	L6
3- Brutto et al., 2016[6]	The Effect of Age in the Association between Frailty and Poor Sleep Quality: A Population-Based Study in Community-Dwellers (The Atahualpa Project)	To evaluate the effect of age on the association between poor sleep quality and frailty.	Cross-sectional study. Rural community Ecuador	97 (31%) frail people	EFS; PSQI	Significant association between age, poor sleep quality and frailty.	L6
4- Lee et al., 2016[10]	Long sleep duration, independent of frailty and chronic Inflammation, was associated with higher mortality: A national population-based study	To explore associations between prolonged sleep duration, frailty, chronic inflammation and mortality.	Cohort study. Urban community China	84 (9%) frail people	Fried; PSQI	Prolonged sleep duration has been associated with mortality in older people.	L4
5- Lee et al., 2014[11]	Long Sleep Duration Is Associated With Higher Mortality in Older People Independent of Frailty: A 5-Year Cohort Study	To examine the relationship between sleep duration, frailty status and mortality in elderly people.	Cohort study Urban community China	142 (4,14%) frail people	Fried; Self-report	The fragility and long duration of nighttime sleep of ten hours or more have been associated with five-year mortality in older adults.	L4

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Authors, year	Title	Objective	Method/ Place of study	Number of prevalence of frailty	Frailty and sleep assessment scales	Outcome/conclusions	EL*
6- Santos et al., 2014[12]	Association between sleep disorders and frailty status among elderly	To analyze the association between nap frequency and levels of frailty, gender, age, education, family income and the five frailty criteria.	Cross-sectional study. Urban community Brazil	173 (9,7%) frail people	Fried; Self-report.	No significant association was found between the frequency of napping and the selected sociodemographic variables and levels of frailty among the elderly people, except for the frailty criterion: low intake and physical activity.	L6
7- Nóbrega et al., 2014[13]	Sleep and Frailty Syndrome in Elderly Residents of Long-Stay Institutions: A Cross-Sectional Study	To evaluate the relationship between sleep and frailty syndrome in residents of long-term care facilities.	Cross-sectional study. ILPI Brazil	34 (49,3%) frail people	Fried; PSQI	Sleep disorders, including poor quality and prolonged latency, were related to frailty in institutionalized elderly.	L6
8- Ensrud et al., 2012[14]	Sleep Disturbances and Risk of Frailty and Mortality in Older Men	To examine the association between older non-frail men and poor sleep quality with the risk of frailty and death.	Prospective cohort. Urban community U.S	360 (14,4%) frail people	Fried adaptation; PSQI e ESS	Older frail men, poor sleep quality, greater night watch and greater night hypoxemia were, independently, associated with greater chances of frailty or death.	L4
9- Ensrud et al., 2009[15]	Sleep Disturbances and Frailty Status in Older Community-Dwelling Men	To assess the association of sleep disorders and frailty status in older men.	Cross-sectional analysis Urban Community U.S	437 (14%) frail people	Fried adaptation; PSQI and ESS	Sleep disorders, including low self-reported quality, lower efficiency, prolonged latency and respiratory disorders, are independently associated with greater evidence of frailty.	L6
10- Fragoso et al., 2009[16]	Sleep-wake disturbances and frailty in community-living older persons	To evaluate the association between sleep–wake disturbances and frailty.	Cross-sectional study Urban community U.S	154 (41,2%) frail people	Fried adaptation; ESS and ISI	Sleep-wake disorders that present with daytime sleepiness, but not insomnia, are independently associated with frailty.	L6

* EL = Evidence level

Source: it was created by the authors.

The countries that stand out with the greatest number of studies are the United States [14-16], followed by Brazil [12-13] and China [10-11]; Ecuador [6], Mexico [7] and Japan [9]. The data reveal that only two (20%) of the studies originate from Brazil, the other eight (80%) ones are foreigners. However, despite the relevance of the topic, at least in the country, the explanation for this result could be the incipient scientific literature on fragility [17].

Regarding the year of publication, six papers (60%) were written between 2014 and 2019 [6-7,9-12], four papers (40%) between 2009 and 2013 [13-16]. It is proven that studies about the elderly health area have been widely recognized due to the projection of elderly people that grows significantly, since, in 2010, the elderly population in Brazil was 10.8%, and the estimate number of older people in 2040 will reach 23.4% [18].

As for the place of study, seven (70%) papers were carried out in the community [9-12,14-16]; two papers (20%) in a rural community [8-9]; and one (10%) paper in a long-stay institution for the elderly people (LSIE) [13]. The prevalence of studies carried out with the older population in the community was also identified in an integrative review focusing on frailty [19], revealing the concern in the promotion and prevention of diseases and the syndrome. The absence of studies in the hospital environment emphasizes a knowledge gap that could be better investigated, given the numerous risk factors that exist in this type of environment.

The existence of studies in the rural environment reveals their dissemination in other contexts of life for the elderly people. Therefore, it becomes relevant to identify the fragility in this environment, regardless of the difficulties of access to carry out the research.

A study in Ribeirão Preto revealed that 75% of institutionalized elderly people are frail, with 62.5% having depressive symptoms, 44.6% had three or four diseases and 42.8% had suffered a fall in the last 12 months. These high percentages demonstrate the presence of risk factors in institutionalized elderly people and that should be a topic more addressed by nurses [20].

To assess frailty, five (50%) papers used Fried's criteria [7.10-13], three (30%) Fried's adaptations [14-16], one (10%) Edmonton's Fragility Scale (EFS) [6], one (10%) phenotype of social fragility (self-report) [9]. The identification of Fried's criteria as an instrument for assessing frailty was expected by the authors, as Fried et al. were the first researchers to describe the concept and criteria that reveal the presence or absence of frailty. Such criteria are considered easy to use in clinical practice, corroborating the percentage of studies found.

Even to a lesser extent, the identification of other methods of assessing frailty does not mean that the other instruments are not effective, since they assess frailty in different ways. Fried evaluates frailty in a one-dimensional way, addressing only the physiological aspects; Edmonton, in a multidimensional way, addressing the social, emotional, pathophysiological, behavioral, functional, environmental, cognitive and spiritual domains. Social frailty is explained through self-reporting based on questions related to solitary life, but so far there are few indexes that evaluate it and there is no consensus on which is the most effective method to assess the social aspect of frailty [21].

It is assumed that the difference between the instruments used is linked to the years of publication of the scientific papers, considering that those ones who used EFS and social frailty are more current. The EFS is comprehensive because it is multidimensional, therefore, it has greater competence in pointing out risk factors, which do not include only the physiological ones, and may be better related to interferences in sleep quality.

The prevalence of frailty ranged from 4.14% [11] to 49.3% [13] among studies that used Fried's criteria. The identification of different percentages for those papers that used these criteria can be justified by the influence of the environment and the health context of the elderly person in relation to frailty. More precisely, the prevalence of frailty varied from 4.14% to 9% [9] among older adults in the community and among the LSIE it was 49.3%.

The identification of 31% [6] of frail elderly people in studies that used EFS, in the rural environment, corroborates with the multidimensionality of frailty by exposing the particularities of the aging process in rural areas. However, in comparison to other studies, whose elderly people were inserted in the urban community, the prevalence of frailty using the EFS is low as it showed 35.7% to 47.2% of frail elderly people [2.22].

The social frailty self-report instrument identified frailty in 11.2% [9] of the elderly people, inferring that aspects related to lonely life are not related to research on the topic. In contrast, in another study, loneliness is identified as a factor

of frailty in the older population, with fragile elderly people being identified with a prevalence of 76.3% without social support, 74.1% who feel the lack of people, 67.5% living alone, 64.9% feeling lonely and 55.6% having low social participation [23].

The quality and quantity of sleep among frail elderly people were assessed by four instruments in an isolated and combined way. About the ten papers, five (50%) used the Pittsburgh Sleep Quality Index (PSQI) [6,10,13-15]; four (40%) the Self-Report [7,9,11-12]. Two (20%) of the studies associated the PSQI with the ESS [14-15], one (10%) associated the ESS with the ISI [16].

It is well known that the PSQI was the most used instrument among the selected studies, revealing that it is a widely used tool to measure sleep quality and quantify it. PSQI is the gold standard instrument for assessing quality and sleep disorders for one month, and it is easily applicable in the clinical context [4]. Such finding is evidenced when observing that the PSQI was the only instrument used in isolation.

On the other hand, ESS demands an increase, as there was an association with another sleep assessment instrument in the three (30%) articles that used it. This data was expected by the authors, since ESS is a method of assessing daytime sleepiness and frailty is influenced by other disorders.

In comparison with the self-report, it was observed that more than half of the articles (60%) used a subjective instrument for the assessment of sleep, demonstrating the relevance of including the perception of the elderly people about their quality of sleep, through self-administered questions. PSQI, ESS and ISI are easy to fill, to understand and to interpret, showing efficiency in the applicability of criteria that evaluate sleep.

Sleep quality related to frailty was associated with the male [14] and female [7] sexes. Two studies selected in their sample only male elders [14-15], excluding existing factors in the relation between frailty and older women. However, studies that included both sexes (80%) revealed that females (60%) are a risk factor for quality and quantity of sleep among frail elderly people. In a rural community in Mexico [7], the prevalence of elderly women who had sleep complaints increased the possibility of being fragile. Nevertheless, it is stated that in the results for females, the probability of frailty has tripled on the difficult to sleep, compared to elderly people who don't have this same problem.

Reinforcing the association between sex and sleep quality, a study that was part of the Aging and Well-Being Survey (AWBS), carried out in the city of São Paulo [24], shows that 51.5% of the female sex have difficulty with the sleep. This fact may be related to the high prevalence of joint diseases, urinary incontinence and nocturia among women.

In contrast to the evidence, the increase in the risk of frailty among non-frail men [14] who have a greater night watch and nocturnal hypoxemia were also identified in the Brazilian study conducted at an LSIE [13]. Such findings demonstrate that the correlation between sex, fragility and quality of sleep are still incipient and require understanding about cause and effect.

When analyzing the components of frailty and sleep [5], frail older adults were the ones who had the worst quality of sleep. Nevertheless, the elderly people who had problems with sleep, inadequate duration, low efficiency, prolonged latency, disturbances of night and daytime sleep showed unidimensional, that is, physiological, confirmatory criteria for reducing weight unintentionally, walking speed, grip strength, physical activities and the presence of exhaustion.

Another multidimensional frailty criterion is the identification of emotional aspects. Although it used only physiological criteria, breaking paradigms related to risk factors for frailty, a study with frail elderly people at a LSIE found that those people who took time to fall asleep showed a lack of enthusiasm [13]. Even understanding that the lack of enthusiasm does not result exclusively in depression, it can be assured that frailty leads to depressive symptoms. This consequence can be supported by the identification of depression among frail elderly people with poor sleep quality [7,10-11,13-15].

A study carried out among elderly people in the community reveals that depressive symptoms are associated with greater pain complaints, worse sleep quality and lower volume of physical activity, with a correlation between depressive symptoms and sleep quality was 0.423 ($p < 0.05$) [25]. Thus, it is up to professionals to identify frail elderly people and to investigate the quality and quantity of sleep, as well as to apply scales that assess depression, such as the Depression Scale of the Center for Epidemiological Studies (CES-D), in view of the significant correlation between the variables [10,13,16], or the Geriatric Depression Scale (GDS) [7,11,14-15].

In the studies evaluated, frailty was associated with poor subjective quality of sleep [13-15], short sleep duration [14], poor sleep efficiency [14], prolonged sleep latency [13-15], daytime sleepiness [9, 11-13,15-16], early sleep [10], long sleep duration [9-11], effect of age [6], insomnia [11,16].

The identification of elderly people with fragility and changes in sleep points to the need to implement interventions for this population. The early assessment of risk factors for poor sleep quality may be a relevant aspect for the modification of frailty. Although the data do not confirm the results related to the risk of death, sleep quality and frailty, a study reveals that sleep quality may have a greater prognostic utility for assessing the risk of frailty in the elderly, while daytime sleepiness may have greater prognostic utility to assess mortality risk [14]. This fact becomes relevant in clinical practice, as fragility and sleep disorders are risk factors for mortality.

In this study, it is worth noting that one of the limitations is related to the integrative review method, which included only articles in English and Portuguese and available, in full, in the online form. Another limitation considered important by the authors is that studies developed in the hospital context were not found nor focused on interventions, mainly, nursing; possibly, this is due to the descriptors used. As it considers an emerging theme in public health, this review prioritized its mapping in different databases, with less depth of analysis of the evidence. However, about the ten studies evaluated, seven were cross-sectional type and the others were cohort type. Thus, new research is suggested, such as systematic reviews, with assessment of the levels of evidence in research, in each area of knowledge, nursing, medicine, psychology and physiotherapy, considering the multidimensionality of frailty in the elderly people.

However, the advantages of the present study refer to the identification and relevance of the quality and quantity of sleep in frail elderly people in the evaluated articles that included only clinical investigation. The potential for the selection of articles is linked to the presence of a third reviewer, through doubt or disagreement, a specialist in gerontological nursing. This reinforces the importance of incorporating validated instruments about frailty and sleep disorder in the assessment of nurses, aiming to conduct their reasoning and clinical judgment to obtain better interventions and results for the frail (and pre-frail) elderly people and their family.

CONCLUSION

Evidence from this integrative review reveals that frailty negatively affects the quality and quantity of sleep in older people. This relationship is independent and can increase the risk of death among them when it is associated. Thus, it is up to health professionals to assess the elderly patients early in order to minimize damage.

Among the selected papers, there was a high prevalence of frail elderly people residing in LSIE who have sleep disorders, followed by elderly people from the countryside and from the community. There was a predominance of Fried's criteria for the assessment of frailty and PSQI for the subjective identification of sleep.

The identification of the female gender and depressive symptoms were prevalent among those with frailty and changes in sleep, being in correspondence with the risk factors for the frailty syndrome.

The results found in this study highlight a deficit in Brazilian publications on the subject addressed. Thus, once its relevance to the elderly people's health has been identified, it is suggested that further research be carried out.

Furthermore, as a contribution to the health area, it is recommended that the instruments to assess the fragility and quality of sleep identified in this study should be incorporated into the care practice, performed on the elderly population segment residing in LSIEs and in rural and urban communities, as they help in the early identification of changes, providing opportunities for early interventions.

For the nurse, the use of the assessment instruments mentioned in the review allows directing the identification of risks arising from complications arising from sleep disorders in frail or pre-frail elderly people and the establishment of interventions that make it possible to qualify the care, management and assistance to the elderly population.

Among the limitations of the study, there is the absence of studies developed in the hospital context and those that articulate interventions, especially nursing, for the elderly person classified as fragile and with sleep disorders.

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Note: Article resulting from the work “A síndrome da fragilidade e a qualidade do sono em idosos”, presented to the Nursing Graduation Course, Universidade Federal de Uruguaiana. We inform that there was no funding agency.

Received in: 08/06/2020
Approved in: 15/10/2020

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