Original Article

TEXTO & CONTEXTO ENFERMAGEM
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IS POOR QUALITY SLEEP PRESENT IN OLDER ADULTS WITH WORSE SOCIAL AND HEALTH STATUS?

Sonia Gonçalves da Mota[1]
Isabela Thaís Machado de Jesus[2]
Keika Inouye[1,3]
Marcela Naiara Graciani Fumagale Macedo[1]
Tábatta Renata Pereira de Brito[4]
Ariene Angelini dos Santos-Orlandi[2,5]

[1]Universidade Federal de São Carlos, Departamento de Gerontologia, São Carlos. São Paulo, Brasil.
[2]Universidade Federal de São Carlos, Programa de Pós-Graduação em Enfermagem. São Carlos, São Paulo, Brasil.
[3]Universidade Federal de São Carlos, Programa de Pós-Graduação em Gerontologia. São Carlos, São Paulo, Brasil.
[4]Universidade Federal de Alfenas, Faculdade de Nutrição, Programa de Pós-Graduação em Enfermagem. Alfenas, Minas Gerais, Brasil.
[5]Universidade Federal de São Carlos, Departamento de Enfermagem. São Carlos, São Paulo, Brasil.

ABSTRACT

Objective: to analyze the relationship among sleep and sociodemographic aspects, health, frailty, performance in activities of daily living, cognitive performance and depressive symptoms of older residents in the community.
Method: a cross-sectional, quantitative study was conducted with 81 older adults residents in the area covered by a Family Health Unit in the city of São Carlos (SP), Brazil. Data collection occurred in 2019, through the application of the following instruments: questionnaire for socioeconomic and health characterization of the older adult, Pittsburgh Sleep Quality Index, Frailty Phenotype proposed by Linda Fried, Mini Mental State Examination, Geriatric Depression Scale, Katz Index and Lawton Scale. Participants were divided into comparative groups according to sleep quality scores. Fisher's exact and Pearson's $\chi 2$ were used. A significance level of 5% was adopted.
Results: 50.6% of the older adults had poor quality sleep (n=41), followed by 33.3% of older adults with good quality sleep (n=27) and 16.1% had sleep disorders (n=13). There was a relationship between sleep quality and sex (p=0.008), work status (p=0.001), self-assessment of health (p=0.013), falls (p=0.034), pain (p=0.012), frailty level (p=0.026) and the slow gait criterion (p<0.001).
Conclusion: there was a higher prevalence of poor quality sleep and sleep disorders in older patients, who do not work outside the home, who evaluated their health as regular or poor, who suffered falls in the last year and who complained of pain, frailty and slow gait.

DESCRIPTORS: Sleep. Sleep disorders. Health of the older adults. Older people. Social vulnerability.

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SONO DE MÁ QUALIDADE ESTÁ PRESENTE EM IDOSOS COM PIOR NÍVEL SOCIAL E DE SAÚDE?

RESUMO

Objetivo: analisar a relação entre sono e aspectos sociodemográficos, de saúde, fragilidade, desempenho em atividades de vida diária, desempenho cognitivo e sintomas depressivos de idosos residentes na comunidade.
Método: estudo transversal, quantitativo, realizado com 81 idosos residentes na área de abrangência de uma Unidade de Saúde da Família do município de São Carlos (SP), Brasil. A coleta de dados ocorreu em 2019, mediante a aplicação dos seguintes instrumentos: questionário para caracterização socioeconômica e de saúde do idoso, Índice de Qualidade do Sono de Pittsburgh, Fenótipo de Fragilidade proposto por Linda Fried, Mini Exame do Estado Mental, Escala de Depressão Geriátrica, Índice de Katz e Escala de Lawton. Os participantes foram divididos em grupos comparativos segundo os escores de qualidade do sono. Foram utilizados Exato de Fisher e $\chi 2$ de Pearson. Adotou-se nível de significância de 5%.
Resultados:50,6% dos idosos apresentaram sono de má qualidade (n=41), seguidos de 33,3% de idosos com sono de boa qualidade (n=27) e 16,1% com distúrbios do sono (n=13). Houve relação entre qualidade do sono e sexo (p=0,008), situação laboral (p=0,001), autoavaliação de saúde (p=0,013), queda (p=0,034), dor (p=0,012), nível de fragilidade (p=0,026) e o critério lentidão da marcha (p<0,001).
Conclusão: houve maior prevalência de sono de má qualidade e de distúrbios do sono em mulheres idosas, que não trabalham fora de casa, que avaliaram a sua saúde como regular ou ruim, que sofreram quedas no último ano, que se queixaram de dor, frágeis e com lentidão da marcha.

DESCRITORES: Sono. Transtornos do sono-vigília. Saúde do idoso. Idoso. Vulnerabilidade social.

SE PRESENTA SUEÑO DE MALA CALIDAD EN ADULTOS MAYORES CON PEOR NIVEL SOCIAL Y DE SALUD

RESUMEN

Objetivo: analizar la relación entre sueño y aspectos sociodemográficos, salud, fragilidad, desempeño en actividades de la vida diaria, desempeño cognitivo y síntomas depresivos en adultos mayores residentes en comunidad.
Método: estudio transversal, cuantitativo, realizado con 81 adultos mayores residentes en el área de cobertura de una Unidad de Salud de la Familia en la ciudad de São Carlos (SP), Brasil. La recolección de datos se llevó a cabo en 2019, mediante la aplicación de los siguientes instrumentos: cuestionario para la caracterización socioeconómica y de salud del adulto mayor, Índice de Calidad del Sueño de Pittsburgh, Fenotipo de Fragilidad propuesto por Linda Fried, Mini Examen del Estado Mental, Escala de Depresión Geriatríca, Índice de Katz y Escala de Lawton. Los participantes se dividieron en grupos comparativos según las puntuaciones de calidad del sueño. Se utilizaron la exacta de Fisher y la $\chi 2$ de Pearson. Se adoptó un nivel de significancia del 5%.
Resultados: el 50,6% de los adultos mayores tenía mala calidad del sueño (n=41), seguido por el 33,3% de los ancianos con buena calidad de sueño (n=27) y el 16,1% con trastornos del sueño (n=13). Hubo relación entre la calidad del sueño y el género (p=0,008), situación laboral (p=0,001), salud autoevaluada (p=0,013), caída (p=0,034), dolor (p=0,012), nivel de fragilidad (p=0,026) y el criterio de lentitud de la marcha (p <0,001).
Conclusión: hubo una mayor prevalencia de sueño de mala calidad y trastornos del sueño en mujeresmayores, que no trabajan fuera del hogar, que calificaron su salud como regular o mala, que sufrieron caídas en el último año, que se quejaron de dolor, frágil y lentitud de la marcha.

DESCRIPTORES: Sueño. Trastornos del sueño-vigilia. Salud. Adulto mayor. Vulnerabilidad social.

INTRODUCTION

Sleep is a restorative action. It is a period of rest in which the body performs some functions that are important for health, such as strengthening the immune system, memory consolidation, hormonal secretion and release, in addition to relaxation and resting the body. A good night's sleep provides physical and mental rest, a sense of well-being, and the recovery of energy for the next day[1].

Population aging is heterogeneous and multidimensional. Cellular and extracellular alterations cause anatomical and functional changes throughout the aging process, with important emphasis on the decline in sleep quality in older adults. Aging affects changes in the quality and quantity of sleep and, at this stage, sleep complaints are frequent among older adults[1].

The prevalence of sleep problems increases with advancing age[2]. Older adults tend to nap during the day and sleep less at night due to the high number of awakenings due to nocturia[3]. Among the older adults the most frequent alterations are the reduction in sleep efficiency, with complaints of insomnia and the use of sleep-inducing medications[4]. These problems can have consequences in wakefulness, such as fatigue, irritability, difficulty concentrating and loss of intellectual performance[1], in addition to leading to the onset of obesity, diabetes, cardio and cerebrovascular diseases[5].

A recent study in Hong Kong found that more than 55% of older adults have sleep-related complaints. The higher incidence is related to females and individuals with anxiety, mood disorders and lower level of happiness[6].

A quantitative, cross-sectional and population study developed in a municipality of Santa Catarina, with 385 older adults of both sexes, aimed to evaluate the quality of sleep in older adults with and without chronic pain. Females prevailed in the sample (67.3%). Among the older adults with pain, 57.6% (n=129) presented poor sleep quality; among those without pain, 56.5% (n=91) had good sleep quality, with a statistically significant difference ($p<0.001$) among the older adults with and without chronic pain[7].

A mixed method study conducted in Kansas, United States of America, aimed to relate sleep with the activities of daily living and quality of life among older adults men and women (n=18). The results showed that the participants obtained, on average, 9.11 points in the Pittsburgh Sleep Questionnaire Index (PSQI), i.e., they had poor quality sleep. The interviewees' narratives revealed severe negative effects on quality of life, including reduced functional capacity and increased stress, anxiety and social isolation[8].

One of the objectives of a nationwide study of 12,174 Canadians was to investigate the relationship between sociodemographic factors and sleep duration. The results showed that short sleep was associated with low income[9].

Another study aimed to evaluate sleep quality in low-income older adults in a rural area of China and to identify the association between sleep quality and sociodemographic factors. The results showed that advanced age, unemployment and lower income were significant factors associated with an increased risk of poor sleep quality for both sexes[10].

Considering that sleep is a restorative action necessary for the preservation of life and that sleep problems tend to increase with advancing age and have negative impacts on the quality of life of this individual[2], studies related to the sleep of the older adults are justified. In addition, there may be an increase in spending on health services due to adverse events, impaired memory and physical and mental disorders, thus investigating this theme is necessary[11].

It is believed that the older adults in contexts of poverty are more exposed to situations of vulnerability, and the greater the damage to the quality of life and well-being of these individuals, who may be affected by poor quality sleep. Studies that sought to analyze the relationship between sleep and sociodemographic aspects, health, frailty, depressive symptoms, cognitive performance and activities of daily living among the older adults are scarce in the literature.

In view of the above, it seems important and pertinent to understand the relationship between these variables, especially those who are exposed to situations of greater social vulnerability, since there may be impairment of the quality of life and well-being of these individuals in the presence of sleep problems. The objective of this study was to analyze the relationship between sleep and sociodemographic aspects, health, frailty, performance in activities of daily living, cognitive performance and depressive symptoms of older adult residents in the community.

METHOD

This is a descriptive, cross-sectional and correlational study, based on the quantitative method of investigation. Its structure followed the guidelines present in the Declaration of strengthening the Reporting of Observational Studies in Epidemiology (STROBE).

It was held in São Carlos, a municipality in the interior of the State of São Paulo, Brazil, in the context of a Family Health Unit (USF) inserted in a region of high social vulnerability.

The population was composed of people aged 60 years or older, registered and living in the area covered by the São Carlos VIII USF. All individuals who met the following inclusion criteria were interviewed: being 60 years of age or older; understand the questions of the interview; agree to participate in the study. The exclusion criteria used were: severe hearing or vision deficits, which could hinder communication; use of a wheelchair; bedridden; with stroke sequelae and terminal stage, as they could hinder the gait test.

Initially, contact was made with the said USF and identification of the households to be visited. A visit was made to the older adults in the company of the community health agent of the USF, respecting the determinations of the direction of primary care of the municipality. In this visit, the older adults were informed about the objectives of the research, the voluntary nature of the participation, the confidentiality of the collected data and how to return the data to the older adults in the homes visited. Afterwards, the invitation was made to participate in the research. A home interview was scheduled for the older adults who agreed to participate. A list of 156 older adults were provided to the researcher, and of these, 75 were excluded, 11 were refusals, 60 addresses changed, one bedridden older adults one with severe cognitive deficit (dementia) and two wheelchair users. Thus, the final sample of this study was composed of 81 older adults.

Socioeconomic and health data were collected through a questionnaire, previously constructed by the researchers, with information on: gender, age group, ethnicity, marital status, religion, family arrangement, current work, retirement, responsibility for home support, family income, health plan, use of medications, subjective health assessment, satisfaction with life, falls and hospitalizations in the last year, presence of diseases, pain, physical activity, smoking, alcohol consumption, naps, coffee consumption and body mass index.

Sleep quality was assessed using the Pittsburgh Sleep Quality Index, a translated instrument adapted and validated for the Brazilian context[12]. It consisted of 19 self-reported questions and encompasses subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disorders, use of sleeping medication and daytime dysfunction. The overall score ranges from 0 to 21, and the higher the score, the worse the quality of the individual's sleep. Scores equal to or higher than five points indicate the presence of poor quality sleep and sleep disorders. The quality of sleep of individuals can be categorized as follows: good quality sleep (0 to 4 points), poor quality sleep (5 to 10 points) and presence of sleep disorders (11 to 21 points)[12].

Cognition was assessed by the Mini-Mental State Examination (MMSE). It is an internationally used cognitive deterioration screening instrument that provides information on different cognitive dimensions. It further signals whether there is likely to be any cognitive impairment and in what area. In Brazil, the MMSE was translated, adapted and validated[13]. The test consists of 12 items, with

a maximum score of 30 points. The cutoff score, a score that indicates the probable presence of cognitive alterations, varies according to the level of education of individuals: without schooling (17 points), from one to three years of schooling (22 points), from four to seven years of schooling (24 points) and eight years of schooling or more (26 points)[14].

Frailty was assessed by the phenotype proposed by Linda Fried, composed of five criteria: 1) Unintentional weight loss: self-reported: "in the last twelve months, do you think you have lost weight without dieting?". If so, if this weight loss was equal to or greater than 4.5 kg or 5% of body weight in the previous year, the older adults participant scored in this criterion; 2) Fatigue: evaluated by self-report referring to two questions - How often, in the last week, did you feel that everything you did required a great effort? and - How often, in the last week, did you feel that you could not carry out your activities? The older adults who answered "always" or "most of the time" to either of these two questions scored in this criterion; 3) Low palmar grip strength: evaluated by the use of portable hydraulic dynamometer in the dominant hand. Three consecutive measurements of palmar grip strength were measured, and arithmetic mean was used. To meet the criterion, the result was adjusted according to gender and Body Mass Index, according to Fried; 4) Low level of caloric expenditure (adapted): assessed by self-report - "Do you think you do less physical activity than twelve months ago?" If so, the older adults scored on this criterion; 5) Slow gait: evaluated by the average time spent to walk 4.6 meters. Three consecutive measurements of gait speed were measured, and arithmetic mean was used. To meet the criterion, the result was adjusted according to gender and height, according to Fried. The level of frailty was obtained by the number of criteria scored by the older adults i.e., the score in no criteria indicates a robust older adults in one or two criteria, indicates a pre-frail older adults person and in three or more criteria indicates a frail older adults[15].

Depressive symptoms were evaluated by the Geriatric Depression Scale. The Brazilian version has 15 questions, with answers "yes" or "no" (0 or 1). At the end, the sum of the score obtained is performed, and from zero to five points, there is no evidence of depressive symptoms, from six to ten points, indicating the presence of mild depressive symptoms, and from 11 to 15 points, severe depressive symptoms[16].

Functional capacity was evaluated by two instruments. The Katz Index for basic activities of daily living addresses tasks such as bathing, ability to dress, use the bathroom, transference, continence and eating. There are three possible scores for each of the items, according to the level of dependence of the patient: independent, needs care and dependent[17]. For the final score, the older adults person who said they needed help or depend on someone to perform any of the basic activities of daily living were considered dependent. Lawton and Brody's Scale of instrumental activities of daily living was validated for the national context[18]. The degree of independence for the following activities was assessed: using the telephone, using means of transport, shopping, preparing meals, performing housework, using medications and handling money. For each of these items, the older adults can score one (complete dependence), two (partial dependence) or three (independence). In the end, all items are added together, whose final score can vary between seven and 21 points, and 21 points mean independence and seven to 20, dependence.

Data collection occurred in a single session from March to November 2019 and was performed individually in the home of the older adults in a space made available by the family. Each interview lasted an average of 50 minutes.

In the descriptive analysis of the data, the proportions and differences between the groups were estimated using fisher's exact tests and Pearson's $\chi 2$. The significance level of 5% was adopted. All analyses were performed on Stata software version 13.0.

All ethical care governing research with human beings was observed and respected, according to Resolution 466/2012, regulated by the National Health Council. This study was approved by the

Research Ethics Committee of the Federal University of São Carlos. An Informed Consent Form was provided to the research participants, and the objectives of the study were presented and explained, and signed on two copies (one for the older adults and one for the researchers' archive). After reading and signing the Free and Informed Consent Form, data collection began.

RESULTS

The sample of this study consisted of 81 older adults. Regarding sleep, 50.6% of the older adults had poor quality sleep (n=41), followed by 33.3% of older adults with good quality sleep (n=27) and 16.1% with sleep disorders (n=13). Table 1 shows the distribution of participants according to sociodemographic aspects and sleep.

Table 1 – Distribution of study participants according to sociodemographic variables and sleep. São Carlos, SP, Brazil, 2019. (n=81)

Variables	Total n (%)	Good sleep quality n (%)	Poor sleep quality n (%)	Sleep disorder n (%)	p-value
Sex					
Female	42 (51.8)	9 (21.4)	22 (52.4)	11 (26.2)	0.008*
Male	39 (48.2)	18 (43.2)	19 (48.7)	2 (5.1)	
Age group					
60 to 69 years old	53 (65.4)	19 (35.9)	27 (50.9)	7 (13.2)	0.432*
70 to 79 years old	20 (24.7)	7 (35.0)	8 (40.0)	5 (25.0)	
80 years or older	8 (9.9)	1 (12.5)	6 (75.0)	1 (12.5)	
Ethnic group					
White	36 (44.4)	13 (36.2)	16 (44.4)	7 (19.4)	0.718*
Brown	31 (38.3)	10 (32.3)	16 (51.6)	5 (16.1)	
Black	11 (13.6)	2 (18.2)	8 (72.7)	1 (9.1)	
Other	3 (3.7)	2 (66.7)	1 (33.3)	-	
Marital status					
Single	6 (7.4)	3 (50.0)	2 (33.3)	1 (16.7)	0.715*
Married / with partner	52 (64.2)	19 (36.5)	26 (50.0)	7 (13.5)	
Separated / divorced	8 (9.9)	2 (25.0)	5 (62.5)	1 (12.5)	
Widower	15 (18.5)	3 (20.0)	8 (53.3)	4 (26.7)	
Religion					
Catholic	44 (54.3)	16 (36.4)	21 (47.7)	7 (15.9)	0.940*
Evangelical	35 (43.2)	10 (28.6)	19 (54.3)	6 (17.1)	
Other	2 (2.5)	1 (50.0)	1 (50.0)	-	
Lives with partner					
No	29 (35.8)	8 (27.6)	15 (51.7)	6 (20.7)	0.606†
Yes	52 (64.2)	19 (36.5)	26 (50.0)	7 (13.5)	

Table 1 – Cont.

Variables	Total n (%)	Good sleep quality n (%)	Poor sleep quality n (%)	Sleep disorder n (%)	p-value
Lives with children					
No	48 (59.3)	18 (37.5)	22 (45.8)	8 (16.7)	0.564†
Yes	33 (40.7)	9 (22.3)	19 (57.6)	5 (15.1)	
Works					
No	70 (86.4)	18 (25.7)	40 (57.1)	12 (17.2)	0.001*
Yes	11 (13.6)	9 (81.8)	1 (9.1)	1 (9.1)	
Retired / pensioner					
No	16 (19.8)	4 (25.0)	9 (56.2)	3 (18.8)	0.729*
Yes	65 (80.2)	23 (35.4)	32 (49.2)	10 (15.4)	
Responsible for the maintenance of the house					
No	19 (23.5)	4 (21.1)	13 (68.4)	2 (10,5)	0.331*
Yes	62 (76.5)	24 (37.7)	27 (44.3)	11 (18,0)	
Family income‡					
Up to 1 minimum wage	13 (16.7)	4 (30.8)	6 (46.1)	3 (23,1)	0.760*
Between 1 and 2 minimum wages	20 (25.6)	6 (30.0)	12 (60.0)	2 (10,0)	
More than 2 minimum wages	45 (57.7)	17 (37.8)	20 (44.4)	8 (17,8)	

*Fisher's Exact Test; †Pearson χ2 test; ‡ Current minimum wage: R$998,00, Brazil, 2019.

There was a predominance of older adult women (51.8%), who live with a partner (64.2%), who did not work (86.4%), are retired (80.2%), are responsible for the maintenance of the house (76.5%) and have a family income greater than two minimum wages (57.7%).

Statistically significant results were found between sleep quality and sex (p=0.008). Female older adult participants had a higher prevalence of poor quality sleep and sleep disorders when compared to male older adult participants. Statistical significance was also identified between sleep quality and work status (p=0.001), i.e., among the older adults who do not work, a higher prevalence of poor quality sleep and sleep disorders was observed when compared to older adults who work.

Table 2 presents the characterization of the older adult participants according to health and sleep aspects.

Table 2 – Distribution of study participants according to variables related to health and sleep condition. São Carlos, SP, Brazil, 2019. (n=81)

Variables	Total n (%)	Good sleep quality n (%)	Poor sleep quality n (%)	Sleep disorder n (%)	p-value
Health insurance					
No	68 (84.0)	24 (35.3)	34 (50.0)	10 (14.7)	0.603*
Yes	13 (16.0)	3 (23.1)	7 (53.8)	3 (23.1)	
Use of medication					
No	14 (17.3)	7 (50.0)	7 (50.0)	-	0.127*
Yes	67 (82.7)	20 (29.8)	34 (50.8)	13 (19.4)	
Self-assessment of health					
Excellent / good	44 (54.3)	20 (45.5)	20 (45.5)	4 (9.0)	0.013*
Regular	29 (35.8)	7 (24.1)	17 (58.6)	5 (17.3)	
Bad / very bad	8 (9.9)	0 (0.0)	4 (50.0)	4 (50.0)	
Self-assessment of life					
Excellent / good	46 (56.8)	19 (41.3)	21 (45.6)	6 (13.1)	0.423*
Regular	22 (27.2)	6 (27.3)	12 (54.5)	4 (18.2)	
Bad / very bad	13 (16.0)	2 (15.4)	8 (61.5)	3 (23.1)	
Fall in the last year					
No	48 (59.3)	21 (43.8)	22 (45.8)	5 (10.4)	0.034†
Yes	33 (40.7)	6 (18.2)	19 (57.6)	8 (24.2)	
Hospitalization in the last year					
No	65 (80.2)	23 (35.4)	31 (47.7)	11 (16.9)	0.648*
Yes	16 (19.8)	4 (25.0)	10 (62.5)	2 (12.5)	
Self-reported disease					
No	9 (11.1)	5 (55.6)	4 (44.4)	-	0.247*
Yes	72 (88.9)	22 (30.5)	37 (51.4)	13 (18.1)	
Pain					
No	27 (33.3)	15 (55.6)	10 (37.0)	2 (7.4)	0.012*
Yes	54 (66.7)	12 (22.2)	31 (57.4)	11 (20.4)	
Physical activity					
No	53 (65.4)	19 (35.8)	25 (47.2)	9 (17.0)	0.736*
Yes	28 (34.6)	8 (28.6)	16 (57.1)	4 (14.3)	
Smoke					
No	63 (77.8)	22 (34.9)	30 (47.6)	11 (17.5)	0.627*
Yes	18 (22.2)	5 (27.8)	11 (61.1)	2 (11.1)	

Table 2 – Cont.

Variables	Total n (%)	Good sleep quality n (%)	Poor sleep quality n (%)	Sleep disorder n (%)	p-value
Drinks alcoholic beverage					
No	72 (88.9)	24 (33.3)	37 (51.4)	11 (15.3)	0.891*
Yes	9 (11.1)	3 (33.3)	4 (44.5)	2 (22.2)	
Coffee consumption					
No	6 (7.4)	1 (16.7)	5 (83.3)	-	0.301*
Yes	75 (92.6)	26 (34.7)	36 (48.0)	13 (17.3)	
Nap					
No	17 (21.0)	4 (23.5)	8 (47.1)	5 (29.4)	0.224*
Yes	64 (79.0)	23 (35.9)	33 (51.6)	8 (12.5)	
Body mass index					
Low weight	7 (8.6)	2 (28.6)	5 (71.4)	-	0.158*
Eutrophic	27 (33.3)	5 (18.5)	17 (63.0)	5 (18.5)	
Overweight	47 (58.1)	20 (42.6)	19 (40.4)	8 (17.0)	

*Fisher's Exact Test; †Pearson's χ2 test.

There was a statistically significant relationship between sleep and self-assessment (p=0.013); fall in the last year (p=0.034); pain (p=0.012), i.e., older adults who evaluated their own health as poor, very poor or regular; those who have fallen in the last year and those who reported pain had a higher prevalence of poor quality sleep and sleep disorders, when compared, respectively, to the older adults who self-rated health as excellent and good, who did not fall in the last year and those who did not report pain.

Table 3 presents the characterization of the older adults in relation to sleep, frailty, performance in activities of daily living, cognitive performance and depressive symptoms.

Table 3 – Distribution of study participants according to sleep and frailty, performance in activities of daily living, cognitive performance and depressive symptoms. São Carlos, SP, Brazil, 2019. (n=81)

Variables	Total n (%)	Good sleep quality n (%)	Poor sleep quality n (%)	Sleep disorder n (%)	p-value
Frailty					
Non-frail/ pre-frail	54 (66.7)	22 (40.7)	27 (50.0)	5 (9.3)	0.026‡
Frail	27 (33.3)	5 (18.5)	14 (51.9)	8 (29.6)	
Weight loss					
No	62 (76.5)	23 (37.1)	32 (51.6)	7 (11.3)	0.098§
Yes	19 (23.5)	4 (21.0)	9 (47.4)	6 (31.6)	
Reduction of physical activity					
No	16 (19.8)	7 (43.7)	8 (50.0)	1 (6.3)	0.418§
Yes	65 (80.2)	20 (30.8)	33 (50.8)	12 (18.4)	

Table 3 – Cont.

Variables	Total n (%)	Good sleep quality n (%)	Poor sleep quality n (%)	Sleep disorder n (%)	p-value
Fatigue					
No	59 (72.8)	22 (37.3)	30 (50.8)	7 (11.9)	0.183‡
Yes	22 (27.2)	5 (22.7)	11 (50.0)	6 (27.3)	
Low palmar grip strength					
No	42 (51.8)	13 (31.0)	24 (57.1)	5 (11.9)	0.403‡
Yes	39 (48.2)	14 (35.9)	17 (43.6)	8 (20.5)	
Slow gait					
No	58 (71.6)	26 (44.8)	26 (44.8)	6 (10.4)	<0.001§
Yes	23 (28.4)	1 (4.4)	15 (65.2)	7 (30.4)	
Cognitive impairment					
No	52 (64.2)	18 (34.6)	24 (46.2)	10 (13.2)	0.491§
Yes	29 (35.8)	9 (31.0)	17 (58.6)	3 (10.4)	
Depressive symptoms					
Absence	53 (65.4)	20 (37.7)	27 (50.9)	6 (11.4)	0.171§
Mild	25 (30.9)	7 (28.0)	13 (52.0)	5 (20.0)	
Severe	3 (3.7)	0 (0.0)	1 (33.3)	2 (66.7)	
ADLS*					
Independent	63 (77.8)	24 (38.1)	31 (49.2)	8 (12.7)	0.220§
Dependent	18 (22.2)	3 (16.7)	10 (55.5)	5 (27.8)	
ADLS†					
Independent	53 (65.4)	14 (26.4)	31 (58.5)	8 (15.1)	0.125‡
Dependent	28 (34.6)	13 (46.4)	10 (35.7)	5 (17.9)	

*ABVD: Basic Activities of Daily Living; †IVD: Instrumental Activities of Daily Living; ‡Pearson $\chi 2$ test; §Fisher's Exact Test.

A statistically significant relationship was identified between sleep and frailty level (p=0.026); and sleep and criterion "slow gait" (p<0.001). Frail and slow-gait older adults with a slow gait presented a higher prevalence of poor quality sleep and sleep disorders when compared to pre-frail and non-frail older adults and those who, respectively, did not have a slow gait.

DISCUSSION

Regarding sleep quality, the older adults had poor quality sleep (50.6%) and sleep disorders (16.1%). Similar data were found in the literature[2,19], which corroborate high prevalence of sleep-related complaints in the older adults.

A recent study conducted in India with 180 older adults sought to identify the prevalence of poor sleep quality and its associated factors. The authors found that 68.9% of the participants scored for poor sleep quality, and the factors associated with it were: single or widowed marital status, depression and anxiety[2].

There is evidence in the literature that the older adult population has more sleep-related complaints when compared to younger individuals because they have a less robust circadian rhythm, because they present neuroendocrine dysfunctions that can impair the quality and architecture of sleep and due to factors such as medical comorbidities, changes in social involvement, the environment and lifestyle[20].

In the present study, there was a relationship between sleep quality and sex (p=0.008), i.e., female older adults participants, with a higher prevalence of poor quality sleep and sleep disorders when compared to older adult males. Similar data were identified in the national literature[21] and internationally[21].

A cross-sectional study, derived from the SABE study (Health, Well-being and Aging), was conducted in São Paulo with 1,334 older adults in the community, with the objective of estimating the prevalence and factors associated with sleep disorders. The results showed that 44.9% of the sample had sleep-related complaints. Factors such as female gender, urinary incontinence, pain and nocturia were associated with sleep disorders[23].

Researchers point out that women have more health-related complaints, seek health services more frequently, and perceive signs and symptoms of diseases more easily, unlike men. In addition, they are more affected by stressful situations and depressive symptoms when compared to men which impair night sleep. The feminization of old age may be accompanied by a higher prevalence of chronic health problems, including complaints related to night sleep[23–24]. In addition, hormonal conditions can also induce sleep problems in women, especially in the postmenopausal period[21].

Some statistically significant results were found between sleep quality and work status (p=0.001), i.e., older adults who do not work had a higher prevalence of poor quality sleep and sleep disorders when compared to those one older adults who work. A higher prevalence of poor sleep was also found among older adults who were unemployed[21]. Scholars state that with unemployment, the older adults may not have a regular rhythm of activities during the day, in addition to the economic insecurity. Both factors contribute to impairments in nighttime sleep. In addition, older adults who are not in the labor market may present complaints related to sleep, due to dissatisfaction with their own lives and impaired emotional health[21].

The study showed a statistically significant relationship between sleep and self-rated health (p=0.013): older adults participants who evaluated their own health as poor, very poor or regular had a higher prevalence of poor quality sleep and sleep disorders, when compared to the older adults who self-rated their health as excellent and good. National and international studies[21,24–25], also identified a relationship between poor quality sleep and poor self-assessment, corroborating the data obtained in the present study.

Professionals should be aware of the self-health assessment of the older adults since it has been considered a predictor of adverse health outcomes. Researchers claim that sleep hygiene is an important factor that influences this perception. Individuals with poor quality sleep complain of health problems and seek health services more frequently. Thus, it is necessary for health professionals to implement assertive actions related to healthy sleep in the older adults so that there is no overload of health services and increased public spending[24–25].

In the present study, a relationship between sleep and falls in the last year was observed (p=0.034). A recent study showed poor sleep quality as a predictor of falls in older adults[26]. The deprivation of a good quality sleep can negatively impact the life of the older adults causing impairments of coordination, attention, concentration and reduction in reaction time, increasing the risk of falls. Moreover, it is known that many older adults with sleep disorders can use benzodiazepines, which also corroborates the increased risk of falls[26]. In addition, researchers point out that poor quality sleep can lead to daytime sleepiness, cognitive deficits and impaired psychomotor performance, increasing the risk of falls[27].

There was statistical significance between sleep and pain (p=0.012), i.e., those who reported pain, presented a higher prevalence of poor quality sleep and sleep disorders, when compared to those who did not report pain. These findings are in line with the literature[1,7].

An investigation conducted in Santa Catarina evaluated sleep quality in 385 older adult participants with and without chronic pain. It identified that 58.2% of the interviewees presented chronic pain, 48.7% with moderate intensity. Most of the older participants in the pain study presented poor sleep quality (57.6%). The authors concluded that pain intensity can influence the quality of night sleep in the older adults[7].

Scholars point out that the older adults see pain and bad night sleep as normal aging events. This behavior causes these complaints to be neglected and negatively impact the quality of life of these individuals. Pain alone is not the cause of sleep-related complaints. It is linked to some health problem, which can alter the functioning of various organic systems, causing repercussions to night sleep and indirectly to the performance of activities of daily living the next day[7].

In this study, frail older adult participants presented a higher prevalence of poor quality sleep and sleep disorders when compared to pre-frail and non-frail older adults (p=0.026). Similar data were found in the literature[28,29].

A longitudinal study was conducted in China with 1,726 older adults people in the community to verify the association between sleep disorders and frailty/pre-frailty. As results, after 1.5 years of follow-up, the authors obtained that poor quality sleep was associated with frailty (OR=1.78, 95%CI 1.19-2.66) and pre-frailty (OR=1.51, 95%CI 1.20-1.90). High sleep latency, sleep disorders, daytime dysfunction and long duration of night sleep (9h/night) were also associated with frailty and pre-frailty[28].

A recent systematic review, composed of seven studies, was carried out with the objective of examining the relationship between sleep disorders and frailty syndrome in the older adults. The authors identified consistent evidence on the relationship between poor sleep quality and frailty in the older adults[29].

Scholars point out that sleep disorders are related to the general condition of perceived health, which may be a marker of multimorbidities, such as cardiovascular diseases and depression, known as predictors of frailty syndrome, which would partially explain the relationship between the two variables. In addition, poor sleep quality can impair the circadian rhythm and provide changes in biochemical pathways, such as reduced hormone levels, increased inflammatory markers, oxidative stress and renal dysfunction, which can culminate in the degradation of muscle proteins and dysregulation of the immune system, increasing the risk for the development of frailty syndrome among the older adults[28,29].

A systematic review with meta-analysis was carried out from 56 articles in order to identify the prevalence of frailty and pre-frailty among older adults' residents in the community of low- and middle-income countries. The prevalence of frailty ranged from 3.9% (China) to 51.4% (Cuba) and that of pre-frailty from 13.4% (Tanzania) to 71.6% (Brazil). This disparity can be understood from the method adopted to assess the frailty and geographical differences between countries. The authors concluded that the prevalence of frailty and pre-frailty seems to be higher in low- and middle-income countries when compared to high-income countries and that this should be considered by health professionals in planning interventions for these individuals[30].

The greater vulnerability to stressors due to aging associated with the presence of chronic health conditions may facilitate the entry of the older adults into the cycle of frailty and, as a consequence, these older adults may present impairment in functional performance, especially in relation to ADLS[31].

A statistically significant relationship was observed between sleep and the criterion "slow gait" (p<0.001). The older adult participants with a slow gait had a higher prevalence of poor quality sleep and sleep disorders when compared to those who did not have slow gait. These data confirm findings in systematic reviews[27,32].

A study of 426 older adults in the United States aimed to examine associations between different aspects of self-reported sleep and poor sleep quality. Multiple linear regressions revealed increased daytime sleepiness associated with a slow gait[33].

Another study with 70 older adults from a community in Japan, which sought to investigate the activity time between active and sedentary older adults under the influence of sleep, shows that the elevation of at least 30 minutes of daily activities significantly influences sleep parameters. However, there was no significant difference in sleep quality regarding activity intensity[34].

Researchers highlight that the reduction of gait speed predisposes the older adults to a higher risk of falls, which consequently restricts or hinders the practice of physical exercises by these older adults. It is known that physical exercises help in improving sleep quality and controlling non-transmissible chronic diseases[27,32].

This study has some limitations. The cause-effect relationship between the variables in relation to the cross-sectional design cannot be attributed. The convenience sample means that the results cannot be generalized to other older adults. It is noteworthy that such limitations serve as a stimulus for more robust studies, such as interventions or longitudinal research. In this sense, it is suggested that future longitudinal studies be carried out in order to unveil the direction of the relationships identified in the present study.

These results may help primary health care professionals to accept the health complaints of older adults especially in relation to sleep, since the affected older adults and their families may present impairments in quality of life and well-being. Thus, the importance of multidimensional evaluation of the healthy person is emphasized as a fast and useful screening test, since the impairment of sleep quality permeates biological and social factors, as previously pointed out.

By identifying sleep-related complaints early, non-pharmacological measures such as health education related to sleep hygiene, phototherapy, relaxation therapy and cognitive behavioral therapy can be adopted[35]. Assertive strategies aimed at health promotion and protection, in addition to the prevention of injuries, can be carried out in order to improve the sleep quality of these older adults and avoid the installation of sleep disorders and the development of adverse health outcomes.

CONCLUSION

It is concluded that older adults with low social and health levels have poor quality sleep. Female older adults, who do not work outside the home, who evaluated their health as regular or poor, who suffered falls in the last year, complained of pain, frail and slow gait presented a higher prevalence of poor quality sleep and sleep disorders, when compared to the other older adult participants. In addition, the findings showed the high prevalence of older adults with poor sleep quality or sleep disorders. It is important to emphasize that only one third of the older adults had good quality sleep.

Considering that sleep-related complaints increase in the last stage of the life cycle and that the consequences of poor sleep quality can be harmful, as described in the literature, the present study demonstrates important variables to be contemplated during the planning of health care actions for the older adults.

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Study design: Santos-Orlandi AA.
Data collection: Mota SG, Macedo MNGF.
Data analysis and interpretation: Mota SG, Brito TRP, Santos-Orlandi AA.
Discussion of results: Mota SG, Santos-Orlandi AA.
Writing and/or critical review of the content: Mota SG, Jesus ITM, Inouye K, Macedo MNGF, Brito TRP, Santos-Orlandi AA.
Review and final approval of the final version: Mota SG, Jesus ITM, Inouye K, Macedo MNGF, Brito TRP, Santos-Orlandi AA.

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CONFLICT OF INTEREST

There is no conflict of interest.

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CORRESPONDING AUTHOR

Ariene Angelini Dos Santos-Orlandi
arieneangelini@yahoo.com.br