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Original Article

Impacts of sleep changes on occupational performance: perceptions of older people

Impactos das alterações de sono no desempenho ocupacional: percepções de pessoas idosas

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Abstract

Introduction: Sleep changes in the older population can cause physical, psychological, cognitive, and behavioral problems with possible impacts on occupational performance. **Objective:** To understand the perception of older people living in a community regarding sleep changes and their impact on occupational performance. **Method:** This is a qualitative, exploratory, and cross-sectional study, carried out with older people living in the Residential Village of the Federal University of Rio de Janeiro. To collect data, the Montreal Cognitive Assessment and the Pittsburgh Sleep Quality Index were used, in addition to interviews to characterize the sociodemographic and health profile, lifestyle habits and understanding the impact of sleep on daily life. Data were analyzed using content analysis. **Results:** Six people participated, aged between 65 and 78 years old, mainly single, with a self-perceived good quality of life and regular health, in addition to an abnormal pattern of sleep efficiency in the last month. Nocturnal diuresis and chronic pain were found to affect rest and sleep, along with habits and environmental factors such as screen use and medication. Sleep changes interfere with mental functions that worsen participation in occupations, especially leisure, basic and instrumental activities of daily living, education and social participation. **Conclusion:** Sleep is influenced by physiological, psychological, social and contextual aspects and influences performance in occupations. It is essential to consider this topic in occupational therapeutic assessment.

Keywords: Sleep, Sleep Disorders, Aged, Occupational Therapy, Daily Activities.

Resumo

Introdução: Alterações de sono na população idosa podem acarretar problemas físicos, psicológicos, cognitivos e comportamentais, com possíveis impactos no

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desempenho ocupacional. **Objetivo:** Compreender a percepção de pessoas idosas residentes na comunidade acerca de alterações de sono e o seu impacto no desempenho ocupacional. **Método:** Trata-se de uma pesquisa qualitativa de caráter exploratório e transversal, realizada com pessoas idosas residentes na Vila Residencial da Universidade Federal do Rio de Janeiro. Para a coleta de dados, foram utilizados a Montreal Cognitive Assessment e o Índice de Qualidade do Sono de Pittsburgh, além de entrevista para caracterização do perfil sociodemográfico e de saúde, hábitos de vida e compreensão do impacto do sono no cotidiano. Os dados foram analisados sob a perspectiva da análise de conteúdo. **Resultados:** Participaram seis pessoas, com idade entre 65 e 78 anos, sobretudo solteiras, com autopercepção de boa qualidade de vida e de saúde regular, além de padrão anormal de eficiência de sono no último mês. A diurese noturna e a dor crônica afetam a ocupação de descanso e sono, bem como alguns hábitos e aspectos ambientais, como uso de telas e medicamentos. As alterações de sono interferem em funções mentais que pioram a participação em ocupações, sobretudo, de lazer, atividades básicas e instrumentais da vida diária, educação e participação social. **Conclusão:** O sono sofre interferência de aspectos fisiológicos, psicológicos, sociais e contextuais, e influencia o desempenho em ocupações. É fundamental considerar esse tema na avaliação terapêutica ocupacional.

Palavras-chave: Sono, Transtornos de Sono, Idoso, Terapia Ocupacional, Atividades Cotidianas.

Introduction

The elderly population is growing exponentially across the world, especially in developing countries. In Brazil, the phenomenon of population aging occurs in a diffuse, profound and persistent way, which requires the creation of strategies to maintain and improve health and well-being (Bevervanço, 2022). Within this perspective, it is understood that performance in different areas of occupation and the balance between them are linked to a range of benefits for health and quality of life in old age (Stav et al., 2012; Seol et al., 2022).

Furthermore, occupations, which govern human existence and can be defined as activities carried out by people in their daily lives aimed at themselves, their family and communities, provide sense and meaning to life (Gomes et al., 2021). In this context, in addition to activities of daily living, health management, education, work, play, leisure and social participation, sleep plays a fundamental role, as the way in which people, communities and societies align and synchronize their sleep pattern affects their health, well-being, quality of life and functional capacity (Neves et al., 2017; Leive & Morrison, 2020).

In occupational therapy, activities related to sleep occupation involve resting, preparing and participating in sessions (Gomes et al., 2021). Rest is defined by activities that promote relaxation time, such as identifying the need to relax; reduced level of involvement in physical, mental or social activities; and relaxation activities that renew energy and interest in resuming usual occupations (Gomes et al., 2021). Sleep preparation involves activities aimed at promoting a physical environment suitable for

the period of unconsciousness and the practice of routines that predispose the individual to a comfortable rest (Gomes et al., 2021). Finally, sleep participation is characterized by maintaining an uninterrupted state of sleep (Gomes et al., 2021).

Frequent problems related to this occupation for a period, at least three times a week and for at least three months, may characterize a sleep disorder (Jaqua et al., 2023). Sleep disorders, whether primary or secondary, associated with different physical, psychological, cognitive and behavioral problems, can encompass changes in sleep phases and cycles, patterns and habits (Neves et al., 2017; Karna et al., 2023). The manifestations of chronic sleep-related problems can vary widely, but most include changes in physical, mental and social well-being, as well as changes in mood, memory and cognitive functions, functional impairment in the performance of social roles and daily activities (Bei et al., 2016; Neves et al., 2017; Karna et al., 2023).

Although sleep disorders are not part of the aging process, their prevalence may increase with age, given their relationship with different circumstances, such as the presence of chronic diseases, psychiatric conditions, physical and emotional discomfort and changes in habits linked to aging and environmental factors (Moreno et al., 2018; Jaqua et al., 2023). The prevalence of this disorder in old age is considered high, above 50%, being more frequent in women and generally linked to pain, urinary incontinence and nocturia (frequent nighttime urination) (Santos et al., 2013; Moreno et al., 2018; Jaqua et al., 2023).

Problems such as early awakening, difficulty falling asleep and staying asleep, as well as having non-restorative sleep and the occurrence of daytime naps in elderly people are associated with attention and memory difficulties, mood changes, increased risk of falls and reduced quality of life (Santos et al., 2013; Jaqua et al., 2023). Thus, there is an understanding that sleep is not just a biological need, it also involves a complex and essential occupation that permeates other spheres of life, in addition to being a guiding thread for the organization of activities and tasks carried out on a daily basis (Smallfield & Molitor, 2018; Leive & Morrison, 2020; Van Der Veen et al., 2022).

Despite the existence of occupational therapy research on sleep in old age (Leland et al., 2014; Smallfield & Molitor, 2018; Van Der Veen et al., 2022), there is a need to expand it from the perspective of understanding the aspects related to sleep changes and their implications for occupational performance. Occupational performance is the ability to follow and maintain a daily routine, perform social roles and tasks in a satisfactory and appropriate manner for the stage of development, culture and environment in which one finds oneself, that is, it refers to the "[…] accomplishment of the selected occupation resulting from the dynamic transaction between the client, their context and occupation" (Gomes et al., 2021, p. 67).

In this sphere, although it is recognized that some objective and practical aspects related to sleep, such as habits and routines, are important for the adequate maintenance of this occupation, to understand its complexity it is necessary to value the personal meaning and experience of the person within their social and physical context (Leive & Morrison, 2020; Van Der Veen et al., 2022). Therefore, the objective of this research was to understand the perception of elderly people living in the community regarding sleep changes and their impact on occupational performance.

Method

This is a qualitative research of an observational and cross-sectional nature. The objective of qualitative research is to clarify and describe data, indicators and trends, as well as to develop a theoretical model applicable in practice, aimed at the study of history, representations, relationships, beliefs, perceptions and opinions, as well as interpretations made by subjects in relation to the production and reproduction of their lives (Oliveira et al., 2019).

The study, which is part of the research project entitled "Factors associated with occupational roles and the participation of elderly residents in a small community in Rio de Janeiro", was approved by the Ethics Committee of the Hospital Universitário Clementino Fraga Filho (HUCFF) of the University Federal Government of Rio de Janeiro (UFRJ), under CAAE n. 05063218.7.0000.5257, having been carried out with the elderly population residing in the Vila Residencial da UFRJ community.

Contact with the participants, who were selected for convenience because they participated in an extension project entitled "Occupational Therapy in the Health of the Elderly: Residential Village" of the Department of Occupational Therapy at UFRJ, followed the following inclusion criteria: people aged 60 years aged or older, residents of the previously mentioned community, of different sexes, functionally independent and without language impairments, from the perspective of the extension project coordinator, and cognitive impairments, according to the Montreal Cognitive Assessment (MoCA-BR). The cutoff score used in MoCA-BR was 21 points (Cecato et al., 2014).

The first contact with the participants was made by the first author with the purpose of presenting the research and its objectives. After consent, a meeting was scheduled at the community residents' association or at the elderly person's own home to carry out the interview. Data collection was carried out from 10/24/2022 to 12/19/2022, through individual interviews, in three subsequent stages carried out at a single moment, after applying the MoCA-BR: 1) Profile identification of the participants; 2) Application of the Pittsburgh Sleep Quality Index (PSQI-BR); and 3) Interview with open and closed questions to assess the impact of sleep on occupational performance, based on AOTA parameters (Gomes et al., 2021) (Chart 1).

The participants' profile involved items on sociodemographic and health characteristics, namely: sex, marital status, family arrangement, education, income, occupational status (active/retired), subjective assessment of health and quality of life (very bad, bad, neither bad nor good, good and very good), self-reported illnesses, physical exercise (at least three times/week), tobacco use and alcohol consumption.

The PSQI-BR contains ten items divided into seven sleep components, with scores ranging from zero to three each, namely: subjective quality, sleep latency, sleep duration, sleep efficiency, sleep disorders, use of medications and drowsiness and daily dysfunction. The total score ranges from zero to 21 points, where a score equal to or greater than five indicates poor sleep quality and a score greater than ten indicates the presence of a sleep disorder (Bertolazi, 2008).

The interview script (Chart 1) was constructed based on the subdivision of categories of occupations described in the occupational therapy practice framework: domain and process (Gomes et al., 2021). The script was tested with two health professionals to

make the necessary adjustments. Furthermore, the interviewer underwent training and carried out a pilot test with a research participant, obtaining positive feedback on the relevance and accessibility of the questions for the elderly population.

Chart 1. Question script.

1. Do you think sleep is an important activity in life? Explain.
2. Have you had trouble sleeping in the last month?
3. Do you think sleep influences the activities you carry out during the day? In what way?
4. In what activities inside and outside the home do you notice this influence? (Give 3 examples).
5. What is the influence of a bad night's sleep on carrying out activities…
· education, voluntary, and work?
· social participation and leisure?
· entertainment games with and without rules and varied games?
· maintenance of health condition?
· maintaining life inside and outside the home?
· related to mobility inside and outside the home?
· personal care?
6. Does sleep affect the organization of your routine?
7. Would you like to change something in your bedroom to sleep better?
8. Do you use specific equipment/devices and strategies for sleeping?
9. Do you consume caffeinated products after 4pm?
10. Do you have a meal before bed?
11. Do you have a habit of napping during the day?
12. On average, how many times do you nap during the day?
13. On average, how long does your nap last during the day?
14. What activities do you do to rest/relax in your daily life?
15. Do you exercise at night?
16. Do you use electronic equipment before going to sleep?
17. How do you prepare the bedroom for sleeping?
18. Do you have any specific ritual before bed?
19. Do you believe that a bad night's sleep can influence other things you do? Which one(s)?
20. What do you think most impacts the quality of your sleep?

To preserve confidentiality, participants' names were replaced by P, followed by a number corresponding to the order of participation in the research (P1, P2, P3, P4, P5, P6). Each interview was audio recorded, transcribed, organized in a spreadsheet developed in *Microsoft Excel* and analyzed inductively, that is, the categories were defined after contact with the data. The data analysis method was based on Bardin's (2011) content analysis, organized into three phases: pre-analysis (organization of the material and structuring of the first ideas), exploration of the material (reading to code the material based on the objective research) and data processing (inference, interpretation and description of results). This process allowed us to extract three main categories, namely: 1) Aspects linked to sleep changes; 2) Strategies for optimizing sleep quality and; 3) Impact of sleep on occupational performance.

Results and Discussion

The research involved six participants, aged between 65 and 78 years old, mainly single and retired, with varying monthly income and education ranging from three to 16 years of study (Table 1). In general, they lived with one to three people, and two (P4 and P6) reported regular physical exercise. Furthermore, the participants had a good or very good quality of life (n=4) and rated their general health condition as neither bad nor good (n=4). The most reported diseases were diabetes mellitus, high blood pressure and rheumatic diseases and, in addition, all participants indicated the continuous use of medications to treat the diseases mentioned.

Table 1. Sociodemographic and health characteristics of participants.

P	Sex	Age (years)	Marital status	Family arrangement	Years of study	Monthly income	Quality of life	Health assessment	Self-reported illnesses
P1	Female	66	Widow	Daughter	10	1	Bad	Neither bad nor good	Osteoporosis, hypertension, vascular, lung and spine problems, fecal incontinence, Crohn's disease and fibromyalgia
P2	Male	73	Married	Wife	5	3 to 5	Good	Neither bad nor good	Osteoarthritis, hypertension, DM and stroke
P3	Female	70	Single	Daughter, son-in-law and grandson	3	Up to 3	Very good	Neither bad nor good	Osteoarthritis, hypertension, DM, vascular and spine problems, stroke and disc herniation
P4	Female	64	Single	Partner	9	Up to 3	Very good	Neither bad nor good	Rheumatism, hypertension, vascular and spine problems
P5	Male	78	Married	Wife, godson and stepson	14	3 to 5	Good	Good	Arthritis and hypertension
P6	Male	67	Single	Lives alone	16	1	Very bad	Very bad	DM, obesity and depression

Caption: P - participant; DM - Diabetes Mellitus.

Aspects linked to sleep change

Only one participant (P5) did not mention sleep changes. However, through the PSQI-BR, it was identified that everyone had problems sleeping in the last month. The duration of sleep indicated by the participants was, on average, five hours per night. It is understood that this duration is variable, eight hours of sleep is generally considered a normal standard for adults, but, for the majority of the elderly population, a time of less than seven hours is identified (Bezerra et al., 2018), as that aging is associated with shorter sleep duration and efficiency and also with more frequent awakenings (Quinhones & Gomes, 2011).

Regarding sleep latency, that is, the transition time from wakefulness to sleep, they were, on average, 40 minutes. The variation was wide, from five to 90 minutes, with three participants (P1, P4 and P5) exceeding expectations, as the literature indicates that the expected time is below 30 minutes (Bezerra et al., 2018). Regarding sleep efficiency, which consists of the percentage of time that the subject actually slept in relation to the

interval in which they remained in bed with the intention of sleeping (Reed & Sacco, 2016), participants showed a variation of 40 to 75%, due to latency and moments of nocturnal awakenings for different reasons. The ideal score would be above 85% (Reed & Sacco, 2016), which allows us to infer that everyone has low sleep efficiency.

In the total PSQI-BR score, two participants (P2 and P5) had scores above five points, which indicates poor sleep quality; all others had a score above ten, indicating the presence of some sleep disorder (Bertolazi, 2008), which is in line with the literature that points to the presence of poor sleep quality in elderly people (Bezerra et al., 2018) (Table 2).

Table 2. Characterization of participants' sleep and scoring of the components of the Pittsburgh Sleep Quality Index (PSQI-BR).

P	Bedtime	Wake up time	Sleep latency		Duration of night sleep		Sleep efficiency		Sleep quality	Nocturnal sleep disorders	Sleeping medication	Drowsiness and daytime disturbances	Total
	Time	Time	Minutes	PSQI-BR Score	Hours	PSQI-BR Score	%	PSQI-BR Score					
P1	10:30PM	7AM	90	3	6	1	70.6%	2	2	2	3	3	16
P2	1AM	9AM	5	0	5	3	62.5%	3	1	1	0	0	8
P3	10PM	5AM	15	1	4	3	57.1%	3	3	2	3	1	16
P4	1AM	6AM	60	2	5	3	40%	3	2	2	0	0	12
P5	10PM	6AM	40	2	6	1	75%	1	1	1	0	1	7
P6	10PM	6AM	30	2	5	2	62.5%	3	2	2	3	2	16

Subtitle: P - participant.

Some factors can contribute to poor sleep quality, such as genetic, environmental, psychological and behavioral (Karna et al., 2023). Age was highlighted by one of the participants as a factor that influences sleep quality. The view of old age is a socially constructed process and varies according to the sociocultural context, but is often associated with losses and disability (Jardim et al., 2019).

> *Sometimes I blame it more on age, I associate it more with being 67, not being able to assimilate and needing to go back. I've always been a very scattered person too, with noise, barking, chatting* (P6).

The participants' reports also pointed out that nocturnal diuresis (nocturia) and chronic pain commonly affect rest and sleep, which is in accordance with the literature (Moreno et al., 2018). Nocturnal diuresis may be associated with the use of diuretic medications that cause frequent awakenings at night and may result in a reduction in total sleep time and efficiency, as well as increasing the risk of falls in older people, especially in men over 80 years of age. (Ferreira & Nunes, 2021).

> *Not to mention that I also take blood pressure medication and it helps a lot at night so I can get up and go to the bathroom to urinate* (P5).

> *Here it comes pee again. I believe this is what disturbs my sleep. That urge comes, if I don't get up... I'll even be honest, I'll put a bucket next to me* (P3).

As pointed out by participants, pain, which tends to increase with advancing age, may be correlated with a decrease in sleep quality (Moreno et al., 2018; Ferreira & Nunes, 2021). Specifically regarding musculoskeletal pain, it is known that it affects the perception of other daily events, due to the increased sensitivity caused by the painful state, causing dysfunctions in daily activities and, mainly, in the occupation of rest and sleep (Moreno et al., 2018).

> *I wake up with a start and there's a sharp pain coming here and my foot lifts up. Cramps, I have a lot too. And I have a lot of cramps. About fifteen days ago, I was sleeping, I was in a knot, wow, I was in pain and no longer had a position to stay in bed, the day was getting brighter, I was giving a massage and nothing* (P4).

It was also possible to observe the interference of a complex health condition. One participant (P1) has Crohn's disease and needs to use the bathroom more frequently. There is a relationship between sleep disorders and inflammatory bowel diseases, in which people with active disease report subjective complaints related to sleep, due to inflammation, in addition to stress, which leads to a significant increase in the symptoms of this type of health condition (Fluxá et al., 2017).

> *I have to get up* [to go to the bathroom because of the symptoms of Crohn's disease]*! I get up 4 times a night, it's the same thing with pee...* (P1).

Furthermore, one participant (P4) cited the interference of tobacco use with his sleep. Tobacco use generates a series of problems, such as social vulnerabilities, cardiovascular problems and, mainly, changes in sleep behavior, mainly due to the chronic use of nicotine (Amorim et al., 2019). The concentration of nicotine in the body, which exerts a stimulating action through the release of neurotransmitters, such as dopamine, acetylcholine and serotonin, in addition to impairing waking and resting activities, has an irritating effect and stimulates the muscles of the respiratory tract, which increases the risk of snoring and apnea, directly interfering with the initiation and maintenance of sleep (Amorim et al., 2019; Araújo et al., 2022).

> *I don't smoke in the early hours of the morning, I only smoke the next day, but as long as I wake up, I'm smoking. I think cigarettes make me sleepy. I think he's the one doing this to me* (P4).

In this context, in addition to tobacco use, it is noteworthy that the use of other substances, such as excessive alcohol consumption or medication, can affect sleep or even worsen symptoms associated with sleep disorders (Karna et al., 2023). Ingestion of alcohol, which has a depressant effect on the Central Nervous System, affects brain waves and sleep duration, especially in the REM (Rapid Eyes Movement) phase, causing fragmented sleep and continuous awakenings (Araújo et al., 2022). Although two participants (P4 and P5) mentioned the consumption of alcoholic beverages, they did not report any interference from its specific use on sleep quality, probably related to frequency, since the consumption mentioned was sporadic.

With regard to the use of medications, one participant mentioned that she realizes that the medication she uses to minimize her pain interferes with her sleep and that it even creates the need to take naps during the day.

> *I take some medicine for this pain in my foot and arm, and I feel drowsy. I started sleeping like this now, but I sleep like that, but soon I wake up, light sleep.* [...] *I feel like sleeping, but I think it's because of the medicine I'm taking, I feel very drowsy* (P3).

Some medications, especially antipsychotics, psychotropics, sedatives and hypnotic agents, may be associated with sleep changes and even cause unusual behaviors, such as sleepwalking, night terrors, restless legs syndrome and nightmares (Karna et al., 2023). Four participants mentioned having nightmares one or more times a week (P1, P2, P4 and P6).

Regarding daytime sleep, four participants reported the daily habit of napping for one to four hours, especially after lunch or in the late afternoon (P1, P2, P3 and P5). In old age, the duration of a nap, which refers to a short period of rest with a reduction in activities and external stimuli, may increase throughout the day, especially in countries with a hot climate and in frail, male elderly people (Santos-Orlandi et al., 2016).

> *Sometimes* [want to sleep] *when I go to lunch, now that we are having lunch at 3pm* [...] *I end up sleeping and get up around 6:30pm. Then, every day I sleep at this time, when night comes, you no longer have that sleep* [...] *sometimes I watch soap operas, drinking coffee and then I nap every day. Then I wake up and watch the soap opera again. I watch TV and fall asleep* (P2).

> *If my granddaughters come over, I don't nap, but if I have something to read, I see something on my cell phone that makes me sleepy* [...] *I can't say* [how many times I doze], *I haven't stopped to notice, but that's how it is, now it is 2 o'clock in the afternoon and look at the time that has already been lost, and now I'm going to tell you that I should nap again during the day. Today I woke up at 10:30 am, took my medicine and then went back to bed and stayed asleep until now* (P1).

> *I stay, but if I stay more when I'm sitting in the chair, if I lie in bed, I can't do it. I sleep sitting in the chair, I go to bed and lose sleep* (P3).

The literature points out that when a nap occurs at the appropriate time of the day and with an adequate duration, around 30 minutes, it can contribute to a state of increased vigilance and improved performance of daily tasks (Santos-Orlandi et al., 2016). On the other hand, when in excess (daytime hypersomnolence), it can impair the quality of nighttime sleep and interrupt activities carried out during the day. Furthermore, it is noteworthy that napping is an important activity to be observed in the elderly population, since when unplanned and lasting for a long time (90 minutes or more), it can additionally be associated with cognitive deficits, risk of morbidity and falls (Santos et al., 2013; Santos-Orlandi et al., 2016).

And, finally, in addition to the aspects already mentioned, it was possible to identify that the use of digital screens also interferes with the quality of sleep. Excessive use of

electronic devices before bed can affect sleep patterns, as the light emitted by them delays the release of melatonin, the hormone that induces sleep, resulting in a delay in the sleep-wake rhythm both on the day of exposure, as in the following days (Dube et al., 2017). Only one participant (P6) realizes that it is necessary to stop using screens in advance and uses it as a sleep re-education strategy.

> *I stay on my cell phone, turn on the television in my room, turn it on and off before going to sleep* (P1).

> [...] *cell phone, I turn it off before going to sleep* [...] *when I go to bed, I turn it off* (P5).

> […] *an hour before bed I stop watching television and looking at the computer because of the light* [...]. *That's what sleep re-education was, I think it's very important because waking up tired and not wanting to get out of bed is chaos. Staying in bed during the day doesn't work either, it's not a pleasant thing and it gives you a bad conscience, you could be doing productive activities and you're looking at the ceiling* (P6).

Health conditions, such as nocturnal diuresis, chronic pain and inflammatory bowel diseases, in addition to the consumption of substances (tobacco and medications), excessive daytime sleep and the use of digital screens were highlighted by participants in the present research as aspects linked to sleep changes. In old age, sleep changes can increase the risk of accidents and the development of several serious complications, such as mood and anxiety disorders, decline in cognitive functioning and physical capacity, presence of frequent falls, worsening quality of life and greater risk of cerebrovascular accidents and cardiovascular disorders (MacLeod et al., 2018; Ward et al., 2022; Karna et al., 2023). Therefore, it is important to address the problem of poor sleep quality with appropriate pharmacological and non-pharmacological interventions (MacLeod et al., 2018).

Strategies for optimizing sleep quality

The literature points out that there are several promising multidimensional intervention approaches to improve sleep quality in old age (MacLeod et al., 2018). Although all participants had had problems sleeping in the last month, only one (P6) had already sought professional assistance. Despite this, everyone mentioned strategies to optimize sleep quality, especially those focused on sleep hygiene by reducing the use of digital screens, as already mentioned, controlling the environment and measures for relaxation.

Regarding environmental control, participants cited the preparation of the bedroom, the arrangement and adaptation of objects and equipment used.

> *I can only sleep after midnight, sometimes around 1am, I can't say why I wake up every day, I didn't notice, I hardly go to the bathroom* [...] *I put a can under the bed and do it, then throw it away and put it in the toilet, because sometimes it's difficult to go to the bathroom* [...] *Before there was a hard mattress...then we*

> *added an orthopedic mattress and it became more comfortable, but our little room is cool, it's nice, there's air, turn on the fan and it's fine* (P2).

> *I place the pillow resting here* [on the leg]. *I lean on my pillow when it's really bothering me, burning, hurting a lot* (P4).

Several factors, such as sounds, temperature, ventilation, light, smells, bedding and familiarity with the location, can affect the comfort level and quality of sleep (Van Der Veen et al., 2022). It is essential to highlight that creating an environment conducive to sleep is part of sleep hygiene recommendations, which include environmental and behavioral practices, in addition to ensuring quality sleep of adequate duration (Dube et al., 2017).

Regarding behavioral practices, participants prepare for bed by taking a shower or dressing appropriately.

> *I take a shower before going to sleep when it's hot, I get up twice at night, I have to take a shower in the morning too, otherwise my day doesn't work out, the day doesn't progress* (P4).

> *I take a shower before bed, especially during this time* [summer]. *I like to take a shower and go to sleep, it doesn't matter if I sleep covered, I don't prepare the room for sleeping, I just make the bed and lie down* (P1).

> *Sometimes I take a shower beforehand, lie down on the armchair, then when I go to sleep, I just lie down. Take a shower, change your clothes, put on comfortable pajamas…* (P2).

Another highlighted aspect refers to the practice of religious rituals as a strategy to engage in the occupation of rest and sleep. The most mentioned ritual was prayer before bed.

> *I ask God for me to sleep, and I ask Our Lady* [...]. *I say a prayer when I go to bed* (P3).

> [...] *I talk to God every day* [before going to sleep] (P4).

> *I pray at night, before going to sleep, during the day, too. But before bed I always do it* (P1).

It is understood that the practice of religious rituals, especially on a constant basis, can be a valuable resource in occupational performance during rest and sleep, as it can offer a sense of purpose, reduce feelings of helplessness and a sense of loss of control associated with aging, optimize spiritual well-being, in addition to reducing the presence of potential depressive and anxiety symptoms (Britt et al., 2023). Furthermore, it is possible to relate spiritual practices to better coping with adversities, traumatic events and stressful factors, reframing one's life story and reorienting care for oneself and others (Machado et al., 2018).

Still within the scope of non-pharmacological practices for self-care with the aim of improving sleep quality, one participant mentioned meditation.

> *I meditate constantly, especially since I'm in a turbulent time. Then I always recite a mantra, to have more perception, with more reasoning, one thing leaves you in the same orbit as the universe, my well-being when you are focused and when you have a goal and are determined, it makes you produce endorphins and It makes you more connected to everything that will and can happen in your life, which is what physics explains* (P6).

In addition to meditation, cited in this research, the literature indicates that other integrated practices focused on managing chronic stress and reducing negative emotions can directly contribute to sleep quality, such as mindfulness and cognitive behavioral therapy (MacLeod et al., 2018). Specifically regarding the practice of mindfulness meditation, it is identified that, in addition to this approach having gained popularity and being accessible to be carried out in different contexts with low or no financial cost, there is evidence that it improves the quality of sleep in the immediate post-intervention (Black et al., 2015; MacLeod et al., 2018).

Other non-pharmacological approaches are cited in the literature, but require the investment of more studies, such as the role of relaxation, light exposure therapy and lifestyle interventions focusing on performing physical exercises with or without the presence of other people (social support) (MacLeod et al., 2018). The results of a recent review study carried out by Brazilian researchers indicate that the practice of regular physical activity has an important role for sleep, as it acts on the sleep-wake cycle by helping to synchronize sleep times at the appropriate time and the increased need for sleep, by reducing the body's energy reserve to maintain a positive energy balance and adequate level of alertness during wakefulness (Damacena et al., 2020). However, in the present research, although two participants (P4 and P6) mentioned regular physical exercise, they did not mention its benefits on sleep quality.

In addition to the strategies already mentioned, one participant mentioned the use of pharmacological interventions for sleep.

> *I started with two homeopathic remedies, along with three drops of Rivotril in the morning and three drops at night. Then, it went to two* [...] *now, I decided to stop on my own* [...] *I already want to go back* [to take it], *because Friday, Saturday and Sunday my sleep was cut off, it wasn't that thing direct. Before, I only got up once to urinate and went back to bed and continued straight away* (P6).

The prevalence of sleeping problems and the use of sleep-inducing medications in elderly people in Brazil is high (Araújo et al., 2022). Despite the expansion of studies on its quantity and the side effects of long-term use, the need for attention and care is reinforced (Araújo et al., 2022).

Impact of sleep on occupational performance

The participants' statements may point to the understanding that sleep influences occupations and the organization of the routine, since, sometimes, because they do not

have a good night's sleep, they stop doing something, interrupt some activity or are unable to maintain its performance.

> *I think that, at home, it directly involves you not maintaining your daily routine, not keeping clean, not maintaining organization* [...] *the main thing at home is this disorganization when it comes to doing your homework, you lose a little of the discipline of tidying the house, doing household chores. The other* [activity] *is walking on the street, you need to be much more careful to avoid falls, because I avoid wearing flip-flops, wearing Havaianas, right? And as I ride my bike a lot, I have to be super attentive to cars, potholes, super attentive to everything.* […] *I don't stop doing it out of necessity, because I need it, but I stop preparing a coffee as a pleasure, that's a different rhythm, rhythm is linked to pleasure, not taking care of myself in a pleasurable way, doing it as an obligation* (P6).

> *When I don't wake up well, to be honest, I don't do anything. I only prepare food from home and that's it for my grandson and my son-in-law's children* (P3).

> *I don't do anything* [leisure activities], *I just do housework, because of this tiredness and lack of enthusiasm. I don't go to church either* (P1).

In the speeches previously transcribed, it can be observed that poor sleep quality restricts participation, and may limit it to activities strictly necessary for survival or recognized by the subject as obligations in the face of demands from the social context, such as self-care activities and the instruments of daily life. It was also possible to identify that even performance in mobility and self-care required greater effort when sleep was not restful, which could be a risk for accidents (MacLeod et al., 2018).

It is added that, given a restorative sleep, it is expected that the person will be better prepared not only to perform their usual occupations in an active and healthy way, but also to face challenges in different contexts, allowing them to go beyond survival and seek a meaningful occupation (Leive & Morrison, 2020). Within this context, some participants reported that engaging in more complex occupations, such as leisure activities and those related to social participation, for example, suffered losses. The abandonment of these occupations is worrying, as their performance is associated with a lower risk of morbidity, disability, cognitive decline and mortality, in addition to being a crucial determinant of a good quality of life and well-being (Smallfield & Molitor, 2018; Silva et al., 2017; Leive & Morrison, 2020).

Among the possible explanations for the impairment in carrying out the occupations mentioned by the participants (self-care, mobility, home maintenance and leisure), one can point out issues related to mood, volition, lack of enthusiasm, fatigue, in addition to cognitive abilities. Specifically regarding mental functions, participants, in addition to attention, cited the impact of a bad night's sleep on the process of encoding memory and reasoning, which can impact the performance of certain occupations.

> *My memory fails me more, when I want to call someone, I have to look for the notebook and look for it* (P3).

> *When I have a bad night's sleep, instead of choosing an outfit, I repeat it; when I'm out of logical reasoning, I go there and get the same one I wore* (P6).

> *Sometimes I forget to water the plants* (P2).

Poor sleep quality leads to dysregulation of the circadian rhythm, responsible for governing the sleep-wake cycle, and impairs basic cognitive processes, such as attention, working memory and executive functions (Freitas et al., 2023). One participant (P6) reports difficulties in carrying out educational activities, such as reading, textual production and carrying out work-related tasks due to this cognitive impairment, with an impact on his learning process (Leive & Morrison, 2020).

> *So, when I have a bad night's sleep, basically you already foresee a chaotic day* [...] *it directly influences production, both in concentration, sometimes you are reading a paragraph and in the middle of the paragraph you think: "damn, what did I just read?", I can't assimilate it anymore* (P6).

Furthermore, all participants reported altered mood. In addition to the lack of enthusiasm, already mentioned, they point to irritability. This state prevents them from initiating or maintaining communication with other people, having difficulty sustaining effective interaction with their family, friends and neighborhood (social participation) and even participating in leisure activities.

> *I think it does have an influence, because you don't have a great mood, you end up blurting out one word or another and the word doesn't come back, right* [...] *when you don't sleep properly, sarcasm comes in and doesn't come out, instead of pleasing the person you do the opposite…* (P6).

> *With my husband I get like thi*s [grumpy] *sometimes yes and sometimes no, when he starts the day talking a lot, I say "shut up, you can talk to me later"* (P4).

Mood is understood as a combination of subjective feelings that are influenced by individual experiences and can vary and fluctuate over different periods of time, including feelings of euphoria, happiness, sadness and others (Freitas et al., 2023). In relation to elderly people, the occurrence of mood instability may be associated with risks of mental illnesses and negative impacts on health, such as cognitive and sleep changes (Freitas et al., 2023). Lack of sleep can worsen existing mood disorders, such as depression and anxiety, in addition to causing symptoms such as mental confusion, spatial and temporal disorientation, fatigue, and changes in emotional response (Bei et al., 2016).

The results of this study agree with the evidence that changes in the sleep patterns of elderly people impact their state of wakefulness and, consequently, their physical, cognitive, social and occupational functioning (Leive & Morrison, 2020; Freitas et al., 2023). Therefore, sleep changes can interfere with both functionality and the skills necessary for performance and occupational balance (Smallfield & Molitor, 2018). Although total occupational balance is unlikely to be achieved in different life cycles and temporary imbalances are not considered pathological, carrying out different

occupations, respecting personal and contextual characteristics and needs, is considered important for maintaining health and well-being (Lillo, 2021).

Finally, it is highlighted that sleep, despite being characterized according to each person's lifestyle, is an essential occupation in human life, as, in addition to being a biological need, it is the basis for all other waking occupations (Leive & Morrison, 2020). As occupation is the central core of occupational therapy, identifying, characterizing and describing the perception of elderly people about sleep changes and their impact on occupational performance can contribute to the organization and consolidation of knowledge not only in occupational therapy, but also, in gerontology and related areas, given that this population has a high rate of sleep disorders (Jaqua et al., 2023).

Conclusion

Participants showed changes in their sleep quality. These changes include insufficient sleep duration, increased latency, and low efficiency. It was possible to observe that chronic health conditions can impact occupational performance related to rest and sleep, with damage to its quality, especially frequent awakenings due to pain or nocturia. On the other hand, rituals such as the practice of prayers were highlighted as strategies to help prepare for sleep. The habits of taking a shower, dressing appropriately and preparing the bed before going to bed were also highlighted as auxiliary strategies for preparing for sleep. Participants also resorted to listening to music, watching television and growing plants, as well as taking naps, as forms of rest in their daily lives.

The inadequacy of the resting place, medication and tobacco consumption, in addition to the excessive use of screens may have contributed to barriers to sleep quality. Poor sleep quality was identified as an aspect that can harm attention, concentration and memory, in addition to contributing to the feeling of fatigue. Furthermore, based on the participants' statements, it was found that sleep changes directly and indirectly interfered with participation in occupations, especially leisure, health management, basic and instrumental activities of daily living, education and social participation, as well as in organizing the routine.

Although the study is limited to a low number of participants, residents of a small community in the city of Rio de Janeiro, and is cross-sectional, meaning it is not possible to establish a causal relationship between the variables studied, it is highlighted that the research can contribute to promote reflections on the topic, given the scarcity of literature on the relationship between aging and sleep and rest in the field of occupational therapy and the lack of direct evidence on the impact of sleep changes in occupations.

It is essential to promote occupational therapy intervention practices to improve performance and satisfaction with sleep, as well as minimize the negative impact of sleep changes on participation in other occupations. Therefore, it is suggested to carry out further studies on the topic, with the aim of ensuring prevention and promotion of health and quality of life.

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Laura Castro Matos was responsible for the preparation, data collection, formatting, data analysis and review of the text. Carolina Rebellato was responsible for guiding the work, collecting data, analyzing data and reviewing the text. Carolina Becker Bueno Lopes was responsible for co-supervising the work, analyzing the data and reviewing the text. Janaina Santos Nascimento was responsible for reviewing the text. All authors approved the final version of the text.

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