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Exploring Sleep Quality and Attitudes in Ageing Portuguese Population

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ABSTRACT

Sleep disturbances are prevalent among older adults, often due to natural physiological aging or various mental health factors, including beliefs and attitudes toward sleep. Despite this, the relationship between sleep quality and mental well-being in older populations remains underexplored. This study aims to examine the role of dysfunctional beliefs and attitudes about sleep as predictors of poor sleep quality in Portuguese adults aged 50 and above.

The study included 125 Portuguese participants, aged 50 to 80 (M = 58.07, SD = 6.15).

Data were collected using the Dysfunctional Beliefs and Attitudes about Sleep (DBAS-16), the Pittsburgh Sleep Quality Index (PSQI), and the Work Health Questionnaire (WHQ), along with sociodemographic information. A self-report online survey was disseminated through social media between March and May 2024.

Findings indicate a significant association between negative beliefs about sleep, poor perceptions of health, and decreased sleep quality in adults over 50. These relationships intensify with age, suggesting that negative attitudes toward sleep may exacerbate sleep disturbances.

The results highlight the need to better understand the interplay between sleep beliefs, functional health, and sleep quality in older populations. Such understanding can inform the development of interventions to improve sleep literacy and overall well-being among older adults.

Keywords: Sleep; Sleep quality; Dysfunctional beliefs; Attitudes about sleep; Older adults.

INTRODUCTION

The growing elderly population presents a significant public health challenge due to its associated health complications (Corbo et al., 2023). Among these challenges, sleep disturbances are increasingly prevalent in older adults, contributing to deteriorations in both mental and physical health (Colombo & Hayes, 2023; Maggi et al., 1998). Approximately half to two-thirds of older individuals report sleep-related complaints (Foley et al., 1995; Miner et al., 2018).

Sleep disturbances in older adults are influenced by natural biological and physiological changes associated with aging (Mander et al., 2017). These changes manifest as decreased sleep efficiency, increased sleep fragmentation, longer time to fall asleep, and heightened daytime sleepiness (Klerman et al., 2004; Yaffe et al., 2014). Common sleep disorders, such as insomnia, circadian rhythm disturbances, respiratory-related sleep disorders, restless legs syndrome (RLS), and REM sleep behavior disorders (RBD), further compound these issues (Vitiello et al., 1997). Moreover, the interplay between sleep health and mental well-being plays a crucial role in cognitive decline, physical and functional impairment, and increased healthcare needs (Corbo et al., 2023).

Given its profound impact, sleep health is recognized as a critical determinant of overall well-being in older adults (Pantesco et al., 2022). Adequate sleep is essential for cognitive functioning, mood regulation, cardiovascular health, and daily performance, reducing the risks associated with accidents and fatigue (Newman et al., 1997; Aguiar et al., 2021). Factors influencing sleep health span a broad range, from physiological and behavioral elements to sociocultural influences, each affecting aspects of physical and emotional health, cognitive performance, productivity, and safety (Sabatini et al., 2022).

Understanding sleep patterns in older populations is essential for promoting healthy aging and identifying factors that influence longevity. Recent research highlights the importance of beliefs and attitudes in shaping health behaviors, including sleep practices (Pantesco et al., 2022). Robbins et al. (2019) have identified prevalent sleep myths and beliefs, which can adversely affect sleep health and contribute to poor sleep hygiene.

Within the Portuguese context, cultural values and individual belief systems can significantly shape sleep quality and overall quality of life (Sella et al., 2022). Dysfunctional beliefs and attitudes about sleep have been shown to negatively affect sleep quality, interfering with daily functioning and well-being (Semler &

Harvey, 2005; Vand et al., 2014). Sella et al. (2022) demonstrated, for the first time, the impact of subjective sleep perceptions and beliefs on the quality of life in older adults, emphasizing the influence of sleep-related factors.

Building on this line of research, the current study aims to explore the association between perceived sleep quality, sleep patterns, and dysfunctional beliefs and attitudes about sleep in a sample of Portuguese individuals aged 50 and above. By examining these relationships, the study seeks to contribute to the understanding of sleep's role in functional health and identify potential targets for interventions to improve sleep quality and well-being in older adults.

METHOD

Study Design and Participants

This cross-sectional study employed a quantitative approach (Montero & León, 2007) to examine the relationships between sleep quality, functional health, and beliefs and attitudes about sleep in adults aged 50 and above. The sample consisted of 125 Portuguese individuals, aged 50 to 80 years (M = 58.07, SD = 6.15), of whom 71 were men (56.8%) and 54 were women (43.2%) (see Table 1). Inclusion criteria required participants to be Portuguese nationals, residents of Portugal, and 50 years of age or older.

Table 1 – Demographic Information of Participants

Variable	Frequency	Percentage (%)
Female	54	43.2
Male	71	56.8
Total	**125**	**100.0**

Measures

After providing informed consent, participants completed an online self-report questionnaire developed on Google Forms. The instrument was designed to assess sleep quality, health perceptions, and dysfunctional beliefs and attitudes about sleep among Portuguese adults aged 50 and over. The questionnaire comprised the following validated scales:

- *Pittsburgh Sleep Quality Index (PSQI)*

The PSQI is a 19-item self-report measure that evaluates sleep quality and disturbances over the past month (Buysse et al., 1989). It includes seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. Each component is scored from 0 to 3, with a total score range from 0 to 21. A global score greater than 5 indicates poor sleep quality. The PSQI has demonstrated strong internal consistency

(Cronbach's α = 0.83) and test-retest reliability (r = 0.85).

- *Dysfunctional Beliefs and Attitudes about Sleep (DBAS-16)*

  The DBAS-16 is a brief self-report scale with 16 items assessing beliefs and attitudes about sleep. Respondents rate their agreement with each statement on a 10-point Likert scale (0 = strongly disagree to 10 = strongly agree), with higher scores reflecting stronger dysfunctional beliefs about sleep. The scale has shown adequate internal consistency (Cronbach's α = 0.77 for clinical samples, α = 0.79 for research samples) and temporal stability (r = 0.83) (Morin et al., 2007).

- *Work Health Questionnaire (WHQ)*

  Adapted from the *Cuestionário de Salud Docente* (Fernández-Puig et al., 2015a), the WHQ assesses participants' health status based on their self-perception. It includes 23 items covering domains such as satisfaction, self-efficacy, exhaustion, voice disorders, musculoskeletal disorders, and cognitive issues, rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Higher scores indicate poorer health across dimensions. The WHQ has demonstrated internal consistency, with Cronbach's α values ranging from 0.71 to 0.87 (Borralho et al., 2020). A selection of items relevant to the study's objectives was used in this research.

Procedure

The study used a snowball sampling technique to recruit participants from the target population of adults over 50. The online survey, titled "The Sleep of Portuguese People Over 50," was distributed via social media platforms such as Facebook and Instagram between March and May 2024. Participants were informed about the study's aims and were required to provide consent before completing the survey.

Ethical considerations were prioritized, ensuring confidentiality and voluntary participation. Inclusion criteria were verified at the beginning of the survey, and responses from participants not meeting the age requirement were excluded. A total of 127 responses were initially received, but two were excluded for not meeting the inclusion criteria, resulting in a final sample of 125 participants.

The survey included 27 questions, with sections addressing sociodemographic data, health status, beliefs and attitudes toward sleep, and sleep quality. The majority of the items were rated on Likert scales, allowing for the assessment of participants' perceptions and behaviours related to sleep.

DATA ANALYSIS

The data were analyzed using the Statistical Package for the Social Sciences (SPSS, version 27). Initially, the normality of the results was assessed with the Shapiro-Wilk test, confirming that parametric analyses were appropriate. Bivariate Pearson correlations were conducted to explore the relationships between sleep quality (PSQI), dysfunctional beliefs and attitudes about sleep (DBAS), perceived functional health (WHQ), and age (Vaus, 2002). Subsequently, a One-way ANOVA was carried out to understand the gender differences (Okoye & Hosseini, 2024). Finally, a multiple linear regression analysis was performed to determine the predictive value of perceived functional health, age, gender, and attitudes toward sleep in explaining sleep quality (Montgomery et al., 2021).

Ethical Considerations

This study was submitted to the Ethics Committee of the University of Évora and adhering to the ethical standards of the Declaration of Helsinki. All participants provided informed consent prior to participation, and their confidentiality was strictly upheld throughout the study. Data were anonymized, ensuring that no personally identifying information was collected or stored. Participation was voluntary, with participants informed of their right to withdraw at any time without consequence. These procedures ensured compliance with principles of beneficence, non-maleficence, autonomy, and justice, safeguarding participant rights and well-being.

RESULTS

The data were analysed using the Statistical Package for the Social Sciences (SPSS, version 27). Descriptive statistics, including means and standard deviations, were calculated for all major variables (see Table 2). To examine the relationships between sleep quality (PSQI), health perceptions (WHQ), dysfunctional attitudes and beliefs (DBAS-16), and age, bivariate Pearson correlations were conducted.

Table 2 - Descriptive Statistics

Indexes	Minimum	Maximum	Mean	SD
PSQI	1.00	17.00	6.92	3.48
WHQ	10.00	43.00	20.78	6.61
DBAS	3.00	160.00	67.51	42.10

The mean PSQI index of 6.92 indicates that participants, on average, experience poor sleep quality, with either severe difficulties in two components or moderate issues in at least three components (Buysse et al., 1989). The moderate standard deviation (3.48) suggests notable variability in sleep quality across the sample. For the WHQ, a mean score of 20.78 implies moderate health concerns, with

variability (SD = 6.61) indicating a wide range of health-related experiences. The DBAS mean score (67.51) suggests that many participants hold dysfunctional beliefs about sleep, ranging from highly dysfunctional to more adaptive attitudes.

Table 3 - Bivariate Correlations between Indexes and Age

Variable	Age	PSQI	WHQ	DBAS
PSQI	.205*	--	--	--
WHQ	-.028	.468**	--	--
DBAS	-.069	.357**	.447**	--

*Significant at the 0.05 level (2-tailed).

**Significant at the 0.01 level (2-tailed).

The results revealed several significant relationships among the study variables. A small yet significant positive correlation was found between age and sleep quality (PSQI) ($r = .205$, $p < .05$), suggesting that sleep quality tends to decline as age increases. This finding is consistent with prior research that highlights an increase in sleep disturbances, such as difficulty falling asleep and reduced sleep duration, with advancing age.

A strong positive correlation emerged between sleep quality (PSQI) and perceived functional health (WHQ) ($r = .468$, $p < .001$), indicating that poorer sleep quality is associated with a decline in overall functional health. This finding suggests that individuals experiencing more sleep disturbances are more likely to report physical and psychological symptoms related to their daily functioning, corroborating previous evidence linking sleep quality with broader health outcomes (Robbins et al., 2019).

Additionally, there was a significant positive correlation between dysfunctional beliefs and attitudes about sleep (DBAS) and sleep quality (PSQI) ($r = .357$, $p < .001$). This indicates that individuals holding stronger dysfunctional beliefs about sleep tend to have poorer sleep quality. Such findings align with the literature that suggests negative perceptions and unrealistic expectations of sleep can exacerbate sleep-related problems (Sella et al., 2019).

Lastly, a strong positive relationship was observed between perceived functional health (WHQ) and dysfunctional beliefs about sleep (DBAS) ($r = .447$, $p < .001$). This association suggests that poorer health perceptions are linked to more maladaptive beliefs and attitudes about sleep, highlighting the influence of an individual's health status on their sleep-related attitudes and, consequently, their sleep quality.

In summary, the correlational analysis demonstrates a complex interaction between age, sleep quality, functional health, and sleep beliefs in Portuguese adults over 50, with dysfunctional beliefs playing a pivotal role in shaping sleep quality and health perceptions.

In order to have a deeply understand of the data, following we explore gender differences in quality of sleep, dysfunctional attitudes and perception of health. For that a one-way

ANOVA was conducted to examine gender differences in perceived functional health (Health Total), attitudes toward sleep (Attitudes Total), and sleep quality (Sleep Quality Total). As shown in Table 4, there were no significant gender differences in perceived functional health, $F(1, df) = 2.083$, $p = .151$, or attitudes toward sleep, $F(1, df) = 0.610$, $p = .436$. However, there was a significant effect of gender on sleep quality, $F(1, df) = 8.422$, $p = .004$, indicating that females reported poorer sleep quality ($M = 7.925$, $SD = 3.690$) compared to males ($M = 6.155$, $SD = 3.124$).

Table 4 - Gender Differences in Health Perceptions, Attitudes, and Sleep Quality

Measure	Gender		*df*	*Z*	Sig.
	Masculine M(SD)	Feminine M(SD)			
Health Total	17.309 (6.784)	19.093 (6.915)	1	2.083	.151
Attitudes Total	64.944 (39.636)	70.889 (45.297)	1	.610	.436
Sleep Quality Total	6.155 (3.124)	7.925 (3.690)	1	8.422	.004

To explore the factors predicting sleep quality, a multiple linear regression analysis was conducted, using Stepwise model (Montgomery et al., 2021). The model included Perception of Health (WHQ), Age, Gender, and Dysfunctional Attitudes and Beliefs about Sleep (DBAS-16) as predictors of the dependent variable, Sleep Quality Index (PSQI).

Table 5 displays the unstandardized coefficients (B), standard errors (SE), standardized coefficients (β), t-values, and significance values (Sig.) for each predictor.

Table 5 - Coefficients from the Multiple Linear Regression Model Predicting Sleep Quality

Modelo	B	SE	β	t	Sig.
Health	.174	.044	.343	3.969	<.001
Age	.133	.043	.235	3.126	.002
Gender	1.423	.530	.203	2.687	.008
Attitudes	.016	.007	.191	2.217	.029

Note. Dependent variable: Sleep Quality Total. SE = Standard Error; B = unstandardized coefficient; β = standardized coefficient

As shown in Table 5, all predictors were significantly associated with sleep quality. Perception of health had the highest standardized coefficient ($\beta = .343$, $p < .001$), indicating that more negative health perceptions are associated with poorer sleep quality. Age was also a significant predictor ($\beta = .235$, $p = .002$), suggesting that increasing age is related to poorer sleep quality. Gender emerged as a significant predictor ($\beta = .203$, $p = .008$), highlighting gender differences in sleep quality. Finally, Dysfunctional attitudes and beliefs about sleep showed a significant association ($\beta = .191$, $p = .029$), demonstrating that more dysfunctional attitudes toward sleep are related to lower sleep quality.

The full model explained 32.4% of the variance in sleep quality ($R^2 = .324$), suggesting that the

combination of these predictors contributes significantly to understanding the factors associated with sleep quality among Portuguese adults.

DISCUSSION

The current study provides insight into the factors influencing sleep quality in Portuguese adults aged 50 and above. The findings reveal that poor sleep quality is prevalent in this population and is influenced by perceived health, age, gender, and dysfunctional attitudes toward sleep.

The results highlight the important role of health perceptions, showing that individuals with more negative health perceptions tend to experience poorer sleep quality. This is consistent with previous research indicating that perceived functional health and physical discomfort can disrupt sleep patterns (Robbins et al., 2019; Sabatini et al., 2022). Age was also found to play a significant role in sleep quality, with older participants reporting poorer sleep. Sleep disturbances in older adults are often linked to chronic conditions, psychological distress, and decreased physical functioning, suggesting that interventions aimed at improving health perceptions and managing health conditions may be beneficial for enhancing sleep quality. This supports existing evidence that aging is associated with sleep disturbances, such as reduced sleep efficiency and increased sleep fragmentation (Mander et al., 2017; Yaffe et al., 2014). Age-related sleep changes may be attributable to physiological alterations, including shifts in circadian rhythms, and lifestyle factors that impact sleep duration and depth. However, the current study extends our understanding by considering how other factors like gender and beliefs about sleep contribute to this relationship.

Gender differences were evident, suggesting that males and females may experience distinct sleep challenges. Prior studies have shown that gender can influence sleep patterns, with hormonal differences, lifestyle factors, and varying stress responses contributing to these variations (Zhu et al., 2021). Tailoring sleep interventions to address these gender-specific needs may enhance their effectiveness.

Dysfunctional beliefs about sleep also emerged as significant predictors of sleep quality. These results align with research demonstrating that maladaptive beliefs and attitudes, such as unrealistic expectations or misperceptions about sleep, are associated with poorer sleep outcomes (Semler & Harvey, 2005; Sella et al., 2022). Cognitive-behavioral interventions targeting these dysfunctional beliefs have been shown to improve sleep quality by reducing anxiety around sleep and promoting healthier sleep practices.

The associations observed between dysfunctional sleep beliefs, perceived health, and sleep quality underscore the psychological component of sleep regulation. Addressing these beliefs and attitudes through psychoeducation and therapeutic interventions can therefore be an effective strategy for improving sleep outcomes in older adults.

Overall, these findings highlight the multifaceted nature of sleep quality in older populations. By demonstrating that perceived health, age, gender, and sleep beliefs significantly contribute to sleep quality, the study offers important implications for future research and interventions. Efforts to improve sleep health in older adults should consider both physical and psychological factors, focusing on modifying dysfunctional beliefs, enhancing health perceptions, and accounting for gender-specific sleep needs.

CONCLUSION

In conclusion, this study highlights the significant associations between perceived sleep quality and functional health, dysfunctional beliefs about sleep, and age with a group of older Portuguese adults. These findings underscore the importance of considering individual perceptions and attitudes in understanding and addressing sleep disturbances in older populations. Future interventions aiming to improve sleep quality and health in this demographic should prioritize modifying dysfunctional beliefs about sleep, thereby promoting healthy sleep behaviours and improving overall well-being.

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