ORIGINAL RESEARCH

ASSOCIATION OF SLEEP HYGIENE BEHAVIOR WITH SLEEP QUALITY IN OLDER ADULTS

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Abstract

Background: Changes in sleep quality as a consequence of the aging process in the elderly can affect sleep quality. So older adults need to get good and appropriate sleep hygiene practices in order to increase sleep efficiency.

Purpose: The purpose of this study was to examine the association between sleep hygiene behavior with sleep quality in older adults.

Methods: This research is quantitative with the design used being a cross sectional study. The sample used in this research was 49 elderly people. Statistical analysis was performed using the Chi-Square test.

Results: the results of bivariate analysis showed a p-value of 0.032 ($p<0.05$), indicating a statistically significant relationship between sleep hygiene behavior and sleep quality in the elderly. nursing interventions based on sleep hygiene education and modification can be an effective non-pharmacological approach to improving the aging population's health and overall quality of life. Further research is recommended to explore additional factors such as environmental conditions, chronic health status, and social support that may influence sleep quality in the elderly.

Conclusion: The importance of nursing services is that they can implement sleep hygiene practices which can be used as independent interventions by nurses in an effort to increase sleep efficiency in the aging population.

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1. Introduction

Sleep is an essential element of human life, and the quality of sleep serves as an important marker of helath and the ability to carry out daily activities throughout the lifespan. Sleep disturbances, or decreased sleep quality and rhythm, can have detrimental effects on various aspects of life, covering both physical condition and mental state, cognitive abilities, and daytime productivity, ultimately affecting overall quality of life. This condition is associated with heightened vulnerability to several medical condition, such as physical illnesses such as cancer and diabetes mellitus, as well as neurological and functional conditions, such as mild memory impairment and Alzheimer's disease (1)(2)(3).

As older adults age, the increased vulnerability to enduring medical conditions that can hinder daily activities tends to increase (4). The progressive physical and physiological changes that occur during aging also increase an individual's vulnerability to both decreased functional independence as well as sleep problems, including challenges with falling asleep remaining asleep-commonly noted in older populations. Furthermore, given that chronic conditions are more widespread in older adults, including those aging normally, these conditions are generally closely linked to sleep disturbances and various adverse health consequences (5).

Sleep deprivation can also disrupt glucose metabolism and hormone function. Furthermore, various types of sleep problems, icluding short, sleep interruptions, hypersomnia, and insomnia, are connected to an increased rate of cognitive impairment in aging populations (6). These disturbances can interfere with memory consolidation, reduce attention and concentration, and accelerate the deterioration of brain tissue associated with cognitive function. In the long term, chronic sleep disturbances can potentially contribute to a higher risk of dementia and Alzheimer's in aging adults, given that the brain doesn't get enough rest to repair and detoxify during sleep (7).

Sleep hygiene is a set of habits and practices aimed at supporting healthy, quality sleep, wich involves sleeping at a regular hours, improving sleep surroundings, and reducing caffeine or digital distractions before going to bed. Poor sleep hygiene can lead to disruptions in sleep, like struggling to fall asleep, restless sleep, or feeling tired upon waking, ultimately reducing sleep quality. Conversely, effective sleep-promoting behavioes are associated with better sleep outcomes in various aspects, including duration, efficiency, and subjective satisfaction with sleep. Good sleep quality directly contributes to quality of life, particularly in terms of physical health, emotional well-being, cognitive function, and daily productivity. In older adults, sleep hygiene is a key factor in maintaining emotional stability, decreasing fatigue, and helping to prevent cognitive impairment and chronic disease. Poor sleep quality in adults has been linked to a number of negative aspects of sleep hygiene behaviors. Effective measures such as pre-bedtime relaxation, sleep hygiene education, and cognitive behavioral therapy may be necessary to help improve sleep quality (8)(9).

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2. Methods

This research uses a descriptive correlative research method to determine the correlation (relationship) between two variables. This design explains the relationship between the independent and dependent variables. The design used in this study was a cross-sectional study. A cross-sectional study examines the association between sleep hygiene practices and sleep quality among the elderly in Tiba Raya Village, Mutiara Timur District, Pidie Regency, data collection was carried out for 2 months.

The sampling technique used in this study was purposive sampling. The sample size consisted of 49 respondents. The instrument used to assess sleep hygiene was the Sleep Hygiene Index (SHI) questionnaire, and the instrument used to measure sleep quality was the Pittsburgh Sleep Quality Index (PSQI). A study by David F, Jeff Bryson, and Robert Corwyn, entitled "Assessment of Sleep Hygiene Using the Sleep Hygiene Index," found the Sleep Hygiene

Index questionnaire to be valid, with an r value of 0.371-0.458. The validity test for the PSQI questionnaire showed that the calculated r (0.410-0.831) was greater than the table r (0.361). The reliability value of the Sleep Hygiene Index questionnaire was 0.71.

3. Results

Data in this study were analyzed using univariate statistical techniques to evaluate sleep hygiene as the independent variable and sleep quality in older adults as the dependent variable. The results of which will be presented in the form of a frequency distribution. Meanwhile, bivariate analysis was used to identify the relationship between each independent variable (sleep hygiene, gender, and occupation) with the dependent variable (sleep quality in the elderly), using the Chi-Square test as an analytical tool.

Tabel 1. Frequency Distribution of Respondent Characteristics (n=49)

No	Characteristics	f	Percentage (%
	Gender		
1.	Male	19	38,8 %
2.	Female	30	61,2 %
	Occupation		
1.	Work	22	44,9
2.	Doesn't work	27	55,1

Table 1 shows that the majority of respondents are female 30 respondents (61,2 %), and the majority of respondents are unemployed 27 respondents (55.1%).

Tabel 2. Distribution of Sleep Hygiene Frequency in the Elderly (n=49)

No	***Sleep Hygiene***	f	Percentage (%
1.	Good	16	32,7
2.	Moderate	24	49,0
3.	Bad	9	18,4

Based on table 2, it shows that the majority of Sleep Hygiene in the Elderly is in the sufficient category, as many as 24 respondents (49.0%), this shows that most of the elderly in the study can still improve their sleep quality, even though they already have relatively good habits.

Tabel 3 Frequency Distribution of Sleep Quality in the Elderly (n=49)

No	Sleep Quality	f	Percentage (%
1.	Good	29	59,2
2.	Poor	20	40,8
	Total	49	100

Table 3 shows that the majority of elderly people's sleep quality was in the good category, with 29 respondents (59.2%).

Tabel 4 Association of Sleep Hygiene Behavior with Sleep Quality in Older Adults

No	*Sleep Hygiene*	Sleep Quality				Total		ρ value
		Good		Poor				
		f	%	f	%	f	%	
1.	Good	12	75,0	4	20,0	16	100	0,032
2.	Moderate	15	62,5	9	37,5	24	100	
3	Bad	2	22,2	7	77,8	9	100	
	Jumlah	29	59,2	20	48,1	49	100	

Table 4 show that most of the 15 respondents who had sufficient sleep hygiene mostly had good sleep quality, namely 15 respondents (62.5%). The results of the statistical test with chi square obtained a value of $\rho = 0.032$ ($\rho < 0.05$), which means that Ha is accepted and Ho is rejected so that it can be concluded that there is a relationship between sleep hygiene behavior and sleep quality in the elderly.

4. Discussion

Socio-demographic characteristics and lifestyle habits significantly contribute to sleep disturbances among the elderly. Several factors observed to be related to sleep disorders include female gender, low education level, marital status such as divorce or widowhood, and living alone. In addition, lifestyle habits such as inadequate fruit consumption, tea drinking, alcohol and caffeine consumption, use of drug intake, health conditions, and lack of physical activity also contribute to sleep disorders. Inadequate sleep quality or sleep-related conditions in the elderly are often associated with various common chronic illnesses like hypertension, type 2 diabetes, heart and blood vessel disease, stroke, depression, and impaired cognitive function.(10) (11).

Women tend to be at higher risk of experiencing reduced sleep quality, reflecting the widely held notion that females are at hinger risk for sleep disorders that males. Several epidemiological studies also indicate that female gender has been identified as an independent risk factor for development of sleep disorders, regardless of age, comorbidities or lifestyle factors. Some factors that may explain poor sleep quality in women include lower education levels, lower personal income, a higher prevalence of chronic diseases, and a greater tendency towards psychological disorders such as depression and anxiety compared to men.

Elderly residents in social care institutions are mostly aged 60-69, female, uneducated, married, and have two or more illnesses. More than half of the residents have poor sleep hygiene, dominated by female elderly aged 60-69. Female elderly residents have poor sleep hygiene more often than male elderly residents (12). Poor sleep hygiene is most common among elderly residents who are uneducated, married, and have two or more illnesses. Therefore, proper assessment and modification of pre-bedtime activities are necessary to ensure healthy sleep for the elderly. Sleep hygiene practices affect sleep quality. This condition occurs due to several factors that can disrupt the elderly's sleep. Elderly residents perceive reduced nighttime sleep duration as related to the aging process and considered normal. The findings in this study indicate that environmental factors have a significant influence on elderly residents in social care institutions. The finding of statistical analysis showed that sleep hygiene is significantly associated with sleep quality in elderly. Older adults who practice goog sleep hygiene are 7.8 times more likely to experience high sleep quality. Therefore, nurses and institutional staff should be change sleep hygiene to improve healthy sleep so that the quality of sleep in the elderly improves (13).

Room temperature and noise levels can affect sleep quality. Older adults experience biological changes, such as decreased blood flow to the skin and decreased sweat gland activity, which can lead to imbalances in body temperature regulation. Temperatures that are too hot or too cold can make sleep less comfortable for older adults. Furthermore, older adults are generally more sensitive to sound, so even low-intensity sounds can still wake them up at night.

A sleep hygiene intervention conducted over a five week peride significantly improved sleep quality in elderly participants. Before the intervention was implemented, the experimental group results showed that approximately 33.21% of participants experienced moderate sleep disturbances. However, after the intervention program was implemented, the incidence of sleep disturbances decreased dramatically to 2.89%. Eighteen elderly participants reported experiencing restful sleep, and 10 others reported undisturbed sleep. The results of this experiment showed a statistically significan tenhancement in sleep quality from pre and post

intervention (14).

Education about sleep hygiene and an interdisciplinary approach play an significant contribution to treating sleep disorders in the elderly. These approaches complement each other to improve sleep quality. Sleep hygiene education aims to provide knowledge and healthy habits that help create a good sleep environment and routine, such as maintaining a sleep schedule, avoiding stimulants before bed, and maintaining a comfortable bed. Meanwhile, interdisciplinary interventions involve various health professionals, such as doctors, psychologists, and nurses, working together to comprehensively address the medical, psychological, and social factors that influence sleep disorders. With this combination of education and a multidisciplinary approach, it is hoped that sleep disorders in older adults can be managed more effectively, thereby improving their overall quality of life (15); (16).

Sleep hygiene is one of the most effective non-pharmacological therapies, involving simple behaviors and environmental specific to the individual adjustments to support healthy sleep. This therapy is relatively easy to implement, affordable, and comprehensive, making it highly beneficial in addressing sleep disorders in the elderly. (17). Adequate sleep is as key factor in maintaining the health and well-being of older adults. Quality sleep helps maintain physical and mental balance, strengthens Sleep contributes to the regulation of immune function, facilitates tissue repair and regeneration, maintains metabolic homeostasis, supports memory consolidation, and enhances cognitive performance in older adults (18)

Good quality sleep plays an important role in Sustaining brain connectivity and promoting mental wellness as we grow older (19). During sleep, particularly during deep sleep, the brain undergoes restorative processes such as strengthening synaptic connections that play a role in learning and memory, and clearing metabolic waste products through the glymphatic system. This process is crucial for preventing the accumulation of Damaging proteins like beta-amyloid, associated with Alzheimer's disease. Therefore, quality sleep not only supports daily cognitive function but also contributes to slowing brain decline due to aging.

Numerous studies have shown that insufficient sleep can raise the risk of numerous serious health issues, including obesity, diabetes, high blood pressure, heart disease, stroke, and mood disorders. (20). Sleep deprivation has been shown to be a contributing factor to various health problems, particularly in older individuals. Inadequate sleep can alter levels of key appetite hormones like ghrelin and leptin, which control feelings of hunger and fullness, thereby increasing the likelihood of obesity (21). Furthermore, sleep disturbances negatively impact glucose metabolism and insulin sensitivity, which can trigger the development of type 2 diabetes. In the cardiovascular system, sleep disturbances can increase sympathetic nervous system activity and cause inflammation, ultimately contributing to high blood pressure, heart disease, and stroke risk. Poor sleep also affects the balance of neurotransmitters in the brain, increasing vulnerability to mood disorders like depression, anxiety, and stress. Therefore, maintaining good sleep quality is crucial for preventing various chronic diseases and supporting Both physical and cognitive well-being, particularly among the elderly.

5. Conclusion

The study identified a strong correlation between sleep hygiene practices and sleep quality among older adults. Most respondents in this study demonstrated fairly practiced good sleep hygiene and experienced sufficient sleep quality. The results of the statistical analysis showed a p-value of 0.032 ($p < 0.05$), indicating a significant correlation between the two variables. These findings support the understanding that healthy sleep habits policies—such as maintaining consistent bedtimes, creating a supportive sleep environment, and avoiding stimulants before bed—can contribute to improving sleep quality in elderly people. Thus, closing interventions through educational approaches and sleep behavior modification can be effective non-pharmacological strategies in improving the health and quality of life of elderly people. Therefore, further research is recommended to explore other factors, such as environmental conditions, chronic diseases, and social support, which also have the potential

to influence sleep quality in the aging population.

The implications of this study indicate that good sleep hygiene practices contribute significantly to improving sleep quality in the elderly, thus making them an effective non-pharmacological approach in nursing interventions. These findings encourage healthcare professionals to integrate sleep hygiene education into promotive and preventive programs, particularly in elderly communities through services such as the Elderly Integrated Health Post or Community Health Centers. Furthermore, The findings of this study may inform the development of future health policies that focus more on improving the quality of life in the elderly through healthy sleep behaviors. In an educational context, it is important for nursing institutions to incorporate sleep hygiene materials into their curricula as part of strategies to improve sleep quality in the elderly. Further research is also recommended to explore other factors such as environmental conditions, chronic diseases, and social support that have the potential to holistically influence sleep quality in the elderly.

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7. References

1. Song C, Zhang R, Wang C, Fu R, Song W, Dou K, et al. Sleep quality and risk of cancer : findings from the English longitudinal study of aging. 2021;(September 2020):1–8.
2. D'Rozario AL, Chapman JL, Hillips CL, Palmer JR, Hoyos CM, Mowszowski, L. ..., et al. Objective measurement of sleep in mild cognitive impairment: A systematic review and meta-analysis. Sleep Med Rev [Internet]. 2020;52:101308. Available from: http://dx.doi.org/10.1371/journal.pone.0319100
3. Hijriana I, Syamsuddin S, Syafira N, Bahri S. Hubungan Perilaku Gaya Hidup dengan Kejadian Hipertensi pada Lansia. J Pharm Heal Res. 2022;3(3):112–7.
4. Hijriana I, Yusnita Y. Pelaksanaan Senam Lansia dalam Upaya Peningkatan Kesehatan. J Soc Responsib Proj by High Educ Forum [Internet]. 2022;3(2):217–9. Available from: https://doi.org/10.1021/acsnano.0c02618
5. Wai JLT, Yu DSF. The relationship between sleep–wake disturbances and frailty among older adults: A systematic review. J Adv Nurs. 2020;76(1):96–108.
6. Campbell LM, Kohli M, Lee EE, Kaufmann CN, Higgins M, Delgadillo, J. D., ... Moore RC. Objective and subjective sleep measures are associated with neurocognition in aging adults with and without HIV. 2023;36(6):1352–71.
7. Páez A, Frimpong E, Mograss M, Dang-Vu TT. The effectiveness of exercise interventions targeting sleep in older adults with cognitive impairment or Alzheimer's disease and related dementias (AD/ADRD): A systematic review and meta-analysis. J Sleep Res. 2024;33(6):1–24.
8. Qi H, Liu R, Zhou J, Feng Y, Feng L, Feng Z, et al. Investigating sleep quality and sleep hygiene awareness among Chinese adults: an association and network analysis study. Sleep Breath. 2023;27(5):2049–58.
9. Lee S, Mu CX, Wallace ML, Andel R, Almeida DM, Buxton OM, et al. Multidimensional Sleep Health Problems Across Middle and Older Adulthood Predict Early Mortality. Journals Gerontol - Ser A Biol Sci Med Sci. 2024;79(3):1–10.
10. Park J, Han J, Lee JR A. Lifetime coffee consumption, pineal gland volume, and sleep quality in late life. Sleep. 2018;
11. Cheng W, Rolls E, Ruan H et al. Functional connectivities in the brain that mediate the association between depressive problems and sleep quality. JAMA Psychiatry. 2020;75:1052–1061.
12. Taporoski TP, Beijamini F, Alexandria S, Aaby D, von Schantz M, Pereira AC, et al.

Gender differences in the relationship between sleep and age in a Brazilian cohort: the Baependi Heart Study. J Sleep Res. 2024;(December 2023):1–8.
13. Annisa M, Nurviyandari D, Wati K. The relationship between sleep hygiene and sleep quality among residents of an elderly care institution in DKI Jakarta. 2019;4:89–97.
14. Rayanti RE, Fretes F De, Kristianti N. Effectiveness of Sleep Hygiene Intervention on the Sleep Quality of the Elderly in Nursing Homes in Salatiga City. 2024;11(January):25–9.
15. Hafızoğlu M, Gürün P, Okyar Baş A, Kayabaşı C, Karaduman D, Atbaş, C. ..., et al. Sleep hygiene education in older adults: effectiveness and association with comprehensive geriatric assessment. Aging Ment Health. 2025;1(7):284–91.
16. Urbanová L, Vaníček O, Červená K, Bartoš A, Evansová K. The impact of sleep education, light intervention and relaxation on sleep and mood in the elderly. Chronobiol Int [Internet]. 2024;41(4):567–76. Available from: https://doi.org/10.1080/07420528.2024.2337007
17. Andas AM, Sansuwito T, Said FM, Wada FH. The Influence of Sleep Hygiene on the Sleep Disorders of Elderly at Integrated Long Term Care. 2024;15(April):109–17.
18. Casagrande M, Forte G, Favieri F. Sleep Quality and Aging : A Systematic Review on Healthy Older People , Mild Cognitive Impairment and Alzheimer ' s Disease. 2022;
19. Fang H, Tu S, Sheng J, Shao A. Depression in sleep disturbance : A review on a bidirectional relationship , mechanisms and treatment. 2019;(November 2018):2324–32.
20. Irwin MR, Vitiello M V. Review Implications of sleep disturbance and inflammation for Alzheimer ' s disease dementia. Lancet Glob Heal [Internet]. 2019;4422(18). Available from: http://dx.doi.org/10.1016/S1474-4422(18)30450-2
21. Crestani F, Williams G, Breheny M, Tupara H, Cunningham C, Gander P, et al. Sleep health in later life: Interviews exploring experiences, attitudes and behaviours of older people. Ageing Soc. 2024;44(3):681–703.