



FACTORS AFFECTING THE QUALITY OF SLEEP QUALITY IN THE ELDERLY

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ABSTRACT

Aging is a process that occurs throughout life. As age increases, various body functions including the neurological system in the form of the number and size of neurons decrease, resulting in a decrease in the function of norepinephrine which ultimately has an impact on the sleep quality of the elderly. Various factors are related to sleep quality, including the physical condition of the elderly, the emotional stress they experience and environmental factors. The research aims to determine factors related to sleep quality in the elderly. The research is descriptive analytic with a cross sectional approach. The population was 123 people, with a sample of 96 people selected through probability simple random sampling. Interviews were conducted in a structured manner to obtain data. Research shows that 79.2% of respondents had poor sleep quality, 67.7% of respondents experienced physical illness and 55.2% of respondents had an uncomfortable environment and 66.7% of respondents experienced emotional stress. There is a relationship between sleep quality and physical pain, the environment and emotional stress. With the results of the chi square test, elderly sleep quality is influenced by physical illness (with a p value of 0.000), the environment (with a p value of 0.022) and emotional stress (with a p value of 0.041). For the health services, they are activating posyandu for the elderly to monitor the health of the elderly and improve the abilities of the elderly through environmental education and stress management education to improve the sleep quality of the elderly. For further research as basic data for research as basic data for research on sleep quality in the elderly.

Keywords: elderly; factors; sleep quality

First Received 28 March 2024	Revised 28 April 2024	Accepted 30 April 2024
Final Proof Received 24 June 2024	Published 01 October 2024	
How to cite (in APA style) Herawati, N., & Syahrums, S. (2024). Factors Affecting the Quality of Sleep Quality in the Elderly. Indonesian Journal of Global Health Research, 6(5), 2853-2862. https://doi.org/10.37287/ijghr.v6i5.3423 .		

INTRODUCTION

Aging is a condition that occurs in human life, a process that occurs throughout life, starting from the beginning of life (Dewi, 2014). The elderly are an age group of humans who have entered the final stages of their life (Manurung, 2022). According to WHO, 2017, elderly people are people aged 60 years or more, divided into four, namely middle age aged 45-59 years, older aged 60-74 years, old aged 70-90 years, and very old aged more than 90 years. (Romana, 2022). Meanwhile, according to the Elderly Welfare Law no. 13 of 1998 are those aged over 60 years. Increasing age in the elderly causes many problems, including decreased body function, both physical and psychological. High life expectancy also increases the prevalence of non-communicable diseases both in the elderly and even in the pre-elderly, where the health problems that often occur are coronary heart disease, hypertension, kidney failure, stroke and DM (Dewi, 2022). According to Tamher (2009: 45) health problems that commonly occur in the elderly include infectious diseases, traumatic events, respiratory tract problems, digestive tract problems, other endocrine and metabolic diseases, various heart and circulatory diseases, kidney and urinary tract diseases, joint diseases, various skin diseases, and disorders of the neurological and psychiatric systems. The elderly also experience changes in the neurological system which physiologically results in a decrease in the size and

number of neurons in the CNS and reduces the function of norepinephrine in the neurological system so that the quality of sleep in the elderly is affected (Maryunani, 2017).

Damage to sensory organs in general can occur with aging which results in decreased sensitivity at times that maintain circadian rhythms. Based on data from the World Health Organization (WHO, 2017), it is recorded that there are 142 million elderly people in the Southeast Asia region. The number of elderly people in Indonesia in 2021 was recorded at 29.3 million and this figure is equal to 10.82% of the total population in Indonesia (BPS, 2021). The elderly population in Indonesia is projected to double from 7.6% to 15.77% in 2035 (Ministry of Health of the Republic of Indonesia, 2019). It is predicted that around 2020-2025, Indonesia will be in fourth position after China, India and the United States in terms of structure and number of elderly populations where life expectancy is above 70 years. Meanwhile in Asia, Indonesia is in fourth place based on the number of elderly people (60 years and over), namely in 2010 around 8.8%, it is estimated that in 2050 it will be 24.5%, while the 3 countries above it will be 42.6% in Korea, 35.2% in China and 27.7%. % in Vietnam (Festi, 2014).

According to the National Sleep Foundation NSF (2023). For adults over the age of 40, 69% of men and 76% of women get up to use the bathroom at least once per night. An elderly person aged 64 years needs 6 hours of sleep every night. Nearly half of all Americans say they feel sleepy during the day between three and seven days per week. About 35.2% of all adults in the US report sleeping an average of less than seven hours per night. It is estimated that between 30% and 48% of older adults experience insomnia. Women have a lifetime risk of insomnia that is as much as 40% higher than men. Around 40% of insomnia sufferers are believed to also suffer from mental health disorders. About 75% of adults with depression suffer from insomnia. BPS data for West Sumatra in 2020 has 909,040 elderly people or the equivalent of 16.43% of the total population of West Sumatra. Data from the Solok City Health Office in 2022 numbered 5,446 elderly people. Among them are 1,608 elderly people in Tanjung Paku, spread across 4 sub-districts, namely Tanjung Paku Sub-district, Koto Panjang Sub-district, Kampung Jawa Sub-District and PPA Sub-District and (Solok City Health Office, 2022). Report data from posyandu cadres in the Tanjung Paku Community Health Center working area, there are 123 elderly who actively participate in posyandu for the elderly from 2022.

According to research by Jepisa et al (2022), factors that can influence sleep quality in the elderly include age, physical illness, depression, anxiety and environmental factors. The influence of elderly age as a factor that has an impact on sleep quality is 56.3% in the elderly group at risk (70 years), the influence of the level of physical illness experienced by elderly people in the unfavorable category is 63.5%, experiencing mild depression is 54.2%, while not experiencing anxiety is 63.5%. 61.2%, elderly with an uncomfortable physical environment 55.2% and a good physical environment 44.8%. Approximately 75% of elderly people's sleep quality is poor. This condition is a challenge in realizing a quality elderly life. Data reports note that life expectancy in every country is increasing year by year, including Indonesia, reaching 73.5 years (BPS Indonesia, 2022). Increasing age has an impact on decreasing physiological function due to degenerative processes which will also have an impact on the quality of life of the elderly (Dewi, 2022)

Elderly people have hours of sleep that are somewhat shorter or the same as adults, while their sleep time is spontaneously interrupted very often, not only that, after waking up, elderly people need more time to go back to sleep. This means that, in general, elderly people have

less time to sleep if it is related to the amount of time they are in bed at night, and elderly people make up for this lack of sleep time by sleeping during the day (Potter and Perry, 2005). Sleep is a state in which an individual has no awareness of their surroundings, but can be easily awakened. Sleep differs from an unconscious state such as a coma in which the individual cannot be awakened. Rest is a basic, dynamic, highly organized, and complex behavior that is essential for healthy functioning and survival. Over an 80-year lifespan, a person who sleeps 7 hours a night will spend about 24 years asleep. Sleep influences behavioral and physiological functions, including memory, mood, hormone secretion, glucose metabolism, immune function, and body temperature (Bucher, 2014).

Rest and/or sleep are included in the basic human needs that must be met. Sleep design refers to nighttime sleep patterns recorded from physiological measures of brain waves, eye movements, and muscle tone called polysomnography (PSG). Sleep consists of two basic states, namely sleep with slow eye movement or non-rapid eye movement (NREM) and rapid eye movement (REM). When sleeping, the body cycles between NREM and REM sleep. After falling asleep, a person goes through four to six cycles of NREM and REM sleep. In healthy adults, the largest percentage of total sleep time, around 75%-80%, is spent in NREM sleep (Bucher, 2014).

NREM sleep is divided into three stages, namely Stage 1 occurs at the beginning of sleep, with slow eye movements, and is a transition phase from wakefulness to sleep. During this period the person can be easily awakened. Stage 2 includes most of the night's sleep. The heart rate slows, and the body temperature drops. This stage is associated with specific electroencephalography (EEG) waveforms that help maintain sleep. Stage 3 is deep sleep or slow wave sleep (SWS). This stage is associated with a large EEG waveform, called a delta wave, which is used as a measure of sleep intensity. SWS sleep decreases as people age as most adults over 60 years of age have little NREM stage 3 sleep. REM sleep accounts for 20%-25% of sleep. REM sleep follows NREM sleep in a sleep cycle. In this stage the brain waves resemble wakefulness and the postural muscles are inhibited, causing the skeletal muscles to greatly decrease in tone. During REM sleep a person cannot stand up and move around. REM sleep is the period when the most vivid dreams occur (Bucher, 2014).

Elderly age has the potential for difficulty sleeping at night, this is the impact of a decrease in the hormone melatonin which also plays a role in controlling circadian rhythms, where especially at night the secretion process occurs which is related to the appearance of drowsiness. Difficulty falling asleep at night is a sleep disorder resulting from the elderly's inability to initiate the sleep process, maintain sleep, sleep that is not refreshing or wake up too early. (Maryunani, 2017) Sleep quality is an individual's level of satisfaction with sleep, so that the individual does not show signs of sleep deficiency and sleep problems do not arise. Sleep quality includes sleep latency, sleep duration, as well as subjective elements such as sleeping at night and resting. Good quality sleep is reflected in health, fitness, and how fresh an individual looks in the morning. (Utami et al., 2021). The sleep quality of the elderly changes with REM shortening. The decline in NREM stages 3 and 4 is also progressive, where some elderly people barely have stage 4 or deep sleep. An elderly person wakes up more often at night and takes a lot of time to fall asleep (Potter and Perry, 2005).

Sleep quality is influenced by a number of factors. Sleep quality can be interpreted as an individual's ability to stay asleep and wake up when the amount of REM and NREM sleep they experience is sufficient. Meanwhile, sleep quantity can be interpreted as a person's total sleep time. Physiological factors, psychological factors and environmental factors as well as

health conditions can have an impact on the quality and quantity of sleep. Among several of these factors, namely age, duration and quality of sleep, varies among individuals of all ages, based on findings that those aged 60 years or more experience poor sleep quality.

Signs of lack of sleep are divided into 2, namely physical and psychological. Physical signs include facial expressions (dark areas around the eyes, swelling of the eyelids, reddish conjunctiva, and sunken eyes), excessive sleepiness characterized by frequent yawning, difficulty concentrating and signs of fatigue including blurred vision, nausea and dizziness. Meanwhile, psychological signs include withdrawal, apathy and decreased response, confusion and decreased memory. The need for adequate sleep is largely determined by the amount of sleep and the quality of sleep. Factors that can influence the quality of sleep are physical condition, where an individual with a healthy body will sleep soundly, whereas if an individual is sick, it is not uncommon for their need for rest and sleep to not be met. The environment can increase or decrease an individual's sleep, where if the environment is calm it allows the individual to sleep soundly and conversely an unstable, noisy environment can hinder an individual's sleep. Psychological stress, including anxiety, will cause disturbances in sleep frequency because the anxiety experienced causes blood norepinephrine to increase through the sympathetic system, the impact of which is to reduce stage 4 NREM and REM (Aspiani, 2014).

Based on an initial survey conducted on elderly people who visited the elderly posyandu in December 2022, it was found that 5 people said they often woke up at night and had difficulty returning to sleep until morning. The description above is the basis for researchers to conduct research on factors related to sleep quality in the elderly in the Tanjung Paku Community Health Center Working Area, Solok City in 2023. The research aims to determine the factors that influence the sleep quality of the elderly in the working area of the Tanjung Paku Health Center Solok City in 2023.

METHOD

The research is a quantitative descriptive analytic, using a cross sectional approach, which was carried out with the aim of finding out the factors related to the quality of sleep of the elderly in the Tanjung Paku health center working area, Solok City in 2023, where each variable, both independent and dependent, was identified simultaneously at one time (Notoatmodjo, 2012:86). This research was conducted in the Tanjung Paku Community Health Center Work Area with the research implementation time being January-June 2023. The population is the entire research object that will be studied (Notoatmodjo, 2012). There are 123 elderly people who regularly participate in posyandu activities in each sub-district of the Tanjung Paku Health Center, Solok City in 2022. The research sample is part of the entire object to be studied and is considered to represent the entire population. The sample in this study was 96 elderly people, who were taken using the probability sampling method (simple random sampling), namely by selecting the sample by lottery. The instruments in this research include measuring sleep quality using a standard instrument, namely Pittsburgh Sleep Quality Index (PSQI), measuring the level of depression using the standard instrument DASS 15, measuring the environment in the form of 7 questions and measuring physical pain in the form of 7 questions. The Pittsburgh Sleep Quality Index (PSQI) asks 7 questions related to the physical complaints of the elderly. PSQI has an internal consistency and reliability coefficient (Cronbach's Alpha) of 0.83 (Buysse et al., 1989). Depression, Anxiety, Stress Scale (DASS-15) with level of discriminant validity and has a reliability of 0.8806 based on Cronbach's Alpha. Results the reliability test for the home environment variable instrument found that Cronbach's alpha was 0.858. And a physical pain instrument with a Cronbach's alpha of 0.95.

RESULTS

Table 1.
Respondent characteristics (n=96)

Respondent characteristics	f	%
Age		
Early elderly (60-74 years)	80	83.3
Late elderly (75 years and over)	16	16.7
Gender		
Man	18	18.8
Woman	78	81.3

Table 1 shows that the majority of respondents (83.3%) were early graduates and the majority (81.3%) of respondents were women.

Table 2.
Respondents based on variables

Variables	f	%
Sleep quality		
Good	80	83.3
Ba	16	16.7
Disease response		
Painless	18	18.8
Sick	78	81.3
Environment		
Comfortable	43	44.8
Uncomfortable	53	55.2
Emotional Status		
depression	64	66.7
no depression	32	33.3

Table 2 above, it can be seen that the majority (79.2%) of respondents experienced poor sleep quality, the majority (67.7%) of respondents experienced illness, more than half (55.2%) of respondents had an uncomfortable environment, and more than half of respondents (66.7%) experiencing depression.

Table 3.
Relationship between physical pain and sleep quality

Disease response	Sleep quality				Total
	Good		Bad		
	f	%	f	%	
Painless	14	6.5	17	24.5	31
Sick	6	13.5	59	51.5	65

Table 3 shows that 14 (6.5%) fewer respondents experienced good sleep quality without illness compared to 6 (13.5%) respondents who experienced poor sleep quality, while 17 (24.5%) fewer respondents experienced poor sleep quality without illness. when compared with those who were sick, 59 (51.5%) respondents.

Table 4.
Relationship between environment and sleep quality

Relationship between environment and sleep quality					
Environment	Sleep quality				Total
	Good		Bad		
	f	%	f	%	
Comfortable	16	9.0	29	34.0	31
Uncomfortable	4	11.0	47	42.0	65

Table 4 shows that more respondents experienced good sleep quality in a comfortable environment, 14 (9.0%) respondents, compared to an uncomfortable environment, 6 (11.0%). Meanwhile, 29 (34.0%) had poor sleep quality in a comfortable environment, compared to 47 (42.0%) with an uncomfortable environment.

Table 5.
Relationship between emotional stress and sleep quality

Relationship between emotional stress and sleep quality					
Emosional status	Sleep quality				Total
	Good		Bad		
	f	%	f	%	
No depression	11	6.7	21	25.3	32
Depression	9	13.3	55	50.7	64

Table 5 shows that there were more respondents who experienced good quality than those without depressive disorders, 11 (6.7%) respondents, compared to those with depressive disorders, 9 (13.3%). Meanwhile, there were 21 (25.3%) fewer people with poor sleep quality who did not have a depressive disorder, compared to 55 (50.7%) who had a depressive disorder.

DISCUSSION

The chisquare test results between physical illness and sleep quality obtained a value of $p=0.000$ ($P<0.05$), this shows that there is a significant relationship between physical illness and sleep quality, where $OR = 8.098$ means that poor sleep quality has an 8 chance, 09 times in sick condition. So the OR value is significant or meaningful. This is in accordance with the results of research by Jepisa (2022) where there is a significant relationship between history of illness and sleep quality in the elderly. During the research, elderly people expressed complaints about the illnesses they experienced, including hypertension, rheumatism, and a history of diabetes mellitus, which sometimes made it difficult for elderly people to sleep. In this study there were also elderly people of average age who were at risk.

Elderly people who experience frequent urination or nocturia will cause them to be disturbed in their sleep and apart from that it will disrupt their health and productivity functions, elderly people who often wake up in the middle of the night to urinate disrupt their normal sleep cycle (Potter & Perry, 2005) The research results obtained are supported by the theory of Perry and Potter (2005) where every disease experienced by a person can cause discomfort (such as pain, difficulty breathing), respiratory system disorders in the form of disease can affect sleep, someone with chronic lung disease, with heart disease coronary heart disease, hypertension, or nocturia or urination at night, resulting in disruption of sleep and sleep cycles. Elderly people who have the problem of helpless leg syndrome, which usually occurs before going to sleep, will experience recurring rhythmic movements in the feet and legs. The pushing of stomach contents into the esophagus (known as a hot stomach, in the form of pain or heartburn in the middle of the chest) causes a person to frequently wake up during sleep at night.

Nocturia is a feeling of wanting to urinate which can disrupt sleep and sleep cycles. This situation is generally experienced by the elderly where bladder tone has decreased. Elderly people repeatedly wake up to urinate and have difficulty going back to sleep (Potter and Perry, 2005). Elderly people who have problems with their circulatory system will often experience leg cramps at night. Elderly people also often experience restless leg syndrome before going to sleep. Where the elderly feel an itching sensation in the muscles and if the legs are moved this can be reduced. Conditions like this can also hinder the relaxation and sleep process in the elderly (Potter & Perry, 2005). According to the researchers' analysis, the response to disease affects the sleep quality of the elderly. Where in this condition there is a lot of decline or change in the elderly due to a decrease in body function which causes them to be susceptible to disease. An individual with a healthy body allows clients to sleep soundly. But for an individual who is sick, he cannot feel restful sleep.

The efforts made by every elderly person can maintain and improve their health condition towards a better direction and minimize the poor quality of sleep experienced by the elderly towards a better quality. Based on the results of the chisquare test, the value of $p=0.022$ ($P<0.05$) is obtained, which shows that there is a significant relationship between environmental factors and sleep quality, where $OR=3.782$ means that poor sleep quality has a 3.78 times chance of having a poor environment. So the OR value is significant or meaningful. The results of research conducted by Jepisa (2022) also found that 86.8% of the environment was uncomfortable, resulting in poor sleep quality for the elderly, with a comfortable physical environment, 60.5% of the statistical test results obtained a p value = 0.006, so it was concluded that there was a significant relationship between environmental factors. with sleep quality in the elderly. The results of this research are supported by Perry Porter's (2005) theory that the physical environment in which a person is located can influence the sleep process. The size, hardness and position of the bed also affect the quality of sleep, sound also affects sleep, a person needs peace to sleep and avoid noise.

Rooms that are too warm or too cold can cause elderly people to become restless (Potter & Perry, 2005). A bedroom environment that is too warm and stuffy can also cause elderly people to frequently wake up from their sleep. So ventilation is very necessary which functions to maintain the freshness of the air flow in the room, so that the balance of oxygen supply needed by the elderly can be maintained. If the oxygen supply experiences a shortage or decrease then the brain will lack oxygen thereby disturbing the balance in the elderly such as experiencing dizziness and headaches in the elderly which can affect the sleep quality of the elderly. Noise can have an impact on the poor quality of sleep experienced by the elderly. Noise can shorten the deep sleep experienced and lengthen the shallow stages of sleep (stages 1 and 2 NREM). This is in line with the concept of Potter & Perry (2005) where it is said that the environment where the elderly process their sleep has a very important influence on the elderly's ability to fall asleep and stay asleep. Efforts are usually made to maintain a good environment by making the elderly's bed and providing comfort to their environment. Based on the results of the chisquare test, the value of $p=0.041$ ($P<0.05$) is obtained which shows that there is a significant relationship between emotional stress factors and sleep quality, where $OR=3.201$ means that poor sleep quality has a 3.20 times chance of existing emotional stress. depressive disorder. So the OR value is significant or meaningful

Based on research according to Rahayu, the results of data analysis between emotional stress and the sleep quality of the elderly found $p= 0.000$ ($P<0.05$). It can be said statistically that there is a significant relationship between emotional stress factors and the sleep quality of the elderly. Based on the theory of Potter & Perry (2005), emotional stress causes a person to become tense, often leading to frustration if they don't sleep. Stress also causes a person to sleep cycles or sleep too much. Continued stress can lead to poor sleep habits. Often elderly people experience loss which leads to emotional stress. Retirement, physical impairment, death of a loved one and loss of economic security are examples that predispose older adults to anxiety and depression. The aging process that occurs in the body will result in the body experiencing various health problems, both physical and psychological. Physical problems include a decrease in the function of the body's organs as a whole. Meanwhile, psychological problems include feeling lonely, fear of losing, fear of facing death, anxiety and depression. Sleep disorders in the elderly are a condition where an individual experiences a change in their rest pattern due to the many problems that arise which results in the elderly feeling less comfortable in their life. Because sleep is a series of brain processes that individuals need to function properly which is believed to be used to maintain balanced physical, emotional, mental and psychosocial health (Nasrullah, 2016).

CONCLUSION

It can be concluded that the majority of respondents (79.2%) experienced poor sleep quality, the majority (67.7%) of respondents experienced illness, the majority (55.2%) of respondents had an uncomfortable environment, the majority (66.7%) the respondent experienced depressive disorders. There is a significant relationship between physical pain and sleep quality, there is a significant relationship between environmental factors and sleep quality, and there is a relationship between emotional stress and sleep quality. Health services can monitor the physical condition of the elderly more regularly through elderly posyandu and provide education about a comfortable environment for the elderly as well as stress management counseling which can be used to increase the relaxation of the elderly and further improve the quality of the elderly's sleep. For future researchers as basic data for subsequent research.

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