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The Relationship Between Sleep Quantity And Stress Levels In The Elderly

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ABSTRACT

Background: *Sleep is a necessity for human life, because sleep is a part of human life which has a large portion, on average almost a quarter to a third of the time is used for sleeping, sleep has a good impact on body health and lack of sleep will have a negative impact on health. This study aims to determine whether there is a relationship between sleep quantity and stress levels in the elderly in Rw 05 Jatimulyo Village, Malang City.* ***Methods:*** *The research design uses a correlational quantitative design with a cross sectional approach. The population of this study were 174 elderly people in Rw 05 Jatimulyo Village, Malang City. And the research sample is 35 respondents with a determination using purposive sampling. Data collection techniques used instruments in the form of sleep duration questionnaires and the Depression Anxiety Stress Scale questionnaire.* ***Analysis:*** *The data analysis method used is the Spearman Rank test.* ***Results:*** *The results of the study proved that most of the 19 (54.3%) respondents experienced poor sleep quantity and most of the 11 (31.4%) respondents experienced moderate levels of stress.* ***Conclusion:*** *The results of the Spearman Rank test show that there is a relationship between sleep quantity and stress levels in the elderly in Rw 05 Jatimulyo Village, Malang City, p value = (0.032) < (0.05), meaning that someone who experiences poor sleep quantity can cause moderate stress levels.*

Introduction

Sleep is a basic human need and essential for survival, requiring almost half of each day. Many seniors complain of disturbed sleep patterns (Wardha Alvitta et al., 2021). Everyone's sleep needs are different, elderly people need 5-6 hours of sleep per day (Yusfar & Hani, 2021).

Older adults have a shorter average sleep duration compared to younger adults (Harisa et al., 2022). Therefore, sleep disorders are a common health problem faced by the elderly. This condition requires serious attention. Poor sleep quality in the elderly is caused by increased sleep latency, decreased sleep efficiency, and earlier awakenings due to the aging process (Yusfar & Hani, 2021).

According to the World Health Organization, the elderly population in Southeast Asia is 8%, or nearly 142 million people. By 2050, the elderly population is estimated to triple. In 2010, the number of elderly was nearly 5,300,000 (7.4%) of the total population. In contrast, in 2020, the number of elderly was 24,000,000 (9.77%) of the total population. By 2030, the number of elderly is estimated to reach 28,000,000 (11.34%) of the total population (A'la et al., 2021). In Indonesia there are around 19.3 million people aged over 60 years (7.4% of the total population), in East Java the number of elderly people is 2,074 million people (10.92% of the total population)

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(Istibsaroh, 2021). East Java has entered the ageing population era, namely when the percentage of the population aged 60 years and above reaches 10% and above, where Malang City is one of the cities with an elderly population of 11.04% (BPS Jawa Timur, 2021).

According to WHO (World Health Organization) data, approximately 18% of the world's population experiences insomnia annually, with complaints so severe that they can cause mental stress for sufferers. The National Sleep Foundation reports that 67% of 1,508 elderly people in America aged 65 and over experience sleep disorders/insomnia, Gafur. In Taipei, research conducted on individuals over 60 years old showed that as many as 40% of elderly people experience insomnia where they have difficulty starting to sleep and often wake up at night, and the prevalence of sleep disorders in the elderly in Indonesia based on an epidemiological survey, 49% or 9.3 million elderly people experience insomnia (Biahimo & Gobel, 2021). More than 50% of seniors over 65 living at home experience sleep disorders, and 66% of seniors live in nursing homes. The incidence of sleep problems in the elderly tends to increase, reaching around 67%. 40% report difficulty falling asleep, and 30% complain of waking up in the middle of the night. Everyone, both healthy and sick, including the elderly, needs sleep to achieve an optimal quality of life. If someone is sick and does not get good quality sleep, recovery time will be longer. The duration of sleep requirements varies from person to person, influenced by several factors, one of which is age. As people get older, they generally experience more sleep disturbances, resulting in decreased quality and quantity of sleep. Most seniors complain of difficulty falling asleep, often waking up suddenly and having difficulty falling back to sleep, and feeling drowsy during the day but unable to fall asleep or entering the dream stage (Wardha Alvitta et al., 2021).

Stress in the elderly can be defined as pressure caused by stressors in the form of changes that require adjustment. The level of stress in the elderly also refers to the level of pressure felt or experienced by the elderly as a result of stressors in the form of physical, mental, and social changes in their lives. The term "stress level in the elderly" also refers to the high and low pressure experienced or felt by the elderly as a result of stressors such as changes in their physical, mental, and social lives. Stress in the elderly is influenced by various factors, including physical health, psychological conditions, family, environment, and work (Elliya et al., 2021).

A person will experience reduced quantity and quality of sleep if they experience insomnia (Biahimo & Gobel, 2021). Sleep disorders are a group of conditions characterized by disturbances in the amount, quality, or timing of an individual's sleep. An older adult may take longer to fall asleep (lie in bed for longer periods before falling asleep) and have fewer or shorter periods of deep sleep (Hasibuan & Hasna, 2021). Behavioral and personality changes, such as depression, withdrawal, aggression, fatigue, visual or drug-induced hallucinations, impaired orientation to time and place, difficulty determining things, coordination difficulties, and speech disorders, are some of the consequences of older adults not getting enough sleep (Wardha Alvitta et al., 2021).

Sleep disturbances are one of the main complaints experienced by the elderly. It is estimated that more than half of seniors aged 65 and over, living at home or in care facilities, experience difficulty sleeping (A'la et al., 2021). Therefore, rest is an important part of maintaining health. Good sleep is characterized by the ability to fall asleep easily, not waking up frequently, and waking up feeling refreshed. Getting enough quality and quantity of sleep is expected to contribute to better health for the elderly. Stress is a physical and psychological reaction or behavioral response to the demands faced. Everyone, including the elderly, should have the ability to manage stress. A positive outlook on various problems can help prevent stress

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in the elderly. Recommended ways for the elderly to manage stress include engaging in activities they enjoy, being physically active, participating in social activities, getting enough sleep, and spending quality time with loved ones (Ambardini et al., 2021).

Based on a preliminary study conducted by researchers, by interviewing 9 elderly people in RW 05, Jatimulyo Village, Malang City on June 1, 2022. From the results of the interview regarding sleep quantity, it was found that 6 elderly people had problems with lack of sleep with an average time of 3-5 hours of sleep per day, namely they never took a nap while sleeping at night starting at 12:00 am and waking up at 04:00 am and continuing for the past few months, they complained of frequently waking up at night, and could not fall back asleep, citing frequent bathroom trips and disturbing surroundings. Judging from the average sleep of the elderly, it is categorized as insufficient. Then the results of the interview regarding stress found 7 elderly people experiencing stress due to economic and work problems. While 2 elderly people said they were stressed because they were sick so they could not do work, rest and activities properly. Based on the phenomena and problems in the background above, researchers are interested in conducting a study on "the relationship between sleep quantity and stress levels in elderly people in RW 05, Jatimulyo Village, Malang City". This study aims to determine whether there is a relationship between sleep quantity and stress levels in the elderly in RW 05, Jatimulyo Village, Malang City.

Methods

This study used a cross-sectional correlational research design. Cross-sectional research is research conducted through access, observation, or data collection at a single point in time (point-in-time approach). The purpose of this study was to determine the relationship between sleep quantity (as the independent variable) and stress levels in the elderly (as the dependent variable). The study population was all 174 elderly people residing in RW 05, Jatimulyo Village, Malang City. According to Arikunto, if the sample size is less than 100 people, all respondents must be recruited. If the sample size is larger, or more than 100, 10-15%, or 20-25%, or even more, are recruited. Because the study population was more than 100 people, the researcher took a sample by multiplying 20% by the sample size, resulting in:

Sample = 174 x 20% = 34.8 if rounded to 35 respondents. So the sample in this study were 35 elderly people who live in RW 05, Jatimulyo Village, Malang City. The sample criteria were selected based on inclusion and exclusion criteria. The inclusion criteria of this study were elderly who were willing to be research respondents, elderly aged 60-74 years and elderly with male and female gender. Meanwhile, the exclusion criteria for this study were elderly who had acute or chronic diseases that were relapsing at the time of the study and elderly with cognitive impairment (dementia).

In this study, the researcher used a purposive sampling technique. And the instrument used to measure sleep quantity was the Badi'ah sleep duration questionnaire with a Cronbach's alpha value of 0.741. This sleep duration questionnaire consists of 6 open-ended questions, which include the average nighttime sleep time, the average morning wake-up time, and the average daytime nap time, which must be answered by the research respondents. Meanwhile, the instrument used to measure stress levels was the Depression Anxiety Stress Scale (DASS 42) questionnaire from Lovibond which was adopted/modified into 14 questions, and has been tested for international validity with a reliability value of 0.912 which was processed based on the Cronbach's alpha assessment. In this study, the researcher used a standard questionnaire or a questionnaire that had been used by previous researchers, so no validity or reliability tests were attempted.

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Results

From the research results obtained as follows:

Table 1 Respondent Characteristics

The table below shows the characteristics of respondents including age, gender, education, and occupation.

Respondent Criteria	N (%)
Age	
60-65	17 (48,6%)
66-70	9 (25,7%)
71-74	9 (25,7%)
Gender	
Male	10 (28,6%)
Female	25 (71,4%)
Education	
SD	19 (54,3%)
SMP	7 (20,0%)
SMA	9 (25,7%)
Work	
Unemployed	2 (5,7%)
Private Sector	10 (28,6%)
Farmer	4 (11,4%)
Housewife	16 (45,7%)
Retired	3 (8,6%)
Total	**35 (100%)**

Based on the data in Table 1, it is known that the majority of 35 respondents are aged 60-65 years, amounting to 17 (48.6%). Respondent characteristics based on gender, 25 (71.4%) respondents were female. Based on education level, 19 (54.3%) respondents had elementary school education. Based on the respondents' occupation, it was found that the majority of respondents worked as housewives, namely 16 (45.7%) respondents.

Table 2 Frequency Distribution of Sleep Quantity

Data grouping the respondents' sleep quantity criteria is presented in the table below:

Quantity of sleep	Frequency	Presentase %
Good	16	45,7 %
Bad	19	54,3 %
Total	**35**	**100 %**

Based on the data in table 2 from 35 respondents, the results showed that the majority of respondents experienced poor sleep quantity, as many as 19 (54.3%) respondents.

Table 3 Frequency Distribution of Stress Levels

Data grouping the respondents' stress level criteria is presented in the table below:

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Stress Level	Frequency	Presentase %
Light	8	22,9 %
Currently	11	31,4 %
Heavy	10	28,6 %
Very heavy	6	17,1 %
Total	**35**	**100 %**

Based on the data in table 3 above, it is known that of the 35 respondents, the majority of respondents experienced stress in the moderate category, namely 11 (31.4%) respondents.

Table 4 Cross Tabulation of Sleep Quantity with Stress Level

Data on the results of respondents' sleep quantity and stress levels are presented in the table below:

Quantity of sleep	Stress Level									
	Light		Currently		Heavy		Very heavy		Total	
	F	%	F	%	F	%	F	%	F	%
Good	5	31,3 %	7	43,8 %	3	18,8%	1	6,3%	16	100 %
Bad	3	15,8 %	4	21,1 %	7	36,8%	5	26,3%	19	100 %
Total	8	22,9%	11	31,4 %	10	28,6%	6	17,1%	35	100 %

Based on the data in Table 4, 7 (43.8%) of the 16 respondents experienced good sleep quality with moderate stress levels. Meanwhile, 7 (36.8%) of the 19 elderly respondents experienced poor sleep quality with severe stress levels.

Data analysis was performed on two variables using the Spearman's rank test to examine the relationship between sleep quality and stress levels in the elderly in RW 05, Jatimulyo Village, Malang City.

The following is the test result data using SPSS software.

Table 5 Results of Spearman Rank Correlation Test

Variables	N	Sig.	Correlation coefficient
The relationship between sleep quantity and stress levels of the elderly in RW 05, Jatimulyo Village, Malang City	35	0,032	0,362

Based on table 5, the results of the Spearman rank correlation test obtained a significant value (Sig.) = 0.032 (p value <0.05) meaning that H0 is rejected and H1 is accepted, meaning that there is a relationship between sleep quantity and stress levels in the elderly in RW 05, Jatimulyo Village, Malang City. The results of the Spearman rank analysis also show a correlation coefficient value of 0.362, which means that the relationship between sleep quantity and stress levels in the elderly in RW 05, Jatimulyo Village, Malang City is positive but has a weak relationship strength.

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Discussion

1. Sleep Quantity in the Elderly in RW 05, Jatimulyo Village, Malang City

Based on the frequency distribution of sleep quantity, the results showed that 19 (54.3%) respondents reported poor sleep quantity, while 16 (45.7%) respondents reported good sleep quantity. This aligns with previous research, which found that the majority of respondents (65.2%) reported sleep deprivation, typically sleeping less than 7 hours (Damaiyanti et al., 2023). According to research (Warsini & Aminingsih, 2021) Sleep is a vital human need, as it is an integral part of life, with an average of nearly a quarter to a third of the body's time spent sleeping. The amount of sleep in older adults varies with age. Among the changes that occur in aging are psychosocial changes related to changes in sleep and rest patterns.

Sleep itself is a state of unconsciousness, meaning a person can be awakened by appropriate stimuli or sensations. It can also be called relative unconsciousness. It is not simply a state of total restlessness without activity, but rather a succession of cycles characterized by minimal activity. At a minimum, there are fluctuating levels of consciousness, changes in physiological processes, and a reduced response to external stimuli. The purpose of sleep is to maintain mental, emotional, and health balance, reducing the burden on the lungs, cardiovascular, endocrine systems, and other systems (Warsini & Aminingsih, 2021). Meanwhile, the quantity of sleep is the amount of sleep time that a person usually needs (Salikunna et al., 2022).

According to the researcher's opinion, the cause of poor sleep quantity in the elderly in RW 05, Jatimulyo Village, Malang City is their sleep duration of less than 6 hours and is influenced by age factors where the elderly are mostly aged 60-65 years, at that age many experience sleep disorders such as frequently waking up in the middle of the night, frequently going to the bathroom and disturbing environments, in addition to the data obtained from interviews conducted by researchers, many respondents have a history of diseases such as gout or rheumatism which are actually felt at night. Meanwhile, in the elderly who experience good sleep quantity, where the sleep duration is 6 hours or more because the elderly do not experience sleep disorders.

2. Stress Levels in the Elderly in RW 05, Jatimulyo Village, Malang City

Based on the results of the study which showed that the picture of stress levels in the elderly in RW 05, Jatimulyo Village, Malang City, namely mild stress levels of 8 (22.9%) respondents, moderate stress levels of 11 (31.4%) respondents, severe stress levels of 10 (28.6%) respondents, and very severe stress levels of 6 (17.1%) respondents. Stress is a condition that is unsafe for people, where this matter can cause physical and psychological pressure on the person (Sugma, 2021). Meanwhile, according to (Muchsin et al., 2023) Stress itself is a physiological and psychological reaction that occurs when someone feels an imbalance between the demands they face and their ability to cope with those demands.

The results of the study indicate that the majority of elderly people in RW 05, Jatimulyo Village, Malang City, experience moderate stress. This is evidenced by the presence of characteristics or indicators that some respondents are not easily irritated by small things, are easily angered, overreact, anxious, easily offended, and have difficulty sleeping. Moderate stress

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is usually accompanied by complaints such as sleep disturbances, tachycardia, and increased emotional tension (Elliya et al., 2021). In addition to moderate stress, some seniors also experience mild stress, severe stress, and even extreme stress. Generally, a person experiencing stress feels disconnected from their life cycle and uncomfortable. Stress is a non-specific response of the body to a disrupted need, a common and unavoidable phenomenon that occurs in everyday life. Everyone experiences it. Mental stress affects a person holistically; mental, physical, psychological, intellectual, social, and spiritual stress can harm the physiological balance (Asiah, 2022).

The research results show that most of the 6 (54.5%) elderly in RW 05, Jatimuyo Village, Malang City, experience moderate stress due to their work as housewives. Meanwhile, the majority of respondents' occupations are housewives, numbering 16 (45.7%). Work can be stressful for the elderly. Deteriorating physical and mental health affects the productivity of the elderly. If they create sufficient "reserves" for old age at a young age, they can expect to retire. According to research (Rokhman, 2021) Stress in the elderly will also affect their activities because it can cause loss of appetite, excessive talking or withdrawal, symptoms of a red face or body shivering with cold, and so on.

There are many causes of stress in the elderly, one of which is work. Anything or a situation that causes stress is called a stressor. Stress factors are divided into internal and external. Internal sources of stress originate within the individual, such as fever, inflammatory disease, physical trauma, malnutrition, exhausting physical activity, and persistent biological dysfunction. Meanwhile, external sources of stress originate outside the individual, such as major changes in environment, changes in status and social status, educational processes, work-related conflicts, and interpersonal relationships (Ares et al., 2022).

According to researchers, elderly people with moderate to severe stress are caused by unstable physical conditions due to thoughts about the demands placed on them, both from themselves and from outside. One of the factors causing stress in elderly people in RW 05, Jatimulyo Village, Malang City is conditions that cause mental fatigue (anxiety), lack of rest, restlessness, insomnia, irritability, and feelings of depression. However, stress in elderly people can be reduced by consuming foods that can change their mood and increase feelings of relaxation.

3. The Relationship Between Sleep Quantity and Stress Levels in the Elderly in RW 05, Jatimulyo Village, Malang City

Based on the results of bivariate analysis using the Spearman Rank test, it shows that the p value = (0.032) < (0.05) which means that the independent variable (sleep quantity) with the dependent variable (stress level) has a relationship, this means that there is a positive relationship between sleep quantity and stress levels in the elderly in RW 05, Jatimulyo Village, Malang City, while the results of the correlation coefficient r = 0.362, this proves that there is a weak correlation between sleep quantity and severe stress levels, where poor sleep quantity can cause severe stress levels. The direction of the relationship is based on the positive correlation coefficient value, so it can be said that the worse the sleep quality of the elderly, the higher the stress level of the elderly. Based on the results obtained, H1 is accepted, namely there is a relationship between sleep quantity and stress levels in the elderly in RW 05, Jatimulyo Village, Malang City. This shows that in this study sleep quantity can be said to be one of the factors that

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can influence the stress level of the elderly. In theory, stress is an unexpected reaction that arises due to high environmental demands on a person, between harmony or balance between forces in the body that are disturbed due to psychological pressure. Meanwhile, stress in the elderly can be defined as pressure caused by stressors in the form of changes that require adjustment from the elderly. The level of stress in the elderly also refers to the level of pressure felt or experienced by the elderly as a result of stressors in the form of physical, mental, and social changes in their lives (Yunita et al., 2023).

The better the quality of sleep in the elderly, the better their stress levels. Conversely, the worse the quality of sleep, the worse their stress levels, as sleep quality and stress levels are interrelated. A previous study stated that sleep is a physiological process that occurs in meaningful choices to maintain balance and health in the body. Elderly people living in RW 05, Jatimulyo Village, Malang City, show more environmental sleep problems. This is evidenced by the elderly who wake up more often at night, wake up in the middle of the night, and wake up earlier in the morning (Utami et al., 2021).

According to the cross-tabulation results, the majority of elderly people in RW 05, Jatimulyo Village, Malang City, experienced poor sleep quality with a severe stress level category, namely 7 (36.8%) respondents, while elderly people who experienced good sleep quality with a severe stress level category were 3 (18.8%). The many sleep problems that occur in the elderly require appropriate action to improve sleep satisfaction. The needs of each dream are different, some are well met and some are interrupted. Elderly people sleep 6-7 hours a day, even though they spend more time in bed, the elderly often complain of waking up frequently at night, lack of sleep, and oversleeping (A'la et al., 2021).

Elderly women who work as housewives have high scores in the moderate stress category with poor sleep quality. Women experience stress more often than men because this condition is related to the hormone estrogen, which is more prevalent in women. Older women experience stress more often, perhaps because they undergo more health check-ups, making stress easier to recognize. Furthermore, women may be more frequently exposed to stressful environments than men. One trigger for mental stress is hormonal imbalance in women, which increases the number of stressful events in women (A'la et al., 2021). According to research (Muttaqin et al., 2021) Fluctuations in estrogen levels in women can affect their emotions. Furthermore, sleep disturbances, such as reduced sleep duration during development, can lead to decreased brain mass, cell death, and an increased risk of behavioral disorders.

Conclusion

From the analysis of the research data entitled "The Relationship Between Sleep Quantity and Stress Levels in the Elderly in Neighborhood Unit 05, Jatimulyo Village, Malang City," the following conclusions were obtained:

1. Most respondents reported poor sleep quality among the elderly in Neighborhood Unit 05, Jatimulyo Village, Malang City.
2. Most respondents reported moderate stress levels among the elderly in Neighborhood Unit 05, Jatimulyo Village, Malang City.
3. The analysis results indicate a relationship between sleep quantity and stress levels among the elderly in Neighborhood Unit 05, Jatimulyo Village, Malang City.

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