

Original Research

The Relationship between Sleep Quality and Physical Fatigue in the Elderly

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ail.com**Abstract****Background:** Elderly (elderly) is the final period in human life where a person begins to experience changes in his life which are characterized by physical, psychological and cognitive changes.**Objective:** This study aims to determine the relationship between sleep quality and physical fatigue in the elderly.**Methods:** This study uses quantitative research using an analytical descriptive method with a cross sectional approach. The sampling technique in this study is Stratified Random Sampling with a total of 75 samples. Data collection using questionnaires.**Results:** The results of the statistical test using the Chi-square test obtained a p-value = 0.002 that is smaller than the p-value ≤ 0.05 which means that H_0 is rejected, then there is a relationship between sleep quality and physical fatigue in the elderly.**Conclusion:** There is a significant and strong relationship between sleep quality and physical fatigue in the elderly. It is expected that health workers will increase public knowledge about sleep quality with physical fatigue in the elderly through socialization and seminars so that the public can understand the importance of good sleep quality.**Keywords:** Elderly; Physical Fatigue; Sleep Quality

Introduction

Elderly (elderly) is the final period in human life where a person begins to experience changes in his life which are characterized by physical, psychological and cognitive changes. According to the World Health Organization (WHO) in the Southeast Asian region, the elderly population is 8% or around 142 million people. By 2050, it is estimated that the elderly population will increase 3 times from this year. In 2000 the number of elderly people was around 5,300,000 (7.4%) of the total population, while in 2020 it is estimated that the number of elderly people reached 28,800,000 (11.3 4%) of the total population. Meanwhile, in Indonesia itself in 2020 it is estimated that the number of elderly people is around 27 million people (Ministry of Health of the Republic of Indonesia, 2020). Based on population census data conducted by BPS (2021) with the age range of 60 years and above in 2020 reached 721,353 people from the total population of North Sulawesi. (Central Statistics Agency, 2021).

One of the health problems for the elderly is sleep disorders. Sleep disorders are where a person experiences disturbances and changes in sleep time that cause discomfort and interfere with daily activities (Tarwoto, 2015). The aging process makes the elderly more prone to sleep disorders. An important symptom of sleep disorders in the elderly is poor sleep quality in the elderly. According to Hidayat (2016), a person's sleep quality is said to be good if it does not show the impact of sleep deprivation and does not experience problems in sleep. The impact of sleep deprivation can be divided into 2, namely the physical impact and the psychological impact. Below we will explain what are the physical and psychological impacts experienced.

A survey conducted on 427 elderly people living in the community, as many as 39% reported experiencing excessive sleepiness and fatigue such as loss of energy during the day, the elderly becoming suboptimal in their activities, fatigue also makes the elderly look sleepy throughout the day thus reducing their interest in activities and reducing the resilience of an elderly person (Darmojo, 2019).

Based on previous research, it was reported that sleep disorders are a variable related to fatigue in the elderly. In fact, this variable is the variable that has the most effect on fatigue compared to other variables based on multivariate analysis of logistic regression. Sleep disorders have a bad impact on a person because it will affect activities during the day as a result of decreased stamina. Sleep disorders as the variable that most affects fatigue can be explained because of the impact of sleep disorders, so that the direct relationship between sleep disorders and fatigue can be seen. The elderly also experience complaints of fatigue easily (*fatigui*), a condition in which there is a feeling of fatigue or physical inability to carry out activities. Fatigue is so important to avoid because it can be a factor related to various other

physical conditions. Illness, lifestyle, and most importantly related to work productivity. (Ridwansyah, Nurbeti & Sunarto, 2019).

Methods

Study Design

This study uses quantitative research using a descriptive analytical method with a cross sectional approach.

Samples/Participants

The sampling technique in this study is Stratified Random Sampling with a total of 75 samples. Data collection using questionnaires. The inclusion criteria are that the elderly are willing as respondents in the research and the elderly can communicate well. The exclusion criteria are the elderly with severe cognitive impairment and the elderly who cannot communicate well.

Instruments

The Sleep Quality Questionnaire was adopted from the modified Karot (2018) from the Pittsburgh Sleep Quality Index (PSQI), which included sleep start time, total nighttime sleep hours, frequency of awakening, feeling refreshed when waking up in the morning, sleep depth, nighttime sleep satisfaction, feeling tired/sleepy during the day. The questionnaire consists of 7 questions with each answer option given a score level of 1-4. Physical fatigue questionnaire The second instrument used, namely the Fatigue Assessment Scale (FAS) questionnaire, FAS was also used in a study conducted by Fatimah (2015) which consisted of 10 items that measured physical fatigue. The FAS features a selection of 5 answers consisting of never (1), sometimes (2), regular (3), often experienced (4), and always experienced (5).

Data Collection

The researcher submitted an application for a research permit to the UPTD Motoboi Kecil Health Center, After obtaining permission, the researcher began to collect primary data by distributing a questionnaire about sleep quality with physical fatigue to the respondents, in this case, the elderly.

Data Analysis

Editing is studying and researching the data that has been collected. In this activity, the steps taken are to check the respondent's code number, check the completeness of the data, which means checking the data collection instrument and checking various data fills.

Ethical Considerations

Based on the results of the reviewer of the Health Research Ethics Commission of the Graha Medika Institute of Health and Technology, Kotamobagu provided approval and ethical recommendations for research submissions.

Results

Univariate Analysis

Based on table 1, it can be seen that most of the respondents are 60-70 years old as many as 46 people, with a large percentage (61.3%). Meanwhile, respondents aged 71-90 years were 29 people with a percentage (38.7%).

Table 1 Frequency of Respondents by Age

Yes	Age	Frequency	Percentage (%)
1	60 -70 Years	46	61,3
2	71-90 Years	29	38,7
	Total	75	100,0

Source : SPSS Processed Data, 2023

Gender

Based on table 2, it shows that most of the respondents are female, with a large percentage (53.3%), while the respondents are male, with a large percentage (46.7%).

Table 2 Frequency of Respondents by Gender

Gender	Frequency	Percentage (%)
Men – men	35	46,7
Woman	40	53,3
Total	75	100,0

Source : SPSS Processed Data, 2023

Final Education

Based on table 3, it shows that the level of education is assessed based on the last education graduates who have been taken by the respondents. The last level of education consists of elementary, junior high, high school and undergraduate (S1). Data shows that the highest number of recent education at the Junior High School (SMP) level is 22 respondents (29.3%), and the minority with undergraduate education (S1) is 13 respondents (17.3%).

Table 3 Frequency of Respondents by Last Education

Final Education	Frequency	Percentage (%)
SD	21	28,0
JUNIOR	22	29,3
SMA	19	25,3
S1	13	17,3
Total	75	100,0

Source : SPSS Processed Data, 2023

Disease History

Based on table 4, it shows that the respondents who have the most disease history are hypertension as many as 20 respondents with a large percentage (26.7%). Meanwhile, the heart was less than 10 respondents with a large percentage (13.3%).

Table 4 Frequency of Respondents Based on Disease History

Disease History	Frequency	Percentage (%)
Hypertension	20	26,7
Joint Inflammation	13	17,3
Diabetes Millitus	16	21,3
Stomach	16	21,3
Heart	10	13,3
Total	75	100,0

Source : SPSS Processed Data, 2023

Univariate Analysis of Sleep Quality and Physical Fatigue Variables in the Elderly.

Variable Sleep Quality

Based on table 5, it shows that 20 respondents with good sleep quality are 20 respondents, with a large percentage (26.7%). Meanwhile, the quality of sleep was poor for 55 respondents, with a large percentage (73.3%).

Table 5 Frequency of Respondents Based on Sleep Quality Variables in the Elderly

Sleep Quality	Frequency	Percentage (%)
Good	20	26,7
Bad	55	73,7
Total	75	100,0

Source : SPSS Processed Data, 2023

Physical Fatigue Variable

Based on table 6, it shows that 21 respondents with mild fatigue were 21 respondents, with a large percentage (28.0%). Meanwhile, there were 54 respondents, with a large percentage (72.0%).

Table 6 Frequency of Respondents Based on Physical Fatigue Variables in the Elderly

Physical Fatigue	Frequency	Percentage (%)
Mild Fatigue	21	28,0
Severe Fatigue	54	72,0
Total	75	100,0

Source : SPSS Processed Data, 2023

Bivariate Analysis

Based on Table 7 of the Cross-Tabulation of the Relationship between Sleep Quality and Physical Fatigue in the Elderly, it was found that of 75 respondents with good sleep quality with mild fatigue, 11 respondents (22.0%) and good sleep quality with severe physical fatigue as many as 9 respondents (45.0%), while poor sleep quality with mild fatigue as many as 10 respondents (18.2%), and poor sleep quality with severe fatigue as many as 45 respondents (81.8%).

Table 7 Cross-Tabulation of the Relationship Between Sleep Quality and Physical Fatigue in the Elderly

Sleep Quality	Physical Fatigue						P- Value
	Mild Fatigue		Severe Fatigue		Total		
	n	%	n	%	n	%	
Good	11	55,0	9	45,0	20	100,0	0,004
Bad	10	18,2	45	81,8	55	100,0	
Total	21	28,0	54	72,0	75	100,0	

Source : SPSS Processed Data, 2023

Discussion

Based on the questionnaire answers filled out by the respondents, there are still many elderly people who experience poor sleep quality. Sumedi et al (2010) in their research also said the same thing that 70-80% of the elderly experienced a decrease in their sleep quality. Sleep quality is a sleep condition that is reported subjectively by the client about his sleep, namely the time to start sleeping, the total hours of sleep at night, the frequency of awakening, the feeling of freshness when waking up in the morning, the depth of sleep, the satisfaction of sleeping at night, the feeling of tiredness/sleepiness during the day (Karota-Bukit, 2005).

The results of a study conducted by Akbar & Laila (2019) on 10 elderly people using the interview method, found that elderly clients who experienced poor sleep quality reached 80%, for the following reasons: often waking up at night, going to bed early but feeling less satisfied with their sleep, feeling sleepy and tired when waking up in the morning.

Chronic diseases suffered by the elderly will cause difficulty in sleeping to have an impact on lack of sleep time, lack of sleep resulting in lack of energy in activities and excessive sleepiness during the day (Fatkhur et al, 2019). The pain caused by illness will cause physical discomfort and sleep disturbances so that the time to sleep is reduced (Alsaadi et al, 2014). The disease that most suffers from the elderly in the work area of the UPTD Motoboi Kecil Health Center is Hypertension (26.7%). Liu et al (2016) in their study stated that the elderly who have hypertension are more affected by sleep disorders compared to normal blood pressure. Respondents who were categorized as good sleep quality with mild fatigue levels felt that they had enough energy to carry out daily activities, but respondents with poor sleep quality and severe fatigue levels felt that they lost energy or did not have enough energy to carry out daily activities. Sleep problems get worse with age. Poor sleep quality in the elderly can be associated with physical, mental and social well-being problems (Zhu et al., 2020). The quality of sleep in the elderly is a condition in which a person is unconscious because the individual's perceptual towards the environment decreases or is lost, in which condition a person can be reawakened with sufficient stimulation. Sleep is an indispensable thing to maintain mental, physiological, emotional and health balance (Aspiani, 2014).

The elderly also experience complaints of fatigue, a condition in which there is a feeling of fatigue or physical inability to perform activities. Fatigue is so important to avoid because it can be a factor related to various other physical conditions, diseases, lifestyles, and most importantly related to work productivity. (Ridwansyah in 2015). Physical fatigue is more susceptible to being experienced by the elderly compared to young people. Such physical fatigue can be reduced with good sleep quality. The results of the study showed that there was a significant relationship between sleep quality and physical fatigue. Researchers believe that this relationship is a reciprocal relationship where if the quality of sleep is good, physical fatigue becomes mild, while if the quality of sleep is poor, physical fatigue becomes severe. Based on this, maintaining sleep quality and reducing activities during the day to avoid fatigue that is meaningful for the elderly is very necessary. Researchers argue that providing sleep needs to improve sleep quality and reduce fatigue is very necessary as suggested by Jinju and Hyunwoo (2016) in their research.

Conclusion

From this study, it can be concluded that sleep quality in the elderly mostly has poor sleep quality. Physical fatigue in the elderly mostly has severe fatigue and there is a link between sleep quality and physical fatigue in the elderly.

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