
The Relationship Between Sleep Quality and Mean Arterial Pressure (Map) Value In The Elderly With Hypertension In The Working Area Of The Palasari Health Center, Subang Regency

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ABSTRACT: Abraham Maslow (1984) proposed a hierarchy of needs that includes 5 basic needs and desires in humans. The 5 levels of basic human needs are physiological needs. Basic human needs are the elements needed to maintain balance, both physiologically and psychologically. One of them is sleep where humans need to meet their basic needs to achieve optimal energy needs. The current investigation employs a cross-sectional research design, utilizing a correlational approach to examine the research question at hand. The sampling method in this research used simple random sampling, the total sample was 94 respondents. The research instrument used the PSQI questionnaire and digital sphygmomanometer instrument. Where the Spearman Rank test results were obtained with a p -value $< 0,001$ and a Correlation Coefficient value of 0.503. So, based on the results of this research, it can be concluded that there is a relationship between sleep quality and MAP value in elderly people with hypertension in the work area of the Palasari Health Center, Subang Regency in 2024 with a p -value $< 0,001$ with a positive correlation coefficient. It is expected that the research will serve as a benchmark for future researchers in the field of education, particularly in their endeavors to enhance the quality of sleep in elderly individuals afflicted with hypertension, utilizing the MAP standards.

KEYWORDS: Sleep Quality, MAP Value, Elderly Hypertension

1. INTRODUCTION

Abraham Maslow proposed a hierarchy of needs that includes 5 basic needs and desires in humans. The 5 levels of basic human needs are physiological needs, a sense of security, affection and belonging, self-esteem and self-actualization. The first need is related to the needs of the human body both physiologically and physically (Maslow, 1984). Basic human needs are the elements needed to maintain balance, both physiologically and psychologically. One of them is sleep where humans need to meet their basic needs to achieve optimal energy needs. When sleeping, the body's immune system recovers so that the body is in optimal condition after waking up.

According to Abraham Maslow's theory, physiological needs are human needs for oxygen, water, food, normal body temperature, sleep, homeostasis and sexual needs. Sleep is considered one of the basic physiological needs of humans. Sleep is a state of consciousness that changes so that it causes disturbances in the individual's perception and responsiveness to the environment. These physiological functions decline due to the degenerative process (aging) that occurs with age. The aging process in humans is a natural occurrence characterized by a decrease in the repair and maintenance ability of body tissues, which leads to a decrease in overall body resistance. This decline ultimately results in a progressive decline in health and the onset of various health conditions in elderly individuals (Setianingsih et al., 2021).

An elderly person is someone who has entered at the age of 60 years and above and has entered a life process characterized by a decrease in physical ability. An elderly person has prolonged sleep onset latency (spending a long time in bed before falling asleep) and shows more sleep. Changes in sleep patterns may be caused by the aging process. Nevertheless, many of these diseases may be related to pathogenic mechanisms that are not considered a typical component of the aging process (Hasibuan & Hasna, 2021).

Many of the elderly generally face problems related to the quality of their sleep. Sleep quality refers to a person's level of satisfaction with their sleep, provided they do not show signs of sleep deprivation or suffer from sleep disorders. Sleep quality includes the length of sleep, the time it takes to fall asleep, and subjective factors such as perception of sleep and calmness. Sleep quality can be determined by observing a person's physical condition, overall health, and freshness when waking up in the morning (Barus et al., 2022). The process of association between insufficient or poor sleep quality (sleep disorders) and hypertension is believed to be the result of a complex range of factors, including increased activity in the nervous system. During homeostasis disorders of the body, the sympathetic nervous system triggers two main systems in the endocrine system which are the hypothalamic pituitary adrenal-axis (HPA-axis) and the sympathomedullary system (Jaleha & Amanati, 2023).

In 2020, the World Health Organization (WHO) stated that almost 18% of the global population suffers from insomnia. This prevalence continues to increase every year, causing significant suffering with various complaints and even causing mental distress in people affected by these impacts. About one-third of the population is estimated to suffer from insomnia. This value is quite significantly increased compared to other disorders (Juwita et al., 2023).

According to the National Sleep Foundation, 67% of 1,508 seniors in the United States who are 65 years of age or older report suffering from sleep disorders or insomnia. In addition, 7.3% of the elderly reported experiencing three difficulties in initiating and maintaining sleep. The prevalence of insomnia incidence in the elderly in Indonesia is relatively high, especially there are around 67% of the population aged 65 years and above. Around 6,701 incidents of insomnia were reported in West Java Province in 2019 (Barus et al., 2022). In Subang Regency, there were 749 cases of sleep disorders in December 2023, while insomnia cases obtained at the Palasari Health Center had 66 cases of sleep disorders from residents aged 60 years and older (Dinkes, 2022).

MAP is the average of systolic and diastolic arterial pressure values observed over a complete cardiac cycle (Morghan & Mikhail, 2018). MAP is determined by a combination of

cardiac output and systemic vascular resistance. Vital tissue perfusion requires a minimum average arterial pressure of 60 mmHg. Prolonged periods of MAP below this threshold can lead to end-organ symptoms, such as ischemia and infarction, due to inadequate blood flow to the target tissue. This can result in decreased consciousness or nerve death (Gogniat et al., 2022).

When sleeping, there is a relative decrease in blood pressure compared to when awake. This decrease is caused by a decrease in sympathetic nerve activity of about 10-20% of normal blood pressure. Poor sleep quality, characterized by frequent awakenings, difficulty starting to sleep, and lack of good sleep, can disrupt balance and further lower blood pressure. Conversely, sleep deprivation, including frequent awakenings at night and insufficient sleep duration, can actually increase blood pressure. Previous studies have shown that the elderly population, especially women, tend to experience a higher prevalence of sleep disorders and poorer sleep quality. Insomnia and sleep pattern disorders generally occur in the elderly due to the aging process (Harsismanto et al., 2020).

Increased blood pressure generally occurs in the elderly, so they are prone to hypertension. According to the World Health Organization (WHO), blood pressure is considered normal if it is below 135/85 mmHg and classified as hypertension if it exceeds the limit of 140/90 mmHg. Hypertension is a chronic condition characterized by a consistent increase in blood pressure beyond the normal limit, with systolic pressure exceeding 140 mmHg and diastolic pressure exceeding 90 mmHg (Setiyorini & Wulandari, 2018, dalam Fazriana, Rahayu, 2023).

Mean Arterial Pressure (MAP) is the mean value of arterial pressure determined from diastolic and systolic measurements, followed by the mean atrenic value. MAP is positive if the result is >90 mmHg and negative if the result is <90 mmHg (Sofiyanti et al., 2023).

Research conducted by Helvia (2021) which was held at the Sintuk Health Center in April 2021 with 64 hypertensive elderly, the results were obtained that the highest degree of hypertension for the elderly was isolated systolic hypertension of 25 people (39.1%) with sleep quality results obtained from a total of 64 hypertensive elderly that the majority of the elderly had poor sleep quality of 53 people (82.8%).

Based on a preliminary study conducted on January 24, 2024, in Palasari Village, the number of elderly aged 45-59 years was 1,141 people, while the elderly aged 60-70 years totaled 464 people. Data on cases of poor sleep quality were obtained in several samples of respondents after using an initial survey of 11 hypertensive elderly people through interviews using PSQI questionnaires and blood pressure measurements using a digital

sphygmomanometer by writing the results of measurements and calculating MAP values on the MAP value observation sheet. The findings showed that, with an average sleep duration of 5-6 hours per day and frequent awakenings at night, 4 elderly people had good sleep quality, 2 elderly people had moderate sleep quality, and 5 elderly people had poor sleep quality. Common complaints include pain, discomfort, a feeling of aches, and frequent awakenings at night. To help you fall asleep more comfortably, efforts are made such as dhikr and making the room comfortable by turning off the lights before going to bed.

Based on the data obtained above, the researcher is interested in conducting a study with the aim of finding out the relationship between sleep quality and MAP value in the hypertensive elderly in the working area of the Palasari Health Center, Subang Regency.

2. MATERIALS AND METHODS

This study is correlation research, with a Cross-Sectional research design, namely independent variables and dependent variables are measured at the same time. This research was carried out in the working area of the Palasari Health Center, Subang Regency, which was carried out from January to April 2024. The population of this study is the elderly with hypertension in the working area of the Palasari Health Center, Subang Regency. Data on the elderly population at the Palasari Health Center has 1,534 cases of hypertension patients from the age of 45 years and above. The sampling method in this study uses simple random sampling. Where the sample obtained in this study is as many as 94 respondents. The instruments in this study are the Pittsburgh Sleep Quality Index (PSQI) questionnaire and the digital Sphygmomanometer instrument to find out blood pressure and find the MAP value from the results of the average calculation of systolic and diastolic blood pressure results using the MAP formula, which has been tested for validity and reliability. Univariate analysis is also used to explain the cararacterisk of the elderly, namely age, education, occupation and gender. In addition, univariate analysis was carried out for independent variables, namely sleep quality and dependent variables, namely MAP values. Meanwhile, the bivariate analysis used was the Spearman Rank correlation test and a cross-tabulation technique was carried out between the sleep quality variable and the MAP value variable.

3. RESULTS

Table 1. Characteristics of Respondents Based on Age in the Elderly with Hypertension in the Working Area of the Palasari Health Center, Subang Regency in 2024

Usia	Mean	Standar Deviasi	Min-Max
	61	7,245	46 - 74

Based on the results in table 1 above, the average age of respondents was 61 years old with a standard deviation of 7,245. Where the youngest age in the data above is 46 years while the oldest age is 74 years old with a standard deviation of 7, 245.

Table 2. Characteristics of Respondents Based on Gender in the Elderly with Hypertension in the Working Area of the Palasari Health Center, Subang Regency in 2024

Jenis Kelamin	Frekuensi (f)	Presentase (%)
Laki-laki	17	18,1%
Perempuan	77	81,9%
Total	94	100,0%

Based on table 2, the results showed that 17 (18.1%) respondents were male, and 77 (81.9%) respondents were female.

Table 3. Characteristics of Respondents Based on Occupation in the Elderly with Hypertension in the Working Area of the Palasari Health Center, Subang Regency in 2024

Pekerjaan	Frekuensi (f)	Presentase (%)
IRT	44	46,8%
Petani	46	48,9%
Pegawai Swasta	3	3,2%
PNS	1	1,1%
Total	94	100,0%

Based on table 3, the characteristics of respondents based on the type of occupation are mostly working as farmers at 48% and as housewives at 46.8%.

Tabel 4. Characteristics of Respondents Based on the Last Education in the Elderly with Hypertension in the Working Area of the Palasari Health Center, Subang Regency in 2024

Tingkat Pendidikan	Frekuensi (f)	Presentase (%)
SD	85	90,4%
SMP	5	5,3%
SMA/SMK	3	3,2%
Perguruan Tinggi	1	1,1%
Total	94	100,0%

Based on table 4 of the characteristics of respondents based on the latest education, most of the 94 respondents were elementary school graduates with a total of 85 people (90.4%).

Tabel 5. Characteristics of Respondents Based on Sleep Quality in Hypertensive Elderly in the Working Area of the Palasari Health Center, Subang Regency in 2024

Kualitas Tidur	Frekuensi (f)	Presentase (%)
Baik	39	41,5%
Ringan	3	3,2%
Sedang	39	41,5%
Buruk	13	13,8%
Total	94	100,0%

Based on table 5 above, the results of sleep quality in the hypertensive elderly were obtained where the quality of sleep was good for 39 people (41.5%), the quality of light sleep was 3 people (3.2%), the quality of moderate sleep was 39 people (41.5%), while the quality of sleep was poor for 13 people (13.8%) out of a total of 94 respondents.

Tabel 6. Characteristics of Respondents Based on MAP Values in Hypertensive Elderly in the Working Area of the Palasari Health Center, Subang Regency in 2024

Nilai MAP	Frekuensi (f)	Presentase (%)
Rendah	0	0
Normal	24	25,5%
Tinggi	70	74,5%
Total	94	100,0%

Based on table 6 above, it shows a low MAP value of 0%, a normal MAP value of 24 people (25%), while a high MAP value of 70 people (74.5%) of the total number of respondents, namely 94 people who were researched.

Tabel 7. Cross-tabulation of the Relationship between Sleep Quality and MAP Value in Hypertensive Elderly

Kualitas Tidur	MAP		
	Rendah	Normal	Tinggi
Baik	0	15 (62,5%)	24 (34,3%)
Ringan	0	0 (0,0%)	3 (4,3%)
Sedang	0	9 (37,5%)	30 (42,9%)
Buruk	0	0 (0,0%)	13 (18,6%)
Total	0	24 (100%)	70 (100%)
<i>p value 0,001</i>			

Based on table 7, the results of the cross-tabulation between sleep quality and MAP values show that the total normal MAP in this study is 24 respondents. Most (62.5%) of normal MAP respondents had good sleep quality, while none (0%) of them had poor sleep quality. On

the other hand, of all respondents who had a high MAP, less than half (34.3%) had good sleep quality and there were 18.6% had poor sleep quality. Where the results of the Rank Spearman test were obtained with a p-value of 0.001 and a Correlation Coefficient value of 0.503. Therefore, based on the results of this study, it can be concluded that there is a relationship between sleep quality and MAP value in hypertensive elderly in the working area of the Palasari Health Center, Subang Regency in 2024.

4. DISCUSSION

Sleep Quality in the Elderly with Hypertension

Based on the results of research that has been conducted on the hypertensive elderly as many as 94 respondents in Palasari Village, it was found that the hypertensive elderly have the following sleep quality, where the quality of sleep is good as 39 people (41.5%), the quality of light sleep is 3 people (3.2%), the quality of moderate sleep is 39 people (41.5%), while the quality of sleep is poor as many as 13 people (13.8%). This study has a difference in sleep quality results with the results of Purba et al (2023) research on the Relationship between Sleep Quality and Blood Pressure in the Elderly in Kuranji District, Padang City, with the results of sleep quality in the elderly in Kuranji District getting as many as 30 (30.9%) elderly people having poor sleep quality and 67 (69.1%) elderly people having good sleep quality.

Therefore, it can be concluded that this study shows that the level of sleep quality in hypertensive elderly has increased highly, where the factors that affect sleep quality are due to age factors due to a decrease in degenerative function (aging) which tends to be less in duration and sleep latency in the elderly with poor sleep quality, there is also a significant increase in MAP results in hypertensive elderly. This is in line with the opinion Ulum et al (2022) about Overview of Sleep Quality in the Elderly in Iryouhojin Nanrenkai Katsuren Byouin Japan which revealed that the aging process causes a decline in neurotransmitter function which is characterized by a decrease in the distribution of norepinephrine. This study also shows that poor sleep quality in hypertensive elderly can be affected by gender, where in this study the majority of respondents are female. This opinion is also supported by research Susanto et al (2022) about Psychological Conditions and Sleep Quality in the Elderly Prolanis Group which states that the majority of women often experience sleep disorders due to changes in the hormonal system.

MAP Value in the Elderly with Hypertension

Based on the results of the study, the normal MAP value was 24 people (25%), while the high MAP value was 70 people (74.5%) out of the total number of respondents as many as 94 people. This is in line with the results of the study Harsismanto et al (2020) about the Relationship between Sleep Quality and Blood Pressure in the Elderly at Risk at the Linggar Health Center, Bandung Regency. Based on the data from the study, it is known that the age of respondents with hypertension at the Tresna Wherda Social Home (PSTW) in 2019 out of 22 respondents, 1 respondent (4.5%) is <65 years old and 21 respondents (95.5%) are >65 years old. The increase in blood pressure in the elderly at the Tresna Wherda Social Home (PSTW) in Bengkulu province is mostly at the age of >60 years, this shows that the elderly have a greater prevalence of hypertension risk.

According to the researcher, it can be concluded that in this MAP value can be increased due to the impact caused by sleep quality which can be a psychological stressor that causes an increase in sympathetic nerves. This opinion is in line with the expression of Ulu et al (2022) In his research on the Overview of Sleep Quality in the Elderly in Iryouhojin Nanrenkai, Katsuren Byouin Japan revealed that the impact of poor sleep quality will be a stressor in increasing sympathetic nerve activity and at the same time poor sleep quality with a short sleep duration is at increased risk of heart disease.

The Relationship between Sleep Quality and MAP Value in the Elderly with Hypertension

Based on the results of the study, it shows a relationship between sleep quality and MAP value in the elderly with hypertension. The relationship is positive and has a strong correlation level category, therefore the worse the sleep quality results of the elderly, the higher the MAP value. This is in line with research Khadijah et al (2023) Regarding the Relationship Between Sleep Quality and Blood Pressure in the Elderly in North Paninggiling, Ciledug revealed that the relationship between sleep quality and blood pressure with positive values is said to be a unidirectional relationship. Therefore, in the study there was a significant relationship between sleep quality and blood pressure of the elderly in North Paninggiling, Ciledug.

According to Maslow, this idea proposes five human desires that show different levels of significance. Man seeks to fulfill his desires in a hierarchical manner, starting with the most basic physiological demands and progressing to a higher level after previous needs have been satisfied. Until basic needs are met, especially self-actualization (Maslow, 1984). Abraham Maslow's concept emphasizes that sleep is categorized as a basic physiological need for

humans. Sleep is a changed state of consciousness that interferes with an individual's perception and responsiveness to the surrounding environment (Sunarya, 2022).

Therefore, it can be concluded that the results of this study show a relationship between sleep quality and MAP values in hypertensive elderly in the working area of the Palasari Health Center, Subang Regency in 2024 which has been conducted on 94 respondents is quite significant with the correlation level leading to a positive direction with a strong correlation and an increase from the previous research comparison. This is in line with research Setianingsih et al (2021) about the Relationship between Sleep Quality and Blood Pressure in the Elderly in Posbindu Kedawung Village shows that there is a relationship between sleep quality and blood pressure with a p-value of 0.023 which means there is a significant relationship between sleep quality and blood pressure.

5. CONCLUSIONS

Based on the results of the research on the Relationship between Sleep Quality and MAP Value in the Elderly with Hypertension in the Working Area of the Palasari Health Center, Subang Regency in 2024, it can be concluded as follows:

1. Good sleep quality for 39 people (41.5%), light sleep quality for 3 people (3.2%), moderate sleep quality for 39 people (41.5%), while poor sleep quality for 13 people (13.8%) from 94 respondents.
2. Normal MAP scores were 24 people (25%), while high MAP scores were quite a lot where 70 people (74.5%) of the total number of respondents were 94 respondents.
3. There is a relationship between sleep quality and MAP value in the hypertensive elderly in the working area of the Palasari Health Center, Subang Regency in 2024 with a p-value of <0.001 .

RECOMMENDATION

The findings of this study can be used to improve understanding of sleep quality which can affect MAP values and to provide information to increase MAP levels and be more able to pay attention to the importance of maintaining sleep quality in health status.

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