



Overview of Factors Determining Sleep Quality in Hypertension Patients at Paniki Bawah Health Center, Manado City

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Sleep quality is one of the important factors in maintaining the body's physiological balance, especially in individuals with hypertension. Poor-quality sleep can lead to increased sympathetic nerve activity and the secretion of stress hormones such as cortisol, which contribute to elevated blood pressure and worsen hypertension conditions. However, to date, research on factors affecting sleep quality in hypertension patients at the primary healthcare level, such as community health centers (Puskesmas), is still limited. This study aims to describe the factors that influence sleep quality in hypertension patients in the working area of Paniki Bawah Community Health Center, Manado City. This study uses a descriptive quantitative approach with a cross-sectional design, conducted from March to June 2025. The research variables include demographic characteristics (age, gender, education, occupation, and income) as well as determinants of sleep quality such as Body mass index (BMI), stress levels, coffee consumption, smoking habits, alcohol consumption, use of sleeping pills, sleep schedule, use of electronic devices, and television-watching habits before bedtime. Data collection was carried out using the Pittsburgh Sleep Quality Index (PSQI) questionnaire to measure sleep quality, the Perceived Stress Scale (PSS-10) to assess stress levels, as well as additional questionnaires regarding lifestyle and sleep habits. Out of 67 respondents, the majority were elderly (>60 years) totaling 65.7% and female (73.1%). A total of 71.6% of respondents had poor sleep quality, while 28.4% had good sleep quality. The dominant factor influencing poor sleep quality was advanced age (72.7%), moderate stress level (80%), excessive BMI (72.2%), and irregular sleep schedule (55.2%). Most hypertension patients at Paniki Bawah Health Center have poor sleep quality. The most influential factors are old age, stress, obesity, and irregular sleep patterns. Health education, stress management, and habituation to regular sleep patterns are needed to improve the sleep quality of hypertension patients

INTRODUCTION

Sleep quality is a condition in which an individual's sleep results in refreshment and fitness upon waking. Quality sleep is sufficient and continuous sleep without significant disturbances (Ministry of Health, 2024). Sleep quality is a significant global health issue, with the prevalence of sleep disorders ranging from 15.3% to 39.2% worldwide (Keswara et al., 2019). In Indonesia, poor sleep quality affects 63% of adolescents due to excessive gadget use (Keswara et al., 2019). Among the elderly, poor sleep quality can lead to physical and psychosocial problems, including weakness, dizziness, and anxiety (Astria & Ariani, 2021).

Hypertension is a global health problem, with an estimated 1 billion cases worldwide (Kusumawardani, 2020). According to the results of the 2018 Basic Health Research (Riskesdas), the national prevalence of hypertension reached 34.1% of the total population (Ministry of Health of the Republic of Indonesia, 2019). This figure indicates that more than one-third of the Indonesian population experiences high blood pressure, which has the potential to cause serious complications, such as heart disease, stroke, and kidney failure. In North Sulawesi Province, based on data from the Central Statistics Agency, the prevalence of hypertension in 2024 reached 33.1% (Central Statistics Agency, 2024). Meanwhile, in Manado City, the highest prevalence of hypertension was in the third quarter, which is from July to September, mencapai 51,1% (Dinas Kesehatan Kota Manado, 2024). Untuk tahun 2024 total kejadian hipertensi di Puskesmas Paniki Bawah recorded 6,668 cases (Puskesmas Paniki Bawah, 2024).

LITERATURE RIVIEW

Several studies have shown a significant relationship between sleep quality and hypertension. A study in Chennai, India, found that approximately 78.8% of hypertensive patients experienced poor sleep quality, with factors such as gender, alcohol consumption, and body mass index (BMI) significantly affecting sleep quality (Venkatesh & Varadarajan, 2024). A similar study in Shandong, China, reported that 60.4% of hypertensive patients had poor sleep quality, with the main contribution from female gender (Gou et al., 2023). In Ethiopia, 37.7% of hypertensive patients also experienced poor sleep quality, with risk factors such as advanced age, obesity, low physical activity, depression, and anxiety playing a major role in worsening sleep quality (Ayanaw et al., 2022).

Paniki Bawah Subdistrict, located in the Mapanget District of Manado City, is an area that faces various public health challenges. Geographically, Paniki Bawah is situated in a rapidly developing region with increasing population density, which directly impacts the demand for and pressure on health services. According to data from the Central Bureau of Statistics of Manado City, non-communicable diseases such as hypertension, diabetes, and metabolic disorders are the main contributors to the disease burden in the city, including in Paniki Bawah, with hypertension recorded as one of the most common diseases in 2020. The aim of this study is to describe the determinants of sleep quality in hypertension patients at Paniki Bawah Community Health Center in Manado City.

METHODOLOGY

This type of research is quantitative descriptive with a cross-sectional approach. The study was conducted at Paniki Bawah Community Health Center, Manado City, from March to June 2025. The study population consisted of all hypertension patients registered at Paniki Bawah Community Health Center in 2025, totaling 6,668 people. The study sample amounted to 67 respondents, selected using purposive sampling according to the established inclusion and exclusion criteria. The variables in this study include demographic characteristics (age, gender, education, occupation, and income) as well as factors determining sleep quality such as body mass index (BMI), stress levels, coffee consumption, smoking habits, alcohol consumption, sleep medication use, and sleep schedule. The use of electronic devices and the habit of watching television before bedtime. Data collection was conducted through interviews using the Pittsburgh Sleep Quality Index (PSQI) questionnaire to assess sleep quality, the Perceived Stress Scale-10 (PSS) to measure stress levels, as well as additional questionnaires for demographic data and respondents' habits. The analysis used includes univariate analysis to describe the frequency distribution of each research variable.

RESULT

This section explains the characteristics of the respondents, the factors determining sleep quality, and the categories of sleep quality. This can be seen in Tables 1-3.

Table 1. Distribution of Respondent Characteristics

Characteristics of Respondents	Category	n (67)	%
Age (Year)	>60	44	65.7
	45-59	19	28.4
	19-44	4	6.0
Gender	Female	49	73.1
	Male	18	26.9
Education Level	SMA	35	52.2
	SMP	13	19.4
	Collage	12	17.9
	SD	7	10.4
Type of Job	Housewife	35	52.2
	Retired	5	22.4
	Private sector worker	6	9.0
	Entrepreneur	5	7.5
	Farmer	3	4.5
	Civil servant	2	3.0
	Mechanic	1	1.5
Number of opinions per month (Rp)	< 500 ribu	35	52.2
	3-5 Million	18	26.9

Body mass index (BMI)	1-3 Million	10	14.9
	500 Hundred-1 Million	4	6.0
	Normal	40	59.7
	Obesity	18	26.9
	Overweight	7	10.4
	Thin	2	3.0

Table 1 shows that the respondents are mostly distributed in the age group >60 years (65.7%), female (73.1%), with a high school education level (52.2%), working as housewives (52.2%), income level < 500 thousand rupiahs per month (52.2%), and having a normal BMI (59.7%).

Table 2. Distribution of Determinant Factors of Sleep Quality in Hypertension Patients

Determining Factor	category	n (67)	%
Stress	Mild Stress	57	85.1
	Moderate Stress	10	14,9
Coffee drinking habits	never	34	50,7
	rare	22	32,8
	Always	11	16,4
Smoking habits	never	64	95,5
	Always	3	4,5
Alcohol consumption	never	65	97,0
	rare	2	3,0
Sleeping pill consumption	never	63	94,0
	Often	4	6,0
Sleep schedule	never	37	55.2
	regular	30	44,8
	Always	36	53,7
Use of electronic devices	rare	17	25,4
	never	14	20,9
	rare	25	37,3
Television watching habits	Always	22	32,8
	never	20	29,9

The research results showed that the majority of respondents experienced mild stress (85.1%), never smoked (95.5%), never consumed alcohol (97.0%), never used sleeping pills (94.0%), had irregular sleep schedules (55.2%), always used electronic devices (53.7%), and rarely watched television (37.3%).

Table 3. Sleep Quality Distribution

Sleep quality	n	%
bad	48	71,6
Good	19	28,4
Total	67	100,0

The results of Table 3 show the distribution of sleep quality, with 48 respondents (71.6%) having poor sleep quality, whereas 19 other respondents have good sleep quality with a percentage of 28.4%. From the distribution table above, it can be seen that the majority of the sample at Puskesmas Paniki Bawah have poor sleep quality.

DISCUSSION

Age

Based on the research results, it was found that hypertensive patients aged 19-44 years, 100% of respondents had poor sleep quality. Meanwhile, in the 45-59 age group, 63.2% of respondents had poor sleep quality and 36.8% of respondents had good sleep quality. Meanwhile, in the age group over 60 years, there was an increase in respondents with poor sleep quality, namely 72.7% of respondents, and only 27.3% of respondents had good sleep quality. The research results illustrate that increasing age affects the decline in sleep quality. This is in line with the National Sleep Foundation (2020), which states that the elderly are more likely to experience sleep disturbances such as insomnia, frequent awakenings in the early morning, and difficulty returning to sleep after waking up.

Gender

Hasil data menunjukkan bahwa responden perempuan sebagian besar memiliki kualitas tidur yang buruk. In the female group, as many as 35 (71.4%) respondents had poor sleep quality, and only 14 (28.6%) respondents had good sleep quality. Meanwhile, in the male group, 13 (72.2%) respondents had poor sleep quality, and only 5 (27.8%) respondents had good sleep quality. This aligns with epidemiological data showing that women are more susceptible to sleep disorders, especially during menopause due to hormonal, psychological, and social factors affecting sleep patterns (Hirshkowitz et al., 2015). There are 82.9% of respondents who only completed high school education and have poor sleep quality, while 17.1% have good sleep quality. In contrast, respondents who pursued higher education have 50.0% with poor sleep quality and 50.0% with good sleep quality. This illustrates that the higher a person's education level, the better their sleep quality. Respondents with higher education have a greater proportion of good sleep quality compared to respondents with medium and low education levels. This can be explained by the fact that education level influences a person's knowledge, attitude, and behavior towards health, including understanding the importance of maintaining regular sleep patterns and a conducive sleep environment (Putri et al., 2020).

Education

The research results showed that 71.4% of respondents who only completed elementary school had poor sleep quality, while 28.6% had good sleep quality. Among respondents who only completed junior high school, 61.5% had poor sleep quality and 38.5% had good sleep quality. For respondents who only completed high school, 82.9% had poor sleep quality, and 17.1% had good sleep quality. Meanwhile, respondents who pursued higher education had 50.0% with poor sleep quality and 50.0% with good sleep quality. This illustrates that the higher a person's educational level, the better their sleep quality. Respondents with higher education have a greater proportion of good sleep quality compared to respondents with medium and low education levels. This can be explained by the fact that education level affects a person's knowledge, attitude, and behavior towards health, including understanding the importance of maintaining a regular sleep pattern and a conducive sleeping environment (Putri et al., 2020).

Occupation

The research results show that the majority of respondents with hypertension across various types of occupations have poor sleep quality. Respondents who are Housewives constitute the largest group, with 35 people, of whom 68.6% have poor sleep quality and 31.4% good. For entrepreneurs, all 6 respondents (100%) have poor sleep quality. In the group of farmers, A total of 3 respondents, with 66.7% having poor sleep quality and 33.3% having good sleep quality. In the retiree group, 66.7% had poor sleep quality and 33.3% had good sleep quality. Respondents working as civil servants (PNS) had 50.0% with poor sleep quality and 50.0% with good sleep quality. And workers who work as mechanics, 1 respondent, 100% had poor sleep quality. The majority, 52.2% of respondents, work as housewives and 22.4% of respondents as retirees. These results indicate that respondents who do not work have a higher proportion of poor sleep quality compared to respondents who work. This may be caused by a lack of physical activity, irregular daily routines, and increased passive rest time, which actually disrupts the body's circadian rhythm. Sufficient physical activity is known to help improve sleep quality as it plays a role in balancing body energy and reducing stress levels (Setiawan & Rahmawati, 2020).

Income

The research results indicate that nearly half of the 35 respondents had no income, with 24 (68.6%) respondents having poor sleep quality and 11 (31.4%) having good sleep quality. For the income range of 0 – Rp1,000,000, 3 (75.0%) respondents had poor sleep quality, and 25.0% had good sleep quality. Among 10 respondents with an income of Rp1,000,001 – Rp3,000,000, 60.0% had poor sleep quality, and 40.0% had good sleep quality. Among 18 respondents with an income of Rp3,000,001 – Rp5,000,000, 83.3% had poor sleep quality, and 16.7% had good sleep quality. Respondents with no income were generally unemployed, a group that may have higher stress levels compared to employed respondents. Financial-related stress has been proven to increase anxiety and negatively affect sleep patterns (Kalmbach et al., 2018). This is in line with the research of Grandner et al. (2020) which emphasizes that low socioeconomic status is a significant risk factor for sleep disorders, particularly insomnia, due to limited resources and financial stress.

Body Mass Index (BMI)

The study results show that 2 respondents with underweight had 100% good sleep quality. For normal weight, 40 respondents, 72.5% had poor sleep quality and 27.5% had good sleep quality. For overweight, 7 respondents, 85.7% had poor sleep quality and 14.3% had good sleep quality. Meanwhile, for obesity, 18 respondents, 72.2% had poor sleep quality and 28.4% had good sleep quality. These results indicate that the higher the BMI value, the greater the likelihood of experiencing poor sleep quality. Individuals who are overweight or obese tend to suffer from sleep disorders such as obstructive sleep apnea (OSA), di mana saluran pernapasan tersumbat saat tidur sehingga menyebabkan tidur tidak nyenyak dan sering terbangun di malam hari (Zhang et al., 2019).

Psychology (Stress)

The research results show that respondents with mild stress levels, 70.2% experienced poor sleep quality, while 29.8% had good sleep quality. In the group with moderate stress levels, 80.0% of respondents experienced poor sleep quality and 20.0% of respondents had good sleep quality. These research results indicate that most respondents were in a state of moderate stress. Stress in hypertensive patients often arises due to concerns about the disease, adherence to medication, economic conditions, and social pressure. Consistent with the research by Handoko (2022), it is stated that increased stress triggers the release of cortisol hormone in the body, which leads to increased activity of the sympathetic nervous system and hinders the body's ability to rest optimally.

Coffee Consumption

Based on the research results, respondents with hypertension who have a habit of drinking coffee mostly have poor sleep quality. In the coffee-drinking group, 84.8% experienced poor sleep quality, while in the non-coffee-drinking group, it was 58.8%. This may potentially be one of the causes of sleep disorders, especially if consumed in the afternoon or evening. In line with research by Drake et al. (2013), it is stated that caffeine consumption even 6 hours before sleep can still significantly disrupt sleep quality.

Smoking

Based on the research results, hypertensive respondents, whether they smoke or not, mostly still have poor sleep quality. In the smoking group, 66.7% of respondents had poor sleep quality, and in the non-smoking group, 71.9%. Although the number of smokers is relatively small, smoking habits remain important to consider because they can affect sleep quality. Nicotine acts as a stimulant that increases central nervous system activity, thereby reducing sleepiness and prolonging the time needed to fall asleep.

Alcohol Consumption

From the research results, most respondents do not consume alcohol but have poor sleep quality. In the group that consumes alcohol, the results are balanced, with 50% having poor sleep quality and 50% having good sleep quality. Meanwhile, in the group that does not consume alcohol, 73.3% of respondents have poor sleep quality and 27.7% of respondents have good sleep quality. Although the proportion of respondents who consume alcohol is very small, it is

important to understand its impact on sleep quality. Alcohol is known to affect sleep patterns by accelerating sleep onset, but at the same time reducing the duration of deep sleep (slow-wave sleep) and increasing sleep fragmentation. Ebrahim's (2013) study explains that consuming alcohol before sleep can lead to a decline in sleep quality due to disturbance in sleep structure.

Sleep Medication Consumption

Research results show that both respondents who consume sleeping pills and those who do not have poor sleep quality. Based on the results, 100% of respondents who consume sleeping pills have poor sleep quality, and 69.8% of respondents who do not consume sleeping pills also have poor sleep quality. This is in line with the study conducted by Putri, N & Wahyuni, E (2020), which stated that the use of sleeping pills does not guarantee better sleep quality, as the use of sleeping pills is only temporary and does not resolve sleep disorders. In fact, long-term use can lead to dependence and disrupted sleep quality.

Sleep Schedule

Research results showed that the majority of respondents with hypertension, whether they had a regular sleep schedule or not, experienced poor sleep quality. The results indicated that 91.9% of respondents who did not have a regular sleep schedule experienced poor sleep quality, and 46.7% of respondents who had a regular sleep schedule also experienced poor sleep quality. Sleeping at a consistent time every day helps maintain the body's circadian rhythm, which is the biological mechanism that regulates a person's sleep-wake cycle (National Sleep Foundation, 2020). A stable circadian rhythm allows the body to rest at the right time and achieve an optimal duration of sound sleep. Conversely, an irregular sleep schedule can cause disturbances in the body's biological system.

Use of Electronic Devices

The research findings show that more respondents who used electronic devices before sleep experienced poor sleep quality (79.2%) compared to respondents who did not use electronic devices before sleep (42.9%). This finding is in line with the research by Yanti, R & Prasetya, A (2021), which shows that using electronic devices before sleep can disrupt sleep quality. In addition, a study by Rahmawati D, et al. (2022) also revealed that using electronic devices before going to bed increases the risk of insomnia. This can worsen hypertension conditions due to insufficient sleep quality and duration.

Watching Television

The research results indicate that the majority of respondents, whether they watch television or not before sleep, have poor sleep quality. However, there is a tendency that respondents who use electronic devices before sleeping slightly more often have good sleep quality (29.8%) compared to those who do not use electronic devices (25.0%). The National Sleep Foundation (2020) states that watching television before bed can disrupt the body's relaxation process because the blue light from the TV screen can suppress the production of melatonin, a hormone that plays a role in regulating sleep-wake cycles. As a result, it takes longer for someone to fall asleep and they tend to have lower sleep quality. Furthermore, Handayani et al. (2021) explains that the habit of watching television at night is often associated with delayed sleep onset latency and

reduced effective sleep duration, especially if the viewing activity is done while using other electronic devices such as mobile phones.

Sleep Quality in Hypertensive Patients at Paniki Bawah Health Center

Based on data collection at Paniki Bawah Health Center, it was found that out of 67 hypertensive respondents, 48 respondents (71.6%) experienced poor sleep quality and only 19 respondents (28.4%) had good sleep quality. This indicates that sleep disturbances are a problem experienced by hypertensive patients in the working area of Paniki Bawah Health Center. The results of this study are in line with the research conducted by (Damayanti et al., 2019), which showed that the majority of hypertensive patients, with a percentage of 78.6%, had poor sleep quality. In addition, the research investigated by (Anwar et al., 2020) showing that 83.3% of hypertension patients have poor sleep quality, which can increase the risk of hypertension.

CONCLUSIONS AND RECOMMENDATIONS

The results of the study regarding the Overview of Determinant Factors of Sleep Quality in Hypertension Patients at Paniki Bawah Community Health Center in Manado City conclude that the majority of hypertension patients at Paniki Bawah Community Health Center experience poor sleep quality. This can be seen from various determining factors such as age, gender, education level, occupation, income, body mass index, psychological factors (stress), coffee consumption, smoking, alcohol consumption, use of sleeping pills, sleep schedule, use of electronic devices before sleep, and watching television before sleep.

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