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Sleep quality in hypertensive patients of productive age

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***Abstract*:**
Hypertension is a non-communicable disease (NCD) whose prevalence continues to increase in Indonesia, including in productive age groups. Poor sleep quality can increase blood pressure and worsen the condition of hypertension. Therefore, it is important to know the description of sleep quality of hypertensive patients in productive age groups to support efforts to control blood pressure and improve quality of life. This study used a quantitative descriptive design with a cross-sectional approach. The study population was 1,829 hypertensive patients aged 18-59 years in the Sukorejo Health Center working area. The sample amounted to 50 respondents who were selected purposively. The inclusion criteria were hypertensive patients of productive age (18-59 years), willing to become respondents, and had a degree of hypertension ≥ degree 1. Exclusion criteria were patients who could not communicate well due to physical or psychological disorders and were not willing to become respondents. Data were collected using the Pittsburgh Sleep Quality Index (PSQI) questionnaire which consists of 7 components. Data were analyzed univariately in the form of frequency distribution and percentage. Most (74%) had grade 1 hypertension. 56% of respondents had poor sleep quality. The PSQI component shows that 54% of respondents have excellent subjective sleep quality, 84% have sleep duration >7 hours, 82% sleep efficiency >85%, but 84% experience sleep disturbances, 76% experience daytime dysfunction, and no respondents use sleeping pills. Most hypertensive patients of productive age in the Sukorejo Health Center working area have poor sleep quality. Interventions against causative factors such as sleep disturbances and daytime activity dysfunction are needed to support blood pressure control and improve the quality of life of hypertensive patients.

***Keywords*:**
productive age; hypertension; sleep; quality

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INTRODUCTION

Hypertension, often referred to as high blood pressure, is a non-communicable disease (NCD) that continues to be a serious health problem worldwide, particularly in Indonesia (Komara et al., 2023). Hypertension generally occurs in older adults, but research has found that it can appear as early as adolescence, with its prevalence increasing in recent years (Khoury & Urbina, 2021). Good sleep quality is crucial for those with hypertension. Those who don't get enough sleep are said to

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have poor sleep quality (Byun et al., 2022). Poor sleep quality significantly increases blood pressure, which can lead to hypertension, a trigger for various diseases (Del Pinto et al., 2021).

In Indonesia, the 2018 Basic Health Research (Riskesdas) recorded a hypertension prevalence of 34.1% among people aged 18 years and older. East Java Province had a higher prevalence of 36.3%. This figure increases with age. The number of hypertension cases in Blitar City in 2023 was recorded at 47,016. The distribution of cases included 13,439 cases at the Kepanjenkidul Community Health Center, 17,513 cases at the Sananwetan Community Health Center, and 16,064 cases at the Sukorejo Community Health Center (Blitar City Health Office, 2023). A preliminary study conducted at the Sukorejo Community Health Center in Blitar City found that the prevalence of hypertension among productive-age individuals was 1,829 cases spread across the Sukorejo sub-district.

Symptoms of hypertension, such as shortness of breath, headaches, nocturia, and dizziness, are known to disrupt sleep quality (Smith et al., 2022). These sleep disturbances, in turn, can exacerbate hypertension and increase the risk of complications. Furthermore, anxiety is often a contributing factor to sleep disturbances in people with hypertension. Excessive anxiety can affect emotional stability and reduce sleep quality, especially in women who experience a decline in estrogen levels with age (Mawarni et al., 2024).

Good sleep quality is crucial for people with hypertension to improve their health and restore their physical condition (Tan & Hui, 2024). The more severe a person's hypertension, the poorer their sleep quality. Poor sleep quality can lead to increased blood pressure, worsen hypertension, and negatively impact quality of life (Yuan et al., 2021). The aim of this research was to determine the quality of sleep in productive-age individuals with hypertension at the Sukorejo Community Health Center, Blitar City.

METHODS

The research design employed in this study was a descriptive, quantitative approach. The population in this study was 1,829 people with hypertension of productive age in the working area of the Sukorejo Health Center in Blitar City. (Nurhayani, 2022). The sample consisted of hypertensive patients of productive age in the work area of the Sukorejo Blitar City Health Center, comprising 50 individuals who met the inclusion criteria. The variable in this study is Sleep Quality in Hypertension Patients of Productive Age. The data collection method in this study was to use a questionnaire sheet containing identity, the Pittsburgh Sleep Quality Index (PSQI) questionnaire, which consists of 7 components, namely, sleep latency, subjective sleep quality, sleep duration, sleep disturbance,

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effectiveness of sleep habits, use of sleeping pills, and daytime activity dysfunction. There are 7 components that have scoring for each PSQI component. Based on the data processing results, descriptive data presentation will be carried out, and general data processing will be presented in the form of diagrams and interpreted.

RESULTS

Table 1. Characteristics of respondents with hypertension of productive age (n=50)

Characteristics	Frequency	Percentage
Age		
31 - 40	6	12
41 - 50	15	30
51 - 59	29	58
Gender		
Male	11	22
Female	39	78
Education		
Elementary School	7	14
Junior High School	10	20
High School	28	56
College	5	10
Occupation		
Housewife	30	60
Farmer	6	12
CIVIL SERVANT	2	4
Self-employed	12	24
Hypertension Category		
1st degree (systolic 140-159, diastolic 90 -99)	37	74
2nd degree (systolic 160-179, diastolic 100-109)	13	26

Based on Table 1, most respondents with hypertension of productive age at the Sukorejo Health Center were aged 51–59 years (58%), indicating that hypertension is more prevalent among older adults within the productive age group. Most respondents were female (78%), suggesting a higher proportion of women experiencing hypertension in this setting. In terms of education, the majority had completed high school (56%), while only a small proportion had a college education (10%). Regarding occupation, housewives dominated (60%), followed by self-employed workers (24%), farmers (12%), and civil servants (4%). Based on the hypertension classification, most respondents were in the 1st degree hypertension category (74%), while 26% were in the 2nd degree category, indicating that the majority had mild to moderate hypertension.

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Table 2. Sleep Quality Components (n=50)

Variable	Frequency	Percentage (%)
Subjective Sleep Quality		
Very good	27	54
Good enough	19	38
Quite Bad	4	8
Sleep Latency		
<15 minutes	18	36
16 - 30 minutes	17	34
31 - 60 minutes	15	30
Sleep Duration		
>7 hours	42	84
7 hours	6	12
5 - 6 hours	2	4
Sleep Efficiency		
>85%	41	82
75% - 84%	7	14
65% - 74%	2	4
Sleep Disorder		
Slight	1	2
Quite a lot	42	84
Many	7	14
Use of sleeping pills		
Not using	50	100
Daytime Activity Function		
A little	6	12
Quite a lot	38	76
Many	6	12

Table 2 showed that most respondents reported very good subjective sleep quality (54%) and generally experienced short sleep latency (<30 minutes). The majority had adequate sleep duration (>7 hours, 84%) and high sleep efficiency (>85%, 82%), indicating overall good sleep patterns. Although 84% experienced moderate sleep disturbances, none of the respondents used sleeping pills, and most (76%) maintained good daytime functioning, suggesting that sleep quality among the respondents was generally satisfactory despite minor disturbances.

Table 3. Sleep Quality Category (n=50)

Sleep Quality Category	Frequency	Percentage (%)
Poor	28	56
Good	22	44

Table 3 shows that more than half of the respondents (56%) experienced poor sleep quality, while 44% reported good sleep quality.

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DISCUSSION

This study found that most hypertensive individuals in the productive age group at the Sukorejo Community Health Center (Puskesmas) in Blitar City experienced a mild to moderate elevation of blood pressure. Because this condition is often asymptomatic, many patients are unaware of their hypertensive status. Without early detection and adequate management, stage 1 hypertension can progress to more severe levels and result in cardiovascular complications (Ministry of Health of the Republic of Indonesia, 2023).

Lifestyle-related factors, including low physical activity, a diet high in sodium and saturated fats, occupational stress, and smoking or alcohol use, significantly contribute to the increase in blood pressure among productive-age individuals (World Health Organization, 2021). Therefore, early preventive strategies—through health education on healthy lifestyles and blood pressure screening at community health posts (Posyandu)—should be strengthened to reduce the burden of hypertension.

This study revealed that more than half of respondents reported poor sleep quality, which has been widely linked to increased sympathetic nervous system activation and elevated levels of stress hormones, particularly cortisol. These physiological changes can promote vasoconstriction and elevated blood pressure (Reckelhoff, 2023). While many previous studies have focused on older adults, similar neuroendocrine mechanisms are also relevant in the productive-age population (Mikolaskova et al., 2025).

Interestingly, most respondents in this study rated their subjective sleep quality as “very good.” This suggests that positive perception toward sleep may exert a protective psychological effect on stress and cardiovascular health. However, subjective evaluations do not always align with objective measurements, as individuals may perceive their sleep as adequate despite underlying disturbances such as sleep apnea or insomnia (Ayanaw et al., 2022; Oseni et al., 2024). Hence, future assessments should combine subjective and objective evaluations for a more comprehensive understanding of sleep patterns.

The study also found variability in sleep latency, defined as the time taken to fall asleep. Normal sleep latency typically ranges from 10 to 20 minutes. A previous study demonstrated that a 10-minute increase in sleep latency was associated with an 89% higher risk of hypertension (Zengin Akkus & Bahtiyar-Saygan, 2022). These findings support the current study’s observation that prolonged latency may be an early marker of elevated blood pressure, likely mediated by autonomic dysregulation and stress arousal mechanisms.

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Most respondents (84%) reported sleeping more than seven hours per night, which is within the optimal range for cardiovascular homeostasis. Adequate sleep duration has been shown to help normalize blood pressure by reducing sympathetic activity and circulating cortisol levels (Bock et al., 2022). Similarly, sleep efficiency—the proportion of time spent asleep relative to time in bed—was high among respondents (≥85%), indicating relatively good restorative sleep (Abraham et al., 2025). Prior research suggests that higher sleep efficiency is associated with a lower risk of hypertension and improved autonomic balance (Arslan et al., 2021). Nevertheless, even among those with adequate duration and efficiency, the presence of sleep disturbances may offset the benefits of sufficient sleep time. In this study, most respondents experienced moderate sleep disturbances, characterized by frequent awakenings or restlessness. Such disturbances can increase sympathetic activation and cortisol secretion, leading to sustained blood pressure elevation (Makarem et al., 2021).

Importantly, none of the participants reported using pharmacologic sleep aids, suggesting limited reliance on medication to address sleep problems. This finding is clinically favorable since hypnotic medications may interact with antihypertensive drugs and impact cardiovascular regulation. Nonpharmacological interventions—such as relaxation therapy, cognitive behavioral therapy for insomnia (CBT-I), and sleep hygiene education—are recommended as safer and effective strategies (Park et al., 2024). Moreover, a considerable proportion of respondents experienced daytime dysfunction, including fatigue, drowsiness, and reduced concentration, likely due to poor nighttime sleep. Daytime dysfunction has been associated with lower work productivity, reduced well-being, and impaired self-management of chronic diseases, including hypertension (Smallfield et al., 2021). These findings highlight the bidirectional relationship between sleep and outcomes related to hypertension management.

CONCLUSION

This study demonstrated that poor sleep quality, particularly sleep disturbance, and daytime dysfunction are prevalent among productive-age hypertensive individuals and contribute to higher blood pressure levels. Comprehensive hypertension management should therefore not rely solely on pharmacological therapy but also incorporate strategies to improve sleep quality as part of a holistic care model for cardiovascular health. Health professionals should incorporate sleep assessment and counseling into hypertension programs at the primary health care level. Routine screening using standardized tools such as the Pittsburgh Sleep Quality Index (PSQI) and education

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on sleep hygiene, stress management, and behavioral therapy should be integrated into community-based interventions.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in the conduct and publication of this research.

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