RELATIONSHIP BETWEEN SLEEP QUALITY AND MEDICATION COMPLIANCE FOR HYPERTENSIVE PATIENTS AT PRIVATE HOSPITAL YOGYAKARTA

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Abstract

Introduction: *Hypertension is often referred to as the "silent killer" and based on the 2013 Basic Health Research data, hypertension sufferers in Indonesia at the age of >18 years reached 25.8%, while the undiagnosed reached 63.2%. Research results have shown that most people have sleep disorders, resulting in the recurrence of hypertension. This research aimed to find a relationship between sleep quality and medication compliance for hypertensive patients at Private Hospital, Yogyakarta.*

Method: *This research used a descriptive quantitative research method with a cross-sectional approach. A total of 40 hypertensive patients were taken as the research samples using an accidental sampling technique. Sleep quality was measured using the PSQI (Pittsburgh Sleep Quality Index) instrument, and compliance with medication was measured using Morisky-8.*

Result: *Findings show that 87.5% of respondents experienced poor sleep quality, while the remaining 12.5% had good sleep quality. Regarding medication compliance, 87.5% of respondents complied with medication, while 32.5% did not. Chi square analysis showed that there was no significant relationship between sleep quality and medication adherence (p=0.523).*

Conclusion: *there is no relationship between sleep quality and medication compliance in hypertensive patients. Based on the results of this research, future researchers are expected to take more samples, random sampling method and examine the effect of medication compliance on quality of life.*

Keywords: *hypertension, medication compliance, sleep quality*

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INTRODUCTION

Hypertension is defined as systolic blood pressure (SBP) of 140 mmHg or more with diastolic blood pressure (DBP) of 90 mmHg or more without consuming anti-hypertensive drugs (Hernandez-vila E., 2014). Hypertension is often referred to as the "silent killer" because most people with hypertension do not have any symptoms or complaints and do not know that they have high blood pressure (Merai et al., 2016).

In the United States, about 75 million people, or one in three adults, experience high blood pressure or hypertension. Out of 75 million, only 54% of these people have controlled blood pressure (Merai et al., 2016). Based on the 2018 Indonesia Basic Health Research data, the prevalence of hypertension sufferers at the age >18 in Indonesia reached 34.11%, while that in DI Yogyakarta reached 12.8%. The interviews with the nurses of Elisabeth 4 Room indicated that the number of hypertensive patientsin private Hospital tended to increase; some of them are even still young.

The impacts of hypertensive diseases are stroke and heart attack. AHA sources (2015) said that with a blood pressure of more than 140/ 90 mmHg, 69% of patients experienced a heart attack, 77% of patients experienced their first stroke, and 74% experienced congestive heart failure (Ioannidis, 2018). The World Health Organization (WHO) mentions that high blood pressure increasesthe risk of damage to blood vessels in major organs, such as the brain and kidneys. Using the data from the National Health and Nutrition Examination Survey (NHANES), showed that the prevalence of hypertension was 37.8%. That survey shows that participants with poor sleep patterns were associated with an increased risk for hypertension. Research conducted by (Vgontzas et al., 2009) using the Multiple Sleep Latency Test (MLST) tool on residents in China found that people experiencing insomnia are more at risk of developing high blood pressure. According to (Hanus et al., 2015), 55.7% of hypertensive patients in Santa Catarina, Brazil, had poor quality. It is strengthened by (Nugroho, Astutik and Efendi, 2020), showing that the subjects with poor sleep quality had 1.39 higher odds of experiencing hypertension. Likewise, (Sen et al., 2012) found that patients with sleep disorders, especially insomnia, are at risk of suffering essential hypertension.Another similar research on medication compliance written by (Burnier and Egan, 2019) suggested that medication compliance in America after one year of being hypertension-diagnosed was less than 50%. Due to non-medication compliance, hypertensive patients worldwide increased from 26.4% to 29.2%. The impact of poor sleep quality also affects the quality of life. (de Carvalho et al., 2013) reinforced that poor hypertension control would affect the quality of life. This study analyzed the relationship between medication adherence and sleep quality in hypertensive patients at a private hospital polyclinic in Yogyakarta.

METHOD

Study Design

This research used a descriptive quantitative method with a cross-sectional approach.

Population, Samples, and Sampling

There were 60-80 patients who came to the polyclinic every month. A total of 40 hypertensive patients were taken for 3 months as the research samples using an accidental sampling technique. Researchers looked for respondents at the internal medicine clinic according to the doctor's practice schedule, which is once a week.

Researchers recruited all hypertensive patients who checked into the internal medicine clinic, were over 40 years old, were willing to become respondents and received antihypertensive drugs.

Instruments

This research used PSQI (Pittsburgh Sleep Quality Index) instrument for quality of sleep, and compliance with medication was measured using Morisky-8. The assessment of sleep quality (PSQI) included the factors of latency, duration, and efficiency of sleep patterns, use of sleep medication and daytime dysfunction. There are 10 questions, but number 10 does not relate with score of PSQI. The total score of PSQI ranging 0 to 21 with the higher total score indicating worse sleep quality (Buysse et al., 1988). The PSQI has been translated into Indonesian and found to be internally consistent with a Cronbach's alpha of 0.79 and content validity of 0.89 (Alim, 2015). This research also use Morisky-8 scale. This scale is a validated assessment tools to measure medication compliance in variety of patients populations including hypertension. Morisky-8 scale is an valid dan reliable instrument with α=0,83 (Morisky et al., 2008).

Produce

Data collection was complete for 3 months. The first step is get approval from director of private hospital and hasetical clearence. Then, after approval researcher meet the head of clinical and the doctor who have patients with hypertension. The researcher came to the internal medicine clinic when the doctor was practising. Researchers identified patients who checked with a diagnosis of hypertension and were willing to become research respondents. The patient signed the informed consent sheet, and then the researcher gave the PSQI and Morisky-8 questionnaires. Data collection was carried out for three months until 40 respondents were obtained.

Data Analysis

Researchers conducted their data analysis using the software. The hypothesis test used is Chi-Square because the dependent and independent variables are categorical.

Ethical Clearence

The Panti Rapih health research ethic committee has given the clearence to this study with a number No. 007/SKEPK-KKE/XI/2019.

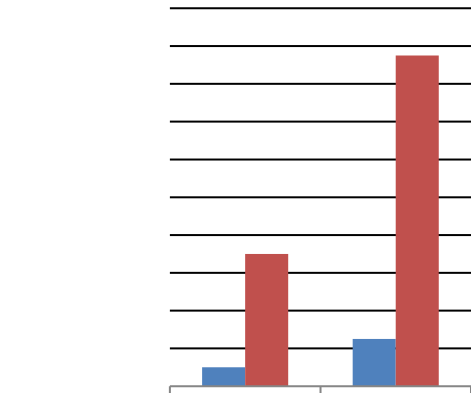
RESULTS

This study was conducted for 3 months with 40 respondents. Researchers used chi square because the research variables had a categorical data scale. Sleep quality variable (good, bad), medication adherence variable (adherent, non-compliant). The characteristic respondents are than half (42.5%) of the respondents were over 65 years old, and a small proportion (5%) were 36-45 years old, less than half of our respondents (40%) suffered

Table 1. Demographic data characteristic of respondents with hypertension at private hospital policlinic Yogyakarta (n=40)

Characteristic	n	%
Gender:		
Male	19	47,5
Female	21	52,5
Age :		
40-45 years old	2	5,0
46-55 years old	7	17,5
56-65 years old	14	35,0
>65 years old	17	42,5
Duration of hypertension:		
<1 year	6	15,0
1-3 year	5	12,5
4-7 year	8	20,0
8-10 year	5	12,5
> 10 year	16	40,0

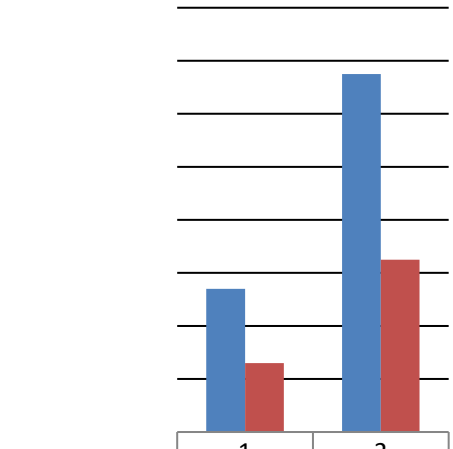
hypertension for more than ten years, and a small proportion suffered hypertension for 1-3 years (Table 1).



	1	2
Quality of sleep Good	5	12.5
Quality of sleep Poor	35	87.5

Figure 1. The quality of sleep in hypertensive patients (n=40).

Based on analysis of the sleep quality of hypertensive patients, was found that more than half of the respondents (87,5%) had poor sleep quality, and only a small proportion (12,5%) had good sleep quality **(Figure 1).**



	1	2
Adherence Adhered	27	67.5
Adherence Non adheres	13	32.5

Figure 2. The medication adherence of hypertensive patients (n=40). Based on Figure 2, it can be seen that most respondents have good compliance (67,5%), and only a small proportion (32,5%) are not compliant in taking medication.

Chi-square analysis of the relationship between sleep quality and adherence to taking medication with p=0.523. The researcher concluded that there is no relationship between sleep quality and adherence to taking medication in hypertensive patients at a private hospital in Yogyakarta (Table 2).

DISCUSSION

The result finding that number of respondent majority is female. Similarly, (Novitaningtyas, 2014) also found that the number of hypertensive women was greater than hypertensive men. Women have a risk of experiencing hypertension after entering menopause due to decreased estrogen levels. In America, 75% of women over 60 years old suffer from hypertension (Zilberman et al., 2015) . Estrogen plays a role in the female reproductive organs, including controlling the liver, heart, brain, and others. Estrogen also serves to increase levels of High-Density Lipoprotein (HDL). Low levels of HDL lead to atherosclerosis processes causing hypertension. (Susanti, 2015) found that 45.3% of the patients experiencing insomnia were women. It can be concluded that hypertension in women is caused by the menopause process and is associated with insomnia.

Viewed from the age, most of the respondents were over 65 years old. According to age categorization by the Ministry of Health, people aged 65 years old or more are categorized as the elders. Age

Table 2. Chi-square analysis

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.407(b)	1	.523		
Continuity Correction(a)	.016	1	.898		
Likelihood Ratio	.439	1	.508		
Fisher's Exact Test				1.000	.469
Linear-by-Linear Association	.397	1	.529		
N of Valid Cases	40				

is one of the risk factors for hypertension that cannot be changed. The older someone gets, the higher the risk of experiencing hypertension. This is related to the flexibility of the arteries, which begins to decrease and stiffen. Furthermore, (Amanda, Prastiwi and Sutriningsih, 2017) suggested that 60% of the elders with poor sleep quality had a risk of hypertension recurrence. It can be concluded that the older someone gets, the higher his risk of experiencing hypertension and disease worsening will be.

Meanwhile, this research found that 40% of the respondents had a medical history of hypertension for more than 10 years. In this research, the hypertensive patients' compliance with medication was good. In this research, there is a possible relationship between the respondents' educational background, mostly Senior High School graduates, and their understanding. A good education will lead to a better understanding. It is consistent with (Aulia, 2018), suggesting that hypertensive patients with a high education background had 58% medication compliance. Her research also indicated a significant relationship between a hypertensive patient's knowledge (education) and medication compliance. In contrast, (Liberty et al., 2018) stated that education did not affect compliance with treatment for hypertensive patients.

Most hypertensive patients (87.5%) experienced poor sleep quality. As for medication compliance, more than half of the hypertensive patients adhered to their medication, while a small proportion of 32.5% did not. Meanwhile, another research proves that there is a significant relationship between poor sleep quality and adherence to taking hypertension medication (Zhang and Tan, 2019). Sleep quality is influenced by several variables, including age, education level, place of residence, impression of illness prognosis, and anxiety (Edmealem et al., 2020).

The assessment of sleep quality included the factors of latency, duration, and efficiency of sleep patterns. The total score of sleep quality is a combination of the three factors. From the ability to initiate sleep, 21 respondents (52.5%) found it difficult to begin sleep in less than 30 minutes. Poor sleep quality or less latency is also associated with an increase in blood pressure. In addition, a person's sleep disorders are not only caused by one factor but also many factors, such as pain or discomfort (Amanda, Prastiwi and Sutriningsih, 2017). Most previous research results have shown hypertensive patients' poor sleep quality. (Sakinah, Kosasih and Sari, 2018) said that 94.6% of 79 hypertensive patients had poor sleep quality. One of the factors contributing to

poor sleep quality is sleep latency, which is the difficulty of initiating sleep in less than 30 minutes.

Moreover, (Roshifanni, 2016) found that people with poor sleep quality are 9.02 times more likely to have hypertension than those with good sleep quality. Sleep is a natural process the body needs to repair body cells and balance metabolism and biochemical processes. Factors that can affect the quality and quantity of individual sleep include diseases-causing stress, lifestyle, environment, and motivation (Roshifanni, 2016). Furthermore, (Harfiantoko and Kurnia, 2013) confirmed that patients with mild hypertension had good sleep quality while those with severe hypertension had poor sleep quality. Thus, it can be concluded that severe hypertensive patients have poor sleep quality.

Regarding medication compliance, this research showed that more than half (67.5%) of the hypertensive patients adhered to medication while the remaining 32.5% did not. It could be because most of the respondents were female.

In addition, it could also be influenced by educational factors. Almost half of the respondents in this research had upper secondary and tertiary education. (Sukma, Widjanarko and Riyanti, 2018) also confirmed that higher education levels significantly affected hypertensive medication compliance with a p-value of 0.008. The higher a person's level of knowledge, the more open their mind and the broader their insight. People with good understanding will do what they understand in everyday life. (Boima et al., 2015) also reinforced a relationship between educational levels and hypertensive medication compliance (p=0.001). Besides, the duration of suffering hypertension affects hypertensive medication compliance. The longer a patient suffers hypertension, the lower medication compliancethe person will have due to boredom. It is known that hypertensive medication takes a long time because hypertension is a disease that cannot be cured but only controlled. However, this research showed the opposite result: no relationship between hypertension suffering duration and the level of medication compliance. In this research, almost half of the respondents suffered from hypertension for more than 10 years but still adhered to taking their medication. (Bilal et al., 2015) on their research in Pakistan 68.14% (from total 113 patients) were non-compliant. Non compliant to be associated with gender and socioeconomic status.

Furthermore, a bivariate analysis of the relationship between sleep quality and medication compliance was performed using a chi-square test with a p-value of 0.523 ($p > 0.05$). This result indicated no relationship between sleep quality and medication compliance in hypertensive patients. This research proved that sleep quality did not correlate with hypertensive medication compliance. Patients with hypertension usually experience sleep disorders. It can be caused by complaints of headaches due to, in addition to increased blood pressure, the effect of using anti-hypertensive drugs. Beta blocker-antihypertensive drugs are known to be associated with sleep disorders. It may be due to the resulting mechanism that inhibits melatonin secretion at night a hormone regulating sleep and the body's circadian timing. Low levels of melatonin can cause chronic insomnia. However, this research did not prove the relationship between sleep quality and medication compliance. Although one of the side effects of hypertension drugs is sleep disorders,

hypertensive patients remain obedient to taking medication, and their sleep quality is not disturbed.

The limitations of this study are the small sample size, weak sampling method, and only conducted in one research location.

Nursing Implication

The results of this study can be used as a basis for nurses to provide education about drug compliance. Although the results of this study show that sleep quality is not significantly related to adherence to taking medication, nurses can convey that maintaining and improving sleep quality is very important to control patients' blood pressure.

CONCLUSION

In terms of sleep quality, most hypertensive patients (87.5%) experienced poor sleep quality, and the remaining 12.5% had good sleep quality. In terms of medication compliance, more than half (67.5%) of hypertensive patients adhered to taking their medication, and the remaining 32.5% did not. There was no relationship between sleep quality and medication compliance in hypertensive patients, with a p-value of 0.523.

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REFERENCES

Amanda, H., Prastiwi, S. and Sutriningsih, A. (2017) 'Hubungan kualitas tidur dengan tingkat kekambuhan hipertensi pada lansia di kelurahan tlogomas Kota Malang', Nursing News, 2(3), pp. 437–447.

Aulia, R. (2018) 'Hipertensi di Instalasi Rawat Jalan RSUD Dr . Moewardi Hipertensi di Instalasi Rawat Jalan RSUD Dr . Moewardi', Publikasi Ilmiah, (April), pp. 1–11.

Bilal, A. et al. (2015) 'Non-Compliance To Anti-Hypertensive Medication and Its Associated Factors Among Hypertensives', Journal of Ayub Medical College, Abbottabad : JAMC, 27(1), pp. 158–163.

Boima, V. et al. (2015) 'Factors Associated with Medication Nonadherence among Hypertensives in Ghana and Nigeria', International Journal of Hypertension, 2015. doi: 10.1155/2015/205716.

Burnier, M. and Egan, B. M. (2019) 'Adherence in Hypertension: A Review of Prevalence, Risk Factors, Impact, and Management', Circulation Research, 124(7), pp. 1124–1140. doi: 10.1161/CIRCRESAHA.118.313220.

Buysse, D. J. et al. (1988) 'The Pittsburgh Sleep Quality Index: A New Intrument for Psychiatric Practice and Research', Psychiatric Research Elsevier, 28, pp. 193–213. doi: 10.1007/978-3-642-36172-2_184.

de Carvalho, M. V. et al. (2013) 'The influence of hypertension on quality of life', Arquivos Brasileiros de Cardiologia, 100(2), pp. 164–174. doi: 10.5935/abc.20130030.

Edmealem, A. et al. (2020) 'Sleep Quality and Associated Factors among Diabetes, Hypertension, and Heart Failure Patients at Debre Markos Referral Hospital, Northwest Ethiopia', Sleep Disorders, 2020, pp. 1–9. doi: 10.1155/2020/6125845.

Hanus, J. S. et al. (2015) 'The quality and characteristics of sleep of hypertensive patients', Revista da Escola de Enfermagem, 49(4), pp. 594–599. doi: 10.1590/S0080-623420150000400009.

Harfiantoko, M. N. and Kurnia, E. (2013) 'Derajat Hipertensi (Menurut WHO) Mempengaruhi Kualitas Tidur dan Stress Psikososial', Jurnal Stikes, 6(2), pp. 1–12. Available at:

https://jurnal.stikesbaptis.ac.id/index.php/STIKES/article/view/193.

Hernandez-vila E. (2014) 'A Review of the JNC 8 Blood Pressure Guideline', Texas Heart Institute Journal., 42(3), pp. 226–228.

Ioannidis, J. P. A. (2018) 'Diagnosis and treatment of hypertension in the 2017 ACC/AHA guidelines and in the real world', JAMA - Journal of the American Medical Association, 319(2), pp. 115–116. doi: 10.1001/jama.2017.19672.

Liberty, I. A. et al. (2018) 'Determinan Kepatuhan Berobat Pasien Hipertensi Pada Fasilitas Kesehatan Tingkat I', Jurnal Penelitian dan Pengembangan Pelayanan Kesehatan, 1(1), pp. 58–65. doi: 10.22435/jpppk.v1i1.428.

Merai, R. et al. (2016) 'CDC Grand Rounds: A Public Health Approach to Detect and Control Hypertension', US Department of Health and Human Services/Centers for Disease Control and Prevention, 65(45), pp. 1261–1264. Available at: http://www.cdc.gov/nchs/nhanes.htm.

Morisky, D. E. et al. (2008) 'Predictive validity of a medication adherence measure in an outpatient setting', Journal of Clinical Hypertension, 10(5), pp. 348–354. doi: 10.1111/j.1751-7176.2008.07572.x.

Novitaningtyas, T. (2014) 'Hubungan karakteristik (umur, jenis kelamin, tigkat pendidikan) dan aktivitas fisik denga tekanan darah pada lansis di Kelurahan makamhaji Kecamatan Kartasura kabupaten Sukoharjo'.

Nugroho, A. S., Astutik, E. and Efendi, F. (2020) 'Relationship between sleep quality and hypertension among working-age population in indonesia', INJEC, 5(1), pp. 35–43.

Roshifanni, S. (2016) 'Risiko Hipertensi Pada Orang Dengan Pola Tidur Buruk (Studi di Puskesmas Tanah Kalikedinding Surabaya', Jurnal Berkala Epidemiologi, 4(3), pp. 384–395. doi: 10.20473/jbe.v4i3.

Sakinah, P. R., Kosasih, C. E. and Sari, E. A. (2018) 'Gambaran Kualitas Tidur Pada Penderita Hipertensi Quality of Sleep Among Hypertension Patients', Media Kesehatan Politeknik Kesehatan Makassar, 13(2), p. 46. doi: 10.32382/medkes.v13i2.663.

Sen, P. et al. (2012) 'Association of Sleep Disorders with Essential Hypertension in Subcontinental Population', Indian Medical Gazette, 146(12), pp. 463–466. Available at: http://medind.nic.in/ice/t12/i12/icet12i12p463.pdf.

Sukma, A. N., Widjanarko, B. and Riyanti, E. (2018) 'Faktor-Faktor yang Berhubungan dengan Kepatuhan Pasien Hipertensi dalam Melakukan Terapi di Puskesmas Pandanaran Kota Semarang', Jurnal Kesehatan Masyarakat, 6, pp. 687–695.

Susanti, L. (2015) 'Faktor-Faktor Yang Mempengaruhi Kejadian Insomnia di Poliklinik Saraf RS DR. M. Djamil Padang', Jurnal Kesehatan Andalas, 4(3), pp. 951–956. doi: 10.25077/jka.v4i3.391.

Vgontzas, A. N. et al. (2009) 'Insomnia with Objective Short Sleep Duration is Associated with a High Risk for Hypertension', SLEEP, 32(4), pp. 491–497.

Zhang, Y. and Tan, X. (2019) 'Compliance with care and poor sleep quality among hypertensive adults in a mountainous area of Hubei province, people's republic of China', Patient Preference and Adherence, 13, pp. 1221–1227. doi: 10.2147/PPA.S212241.

Zilberman, J. M. et al. (2015) 'Association between hypertension, menopause, and cognition in women', Journal of Clinical Hypertension, 17(12), pp. 970–976. doi: 10.1111/jch.12643.