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THE ASSOCIATION BETWEEN MEDICATION ADHERENCE LEVEL WITH SUCCESS OF THERAPY IN HYPERTENSION PATIENTS

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ABSTRACT
The success of therapy in hypertensive patients is influenced by drug use adherence behavior. The success of therapy reduces the risk of complications in other organs and reduces mortality. This study aims to determine the association between the level of adherence to the use of antihypertensive drugs in patients with the success of therapy. Adherence data was collected using the Hill-Bone Translate Indonesia 11 (HBTS-I 11) questionnaire and the therapeutic success data were taken from medical records in hypertensive patients at the outpatient pharmacy installation at UNS Hospital. This research is observational through a cross sectional approach. The sampling technique was carried out by purposive sampling technique by applying the inclusion criteria of respondents. Data collection was carried out by approaching potential patients in the waiting room of the UNS Hospital outpatient pharmacy installation to be given the Hill-Bone translate Indonesia-11 questionnaire. Respondents' willingness to participate in the study was proven by their willingness to fill out informed consent. The analysis test of the association between drug adherence and the success of achieving the therapeutic target was carried out with the Chi Square test. The results of the study showed that patients who adhered to using drugs were 41% and those who were not adhered were 59%. The Chi Square test analysis showed that p value = 0.005 ($p < 0.05$) indicating there was a significant association between adherence to taking antihypertensive drugs and the success of therapy for hypertensive patients in the outpatient pharmacy installation at UNS Hospital.

Keywords: hill-bone translate indonesia-11; hypertension, medication adherence; therapeutic success

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INTRODUCTION

Most major guidelines recommend that hypertension is diagnosed when systolic blood pressure is ≥140 mmHg and/ or diastolic blood pressure is ≥90 mmHg after repeat examination (Unger, et al., 2020). Hypertension is still a global health problem. The global prevalence of hypertension continues to increase. The estimated prevalence of hypertension globally in 2019 is 33,1% (WHO, 2022a). Hypertension is also still a health problem in developing countries, including Indonesia. The results of the 2018 Basic Health Research in Indonesia showed that the prevalence of hypertension nationally was 34,1% and the prevalence of hypertension in Central Java aged ≥ 18 years was 37,57% (Kemenkes RI, 2018). Raised blood pressure increase the risk of death. Raised blood pressure is estimated to cause 7,5 million deaths in the world, about 12,8% of the total of deaths (WHO, 2022b). High blood pressure in patients with hypertension can lead to several complications of cardiovascular disorders such as myocardial infarction, cerebrovascular events, kidney disease

which is the main cause morbidity and mortality in patients with hypertension. The goal of hypertension therapy is to reduce morbidity and mortality from cardiovascular events and kidney disease (Dipiro, et al., 2020).

The adherence of taking medication is very important in hypertension therapy because it's one of the key components of successful therapy, but several studies have shown that medication adherence in hypertensive patients is still low. A cross-sectional study conducted by Chunhua Ma on rural patients with hypertension at three township hospitals in Shanxi Province (North China) demonstrated that 78.7% of patients were non-adherents (Ma, 2016). A hospital-based cross-sectional study among adult hypertensive patients that was conducted at hypertensive follow-up clinic of Jimma University Specialized Hospital from March 4, 2015 to April 3, 2015 show that among 280 hypertensive patients, 61.8% of the study participants were found to be adherent. That study showed that the adherence level to the prescribed antihypertensive medications was found to be sub-optimal according to the MMAS-8 (Asgedom, 2018). Several studies of adherence of hypertensive patients in primary health care settings in some areas of developing countries such as in sub-urban townships of Windhoek, Namibia demonstrated that less than half of patients had acceptable levels of adherence (Nashilongo, et al., 2017). Some study in Indonesia also showed there are low level of compliance of hypertensive patients in primary health care. More than 50% hypertensive patients in primary health care in Bandung City still has low level of medications adherence with rate of adherence is 26.3% (Sinuraya, et al., 2018). The study in Depok I Primary Health Care showed that 68 from 124 hypertensive patients are insufficient compliance (Anugera and Setiawan, 2022).

Good medication therapy compliance is a protective factor for blood pressure control (Zhang, et al., 2017). Non-adherence of taking antihypertensive medication is the main cause of uncontrolled hypertension. Uncontrolled hypertension increases cardiovascular morbidity and mortality. Untreated hypertensive patients had increased risk of all-cause, cardiovascular disease-specific and cerebrovascular disease-specific death (Zhou, et al., 2018). Therefore, this research is important to conduct, considering that some research results show that medication adherence of hypertension patients still low. The aim of this study is to determine the association between the level of adherence to the use of antihypertensive drugs in patients with the success of therapy.

METHOD

This research was conducted at UNS Hospital Surakarta, Central Java, Indonesia in January 2022. The research conducted was observational through a cross sectional approach. The sampling technique was carried out by purposive sampling technique. The number of respondent samples is 100 respondents. The inclusion criteria of patients in this study are aged ≥18 years, hypertensive patients with or without comorbidities, patients who have undergone hypertension therapy for at least 4 months, receiving oral hypertensive drugs, currently taking at least one type of antihypertensive drug, and patients are can read and write. The exclusion criteria in this study are patients who did not fill in the questions in the questionnaire completely and patients who could not communicate properly.

Patient antihypertensive medication adherence measured by using the Hill-Bone Indonesian Translate-11 item questionnaire (HBTS-I 11). The Hill-Bone Indonesian Translate-11 item questionnaire is a Hill-Bone questionnaire that has been translated into Indonesian, reduced from 14 questions to 11 questions and has been tested for validity and reliability by Fauziah in 2019. The validity test carried out includes face validity and structural validity. The HBTS-I

11 questionnaire was declared valid based on the absence of editorial suggestions from respondents in the face validity test and the results of the structural validity test could form 3 factors, two factors regarding medication adherence and one factor regarding salt intake. The Kaiser-Mayer-Olkin value obtained was 0,812 with a total variance of 54%. The results of the reliability test showed a Cronbach alpha value of 0,742, indicating that the HBTS-I 11 was reliable (Fauziah, 2019). Data on the success of therapy was obtained from blood pressure data in patient's medical record. Patient therapy is considered successful if it achieves blood pressure targets based on JNC VIII. The test used with the Chi-Square test technique to test the association between patient's antihypertensive drugs adherence with therapeutic success. This research has been assessed as ethically approved by the Health Research Ethics Committee Dr. Moewardi Hospital by on ethical clearance letter number 1.164/XII/HREC/2021. This research was conducted in January 2022.

RESULTS

Table 1.
Respondent characteristics (n=100)

Characteristics		f	%
Gender	Male	65	65
	Female	35	35
Age	31-40	2	2
	41-50	18	18
	51-60	26	26
	>60	54	54
Last formal education	Junior high school or lower	40	40
	Senior high school or higher	60	60
Job status	Working	18	18
	Not working	82	82
Duration of hypertension	≤5 years	41	41
	>5 years	59	59
Antihypertensive drug therapy	Monotherapy	41	41
	Combination	59	59

Table 2.
Cross tabulation of duration of hypertension with level of medication adherence (n=100)

Duration of Hypertension	Level of Medication Adherence (%)	
	High	Low
≤5 years	43	57
>5 years	35	65

Table 3
Cross tabulation of antihypertensive drug therapy with level of medication adherence (n=100)

Number of drugs used	Level of Medication Adherence (%)	
	High	Low
Monotherapy	38	62
Combination	45	55

Table 4.
Association between level of adherence with therapeutic success (n=100)

Level of Medication Adherence	Therapeutic Success (%)		p value
	Succeed	Not Successful	
High	48,8	51,2	0,005
Low	22,0	78,0	

DISCUSSION

The distribution of patient's characteristics shows that there are more male (65%) than female (35%) hypertensive patients at UNS Hospital in January 2022. The proportion of male hypertensive patients at UNS Hospital is more than female, in contrast to the prevalence of hypertension in Indonesia where there are more female (36,9%) than male (31,3%) (Kemenkes RI, 2018) while the prevalence of hypertension in promore than vince of Central Java in female (40,17%) is higher than male (34,83%) (Dinas Kesehatan Provinsi Jawa Tengah, 2019). In this study, most of the patient characteristics based on age were >60 years old (54%). Before the age of 65, the prevalence of high blood pressure is higher in men than women and is similar between the ages of 65 and 74 (Dipiro, et al., 2020). Younger patients (women and men) were more willing to seek primary care compared to older patients (Thompson, et al., 2016). A study at Depok I primary health care shows that gender, age, duration of hypertension, and total therapy had no significant relationship to antihypertensive medication adherence (Anugera and Setiawan, 2022).

Patient's characteristics based on formal education level in this study were mostly in the high category, there are 60 respondents (60%) graduated at least from high school or higher. A study in the Ngluwar public health care center in Magelang Regency, Central Java, Indonesia shows no relationship between level of formal education on medication adherence (Wicaksono, et al., 2021). This may be influenced by the lack of duration of exposure to health education. A study in West Java, Indonesia shows that hypertension client in Cipayung sub district had positive health behaviors of 63 participants (57.8%), this could be influenced by the duration of exposure to health education (Wiarsih, 2020). The majority of hypertensive patients in this study were not working (retired or taking care of the house hold) with a percentage of 82%. There is a significant relationship between job status and medication adherence (Wicaksono, et al., 2021). Some patients who not working are women whose take care of household. Take care of household activities makes them carry out monotonous activities that are carried out in the house for a prolonged period of time can increase the risk of stress (Putri and Sudhana, 2013). A study at the Karang Dapo Health Center, Muratara Regency, Bengkulu, Indonesia showed that there is a significant relationship between employment status and medication adherence of hypertension patients (Listiana, et al., 2020).

More patients in this study had suffered from hypertension for >5 years (51%) than those ≤5 years (table 1). More patients suffering from hypertension for ≤5 years had a high level of medication adherence (43%) than patients suffering from hypertension for <5 years (table 2). Patients with hypertension those suffering for <5 years are have blood pressure controlled compared with patients ≥5 years, but this factors did not have a significant effect in blood pressure control (Asgedom, et al., 2018). There is significant relationship between length of time suffering from hypertension and the medication adherence in hypertension patients at Karang Dapo Health Center, Muratara, Bengkulu, Indonesia (Listiana, et al., 2020).

The percentage of patients who received combination drug therapy in this study was 57%, more than patients who received monotherapy (table 1). In this study, more patients who received combination drug therapy had a high medication adherence rate (45%) than patients who received monotherapy (table 3). However, according to Grigoryan (2013), it was found that regardless of the drugs, nonadherence to antihypertensives is usually partial. A study involving 63.448 residents of the Lombardy Region (Italy) aged 40-80 years, who were newly treated with antihypertensive drugs, identified and followed for 1 year after the first prescription showed that patients who were initially a 2-drug single-pill combination demonstrated more frequently a good medication adherence than those starting with a single drug (Rea, et, al., 2021).

The level of antihypertensive medication adherence based on the HBTS-I 11 questionnaire in the outpatient installation at UNS Hospital for period January 2022 was more in the low adherence category of 59% than high adherence (41%). Low medication adherence can lead to health consequences including uncontrolled hypertension and hypertension crises. Suboptimal adherence is associated with various target organ changes linked to greater risk of cardiovascular events, including vascular stiffness, left ventricular hypertrophy (LVH) and microalbuminuria. Suboptimal adherence is also associated with multiple adverse cardiovascular events including acute coronary syndromes, stroke, transient ischemic attack and chronic heart failure as well as mortality (Burnier and Egan, 2019). The results of this study showed that there is a significant relationship between medication adherence to therapeutic success (p value = 0,0005 < 0,05) (table 4). Thos result in line with the study in Cipayung district, West Java, Indonesia. The majority of hypertension clients in Cipayung sub district, were not drug compliant in 71 participants (65.1%), low medication adherence due to low effort to access treatment and not taking medication according to recommended treatment (Wiarsih, 2020).

CONCLUSION

The level of antihypertensive medication adherence based on the HBTS-I 11 questionnaire in the outpatient installation at UNS Hospital for period January 2022 was included in the low adherence category of 59% and included in the high adherence category of 41%. There is an association between antihypertensive medication adherence and the success of therapy with a p value = 0,005 (<0,05).

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