

RATIONALITY OF THE USE OF ANTI-HYPERTENSIVE DRUGS AT THE SORAWOLIO HEALTH CENTER, SORAWOLIO DISTRICT

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ARTICLE INFORMATION

Received: 5 December 2025

Revised : 7 January 2026

Accepted: 2 February 2026

DOI

KEYWORDS

Keywords: hypertension drugs, health centers, rationality, right indications, right drugs, right patients and right doses.

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A B S T R A C T

Background:

Hypertension is a non-communicable disease that is a major concern in efforts to overcome health problems at the global level. The rationality of the use of antihypertensive drugs is an important factor in the management of this disease, especially in primary service facilities such as health centers. Evaluation of the rationality of the use of antihypertensive drugs needs to be carried out to ensure that patients get the right therapy according to the standards. **The purpose** of this study is to evaluate the level of rationality in the use of antihypertensive drugs at the Sorawolio Health Center based on the criteria of right indication, right medication, right patient, and right dose. **This** research method uses an observational analytical design retrospectively on 85 prescription samples of hypertension patients who received treatment at the Sorawolio Health Center in January–December 2024. The data were analyzed descriptively quantitatively using percentages for each rationality category. The results of the study showed that the use of antihypertensive drugs at the Sorawolio Health Center had met the criteria of 100% of the right indications, the right medication, and the right patient. Thus, it can be **concluded** that most of the prescription of antihypertensive drugs at the Sorawolio Health Center has been carried out rationally according to the applicable therapy standards.

INTRODUCTION

Hypertension is one of the non-communicable diseases that is now receiving major attention in the health sector at the global level. Based on recommendations *Join National Committee dalam The Eighth Report of Join National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure* states that high blood pressure (hypertension) is a condition where a person's blood pressure is ≥ 140 mmHg (systolic) and/or ≥ 90 mmHg. Apart from being a type of non-communicable disease, hypertension is also a major risk factor for other cardiovascular diseases (Ansar et al., 2019). Hypertension is a health disorder that is manifested by an increase in systolic blood pressure ≥ 140 mmHg and diastole ≥ 90 mmHg (Adistia et al., 2022).

According to World Health Organization (WHO) data, hypertension affects about 22% of the world's population and it is estimated that the number of cases will reach 1.5 billion by 2025. From year to year, around 9.4 million people die from high blood pressure and its complications. In the Southeast Asian region, the prevalence of hypertension is reported to be 36%. Meanwhile, the results of the 2018 Riskesdas show that the incidence of hypertension in Indonesia reached 34.1%, with the highest rate in South Kalimantan at 44% (WHO, 2012). The number of hypertension cases in Southeast Sulawesi Province in 2018 was 13,480 cases. In the city of Baubau as many as 851 cases (Riskesdas, 2018). According to (SKI), as many as 5,585 cases increased in Southeast Sulawesi (Ministry of Health, 2023). The prevalence of hypertension tends to increase significantly in individuals aged 60 years and above. Increasing age is one of the factors that affect the increase in arterial pressure and organ dysfunction. This is indicated by reduced arterial elasticity and increased hardening of blood vessels, which ultimately increases the risk of hypertension in the elderly group (Rahma et al., 2024). Judging from the 2023 Indonesian Health Survey (SKI), the proportion of people with high blood pressure in the age category of 18-24 years was recorded at 10.7%, while at the age of 25-34 years it increased to 17.4%. In the 45-54 year age group, the prevalence reached 45.3%, and even higher in the 55-64 year age category, which was 55.2% (Ministry of Health, 2023).

As the first phase of health facilities, the Puskesmas plays an important role in providing services to the community and is responsible for ensuring the appropriate use of drugs according to guidelines. The use of inappropriate drugs in health centers can have a considerable harmful impact,

especially for low-income people who mostly rely on health services at health centers. Therefore, it is necessary to evaluate the rationality of the use of antihypertensive drugs for hypertensive patients at the Sorawolio Health Center, Sorawolio District (Untari, 2018).

Based on data from the Sorawolio Health Center, the number of hypertension cases from January to December 2024 was recorded at 548 events. Thus, this research was carried out to assess the rationality of the use of antihypertensive therapy in the work area of the Sorawolio Health Center in 2024. The rationality assessment includes factors of right indication, right drug, right patient, and right dose referring to the main standard of treatment recommended by the *The Eighth Report of The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure*(JNC VIII) (James et al., 2014).

METHOD

This research uses an analytical observational design by applying a retrospective-based data collection method, namely through tracing 85 medical records and patient prescriptions at the Sorawolio Health Center in the period from January to December 2024. Of the total 548 patients who became the study population, based on the calculation of the Sample was calculated based on the Slovin Formula (Hamka & Syamsuddin, 2024), the sample obtained from the population of 85 research subject populations. This research Run starting from May-July 2025 at the Sorawolio Health Center. In this study, data was analyzed using a quantitative descriptive approach, namely by presenting an overview and calculating the percentage of medical records and treatment prescriptions for patients with high blood pressure.

RESULTS & DISCUSSION

From the results of research related to the rationality of the use of antihypertensive therapy in patients at the Sorawolio Health Center, Sorawolio District, for the period from January to December 2024, data was obtained that the number of hypertensive patients was recorded as many as 548 cases. Of the total 548 patients who were in the study population, based on the Slovin formula, the number of samples obtained reached 85 respondents (Table 1). Referring to Table 1 data, out of a total of 85 hypertension patients used as a research sample, 63 women (74.11%) and 22 men (5.88%) where female patients were more dominant than male patients. The results of this study are in line with the findings Sari et al., 2022 Previously, the female gender was more dominant, namely 34 patients with a percentage of 68% while the male gender was 16 patients with a percentage of 32%. Women who have entered the postmenopausal period are more likely to experience high blood pressure, because a decrease in estrogen levels can affect the elasticity of blood vessels and increase the risk of hypertension. Women's blood pressure, especially systolic blood pressure, increases with age. Ekasari et al., (2021) Stating that patients suffer from increased blood pressure can be triggered by two aspects, namely permanent hypertension risk factors and hypertension risk factors Modifiable where the risk factors for hypertension that cannot be changed are in the form of family history, age, gender. Meanwhile, risk factors for hypertension that can be changed are poor eating habits, low physical activity, obesity, excess alcohol, smoking, stress, high cholesterol, and diabetes.

In Table 1, the research results obtained are based on the elderly group. The incidence of high blood pressure continues to increase, especially in the majority of patients in this study, the age group of 56-65 years is the largest number of cases, with a total of 46 people (54.11%). Meanwhile, in the younger age group, the number of cases is relatively smaller, for example in the age range of 18-25 years old there were 7 people (8.23%). Although the prevalence is lower than in old age, hypertension can also occur at a young age. This is generally influenced by genetic factors, unhealthy eating style, for example often consuming high-fat foods, obesity, stress, and a lifestyle that does not support health, such as rarely exercising, which are the main factors that cause hypertension at a young age Yusuf et al., (2021)). 5.88% suffered from high blood pressure 1 and 17.64% suffered from high blood pressure grade 2.

Table 1 Characteristics of the research subject

Characteristics of respondents	N=85	
	Sum	Percentage
Gender		
Woman	63	74,11%
Man	22	25,88%
Age		
18-25	7	8,23%

26-35	10	11,76%
36-45	10	11,76%
46-55	12	14,11%
56-65	46	54,11%
Blood pressure		
Usual	3	3,52%
Prehypertension	19	22,35%
Hypertension	5	5,88%
Hypertension of the 1st degree	43	50,58%
Hypertension degree 2	15	17,64%

Table 2 Rationality of Hypertension Treatment at Sorawolio Health Center Based on Proper Indications

Diagnosis	Prescription at Sorawolio Health Center	Guidelines according to JNC VIII	Present rationalities (%)
1. Hypertension of the 1st degree	1. Captopril	1. Captopril	100
	2. Amlodipin	2. Amlodipin	
2. Hypertension degree 2	3. Captopril + Amlodipine	3. Hydrochlorothiazide + Captopril	
		4. Hydrochlorothiazide + Amlodipine	
		5. Captopril + Amlodipine	
		6. Furosemid + Spironolactone + Amlodipin	

In Table 2, the exact criteria for the indication can be assessed from whether the patient does need the administration of antihypertensive drugs, which is based on the level of blood pressure he has Andriani et al., (2023). Based on Table 2, all hypertension patients at the Sorawolio Health Center in January-December 2024 are in accordance with the right criteria for reaching 100%. This fact shows that the prescription of blood pressure-lowering drugs carried out by the doctor is in accordance with the patient's indications and diagnosis. Referring to the guidelines of JNC VII and JNC VIII, the determination of antihypertensive therapy is adjusted to the level of blood pressure. In patients who show systolic blood pressure of 140–159 mmHg or diastolic blood pressure of 90–99 mmHg (stage 1 high blood pressure), the recommended therapy is antihypertensive monotherapy. Meanwhile, in patients who have systolic blood pressure ≥ 160 mmHg or diastolic blood pressure ≥ 100 mmHg (stage 2 hypertension), the recommended therapy is a combination of two types of high blood pressure therapy.

Table 3 Rationality of Hypertension Treatment at Sorawolio Health Center Based on Appropriate Medication

Diagnosis	Prescription at Sorawolio Health Center	Guidelines According to JNC VIII	Drug suitability Conform No
1. Hypertension of the 1st degree	1. Captopril 2. Amlodipin	Singular between: HCT/Captopril/Amlodipin	78 (91,76%)
2. Hypertension degree 2	1. Single	1. Single • HCT • Captopril • Amlodipine	7 (8,24%)
	2. Combination • Captopril + Amlodipine	2. Combination • HCT+Captopril • HCT + Amlodipin • Furosemid + Amlodipin • Captopril + Spironolactone + Amlodipin	
Total			85 (100%)

In Table 3 The rationality of hypertension treatment at the Sorawolio Health Center refers to the right medication, therapy was rational there were 85 patients with 100% presentation where the single between captopril and amlodipine drugs was 78 people (91.76%) and the combination of captopril + amlodipine was 7 people (8.24%). The exact rationality of the drugs given has been based on the standards used in this study, namely the guidelines of JNC VII and JNC VIII. The types of hypertension drugs that are most often used at the Sorawolio Health Center are amlodipin and captopril. Amlodipin and captopril are drugs that are recommended as initial therapy in hypertensive patients Hasty et al., (2022). Amlodipin is a type of Calcium Channel Blocker (CCB) that functions by preventing the entry of Ca^{2+} into smooth muscle cells on the walls of blood vessels, thereby causing vasodilation and

lowering blood pressure. On the other hand, captopril is categorized as an Angiotensin Converting Enzyme Inhibitor (ACEI) class which works by blocking the work of ACE enzymes that act by converting angiotensin I to angiotensin II. This mechanism prevents vasoconstriction from occurring, so that blood vessels remain enlarged and blood pressure can be lowered Erlandi et al., (2024).

Table 4 Rationality of Hypertension Treatment at Sorawolio Health Center Based on the Right Patient

Yes	Name Medicine	Contraindications of Drugs	Right Patient	Present (%)
1.	Captopril	Gestational period, hyperkalemia, bilateral renal artery stenosis	2	2,35%
2.	Amlodipin	Congestive	76	89,42%
3.	Captopril + Amlodipine	Pregnancy, hyperkalemia, bilateral renal artery stenosis, congestive	7	8,23%
Total			85	100%

Based on Table 4, the rationality of hypertension therapy at the Sorawolio Health Center according to the right criteria of patients showed rational results for all respondents, namely 85 patients (100%). This condition occurs because the drugs recommended in the prescription for hypertensive patients are in harmony with the pathological and physiological conditions of the patient as stated in the medical record. Although not all follow-up examination information is available, patients are assumed to be free of contraindications to the use of blood pressure-lowering medications. There were three types of therapy given, namely captopril in 2 patients (2.35%), amlodipin in 76 patients (89.42%), and a combination of captopril and amlodipine in 7 patients (8.23%)

Table 5 Rationality for Hypertension Treatment at Sorawolio Health Center Based on the Right Dose

Prescription at Sorawolio Health Center	Guidelines according to JNC VIII	Drug Suitability	Present rationalities (%)
1. Captopril 12.5-25 mg/day	1. Captopril 50 mg/day	Fit = 85	100 %
2. Amlodipine 5-10 mg/day	2. Amlodipine 2.5-10 mg/day	Inappropriate = 0	

In Table 5, the rationality of hypertension therapy at the Sorawolio Health Center is based on the exact dosage indicators of 85 patients presenting (100%) hypertension drugs recorded in the prescription have met the standards where the use of captopril and amlodipin drugs is effective with harcertainty. There were 7 patients 8.24% receiving antihypertensive captopril with a dose of 12.5 mg with a drinking rule of 2x1 morning and night, at the recommendation of JNC VII and JNC VIII the general dose range in mg/day was 25-100 mg/day, then the calculation of the prescription of the use of captopril at the Sorawolio Health Center was rational because in a matter of 1 day the dose had reached 25 mg/day in accordance with the dosage range recommended by JNC VII and JNC VIII. A total of 34 patients, 40% received antihypertensive amlodipine at a dose of 5 mg/day with a 1x1 nighttime drinking rule at the recommendation of JNC VII and JNC VIII in the general dose range in mg/day of 2.5-10 mg, which means that it is appropriate.

Table 6 The Rationality of Hypertension Treatment at the Sorawolio Health Center that Meets All Indicators: Right Indications, Right Medication, Right Patient, and Right Dose

Rationality of Hypertension Treatment	Number of Patients	Present rationalities (%)
Rational treatment	85	100 %
Irrational treatment	0	

Of the total 85 patients studied, all (100%) received rational treatment, which is in accordance with the guidelines of JNC VII and JNC VIII, so that the therapy provided met the criteria of indication tept, drug tept, patient tept, and tept dose. Table 6 shows that hypertension treatment at the Sorawolio Health Center is based on 4 main indicators, including the right indication, the right medication, the right dose and the right patient. The administration of antihypertensive drugs in this study has met all rationality indicators. The first indicator, the right indication, is indicated by the suitability of drug administration based on the diagnosis of hypertension. The second indicator, the right drug, can be seen from the selection of drugs that are in accordance with the JNC VII and JNC VIII therapy guidelines. The third indicator, the patient's right, is reflected in the administration of the drug without any contraindications based on the patient's clinical condition. Meanwhile, the fourth indicator, the right dose, is proven through the determination of doses that are in line with treatment standards.

COVER

Based on the findings of the research on the rationality of the use of antihypertensive therapy at the Sorawolio Health Center, it can be concluded that the treatment provided includes the rational category can be seen from 4 variables, namely the correct indication with a 100% drug concentration with a percentage of 100%, a patient with a percentage of 100%, and a dose of a percentage of 100%. The author stated that there are no limitations to the research.

THANKS

The researcher expressed his gratitude to Hasty Hamzah, S.Si., M.Si and Apt. Yuyun Wirasasmita, S.Farm., M.Farm for all the guidance, advice and support provided during the writing of this journal.

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