Evaluation of the Use of Antihypertensive Drugs in Outpatients at Bandar Lampung Private Hospitals

Lusia Natalia, Gusti Ayu Rai Saputri, Satria Wijaya
Universitas Malahayati, Bandar Lampung, Indonesia
Email: nataliatunip@gmail.com, gustifarmasi@malahayati.ac.id,
satria.wijaya@malahayati.ac.id
Correspondence: nataliatunip@gmail.com*

Abstract

Hypertension is a global health challenge, and its treatment requires careful and accurate use of antihypertensive drugs. In this study, the evaluation of antihypertensive drug use in outpatients at Bandar Lampung Private Hospital was conducted to assess the rationality of drug prescriptions based on the JNC 8 guidelines. The study adopted a non-experimental descriptive quantitative design with a retrospective approach, using data from medical records of hypertensive patients between March and May 2024. The evaluation included parameters such as diagnosis accuracy, correct disease indication, appropriate drug selection, dosage, administration method, and time intervals of administration. The findings showed excellent adherence to guidelines, with 100% accuracy in diagnosis, disease indication, drug selection, and administration method. However, dosage accuracy was 91%, and time interval adherence was 95.03%. The most common patient characteristics were women (58%), individuals aged over 60 years (48%), and those with stage 1 hypertension (73%). Drug use patterns indicated a preference for two-drug combination therapy, with amlodipine being the most commonly used drug. The study identified areas needing improvement, including dose optimization and the frequency of Adalat Oros 30mg administration. The study's findings contribute to optimizing antihypertensive therapy, improving clinical pharmacy services, and providing valuable insights for further research in multi-center settings.
Keywords: Antihypertensive Drugs, Rationality, JNC 8 Guidelines, Hypertension, Private Hospital.

INTRODUCTION

Hypertension has become one of the global health problems that requires serious attention from all over the world (Organization, 2023; Schutte et al., 2021). This disease is known as the "silent killer" because it often does not cause obvious symptoms but can cause serious complications in vital organs such as the heart, kidneys, and brain. The World Health Organization (WHO) reported that hypertension affected 22% of the world's total population in 2013, with a projected increase of 1.5 billion people by 2025. More worrying data shows that every year there are 9.4 million people who die from hypertension and its complications (WHO, 2013).

The hypertension situation in Indonesia shows a worrying trend. Based on data from *Basic Health Research* (*Riskesdas*) in 2018, the prevalence of hypertension in Indonesia

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is 34.1% of the total population. This figure has increased significantly compared to the results of blood pressure measurement in the population aged 18 years and older, which reached 25.8% of the total population of around 250 million people. The incidence of hypertension shows a significant increase in patients aged 60 years and above, reflecting a close relationship between the aging process and the risk of hypertension (Saputri, 2023).

The Southeast Asian regional context shows that the incidence rate of hypertension reaches 36%, placing this region as one of the regions with a high burden of hypertension globally. The geographical, genetic, and lifestyle differences of Southeast Asian peoples contribute to the high prevalence of hypertension in the region. Risk factors such as high salt consumption, lack of physical activity, stress, and changes in traditional diets to modern diets are the main determinants of the increase in hypertension cases.

Hospitals as health service institutions play a crucial role in handling hypertension. Hospitals provide comprehensive individual health services that include inpatient, outpatient, and emergency services (Ministry of Health, 2020). People choose hospitals as health services because they have complete facilities, ranging from treatment rooms, specialist doctors, to diagnostic facilities such as X-rays, ultrasound, and comprehensive laboratories.

Pharmaceutical services are an integral component in the treatment of hypertension in hospitals. This service includes direct services that have responsibility for patients related to pharmaceutical preparations, management of pharmaceutical preparations and consumable medical materials, infrastructure, and clinical pharmacy services that aim to realize optimal results in improving the quality of life of patients (Lesta, 2021). Through pharmaceutical services, patients obtain medications, information on the use of drugs, and therapies that are in accordance with the condition of the disease experienced.

Prescriptions as legal instruments in drug service reflect the complexity of treating hypertension. The patient is obtained after being examined by a doctor according to the disease experienced, then the drug is written in the prescription as proof of taking the drug with the right dosage and indications. However, prescriptions can also describe problems in medicine such as polypharmacy, the use of drugs that are not appropriately expensive, the use of antibiotics and injection preparations that are excessive, and the use of drugs that are not properly indicated (Mahdiana, 2020).

Drugs play a very important role in health services, especially in the treatment and prevention of hypertension. Hypertensive pharmacotherapy cannot be separated from comprehensive therapeutic actions involving a wide range of clinical considerations. Various choices of antihypertensive drugs are available today, so careful consideration is needed in choosing the right drug for the patient's specific condition (Siregar, 2021). Drugs can be *mixed* (mixed) or *single* (non-mixed) according to the patient's complaints and the clinical conditions faced.

Hypertension as a chronic disease is characterized by a persistent increase in blood pressure and requires long-term treatment. Cardiovascular diseases, especially hypertension, require appropriate treatment because they can cause serious complications such as stroke, heart failure, and kidney disease (Hariadini et al., 2020). The complexity of treating hypertension requires a multidisciplinary approach involving physicians, pharmacists, and other healthcare professionals to ensure optimal therapeutic outcomes.

The classification of antihypertensive drugs includes various groups with different mechanisms of action, namely Alpha blockers, Beta blockers, ACE inhibitors, Diuretics, and Vasodilators. The World Health Organization recommends the stages of using antihypertensive drugs starting with monotherapy using one of the Diuretic groups, Beta blockers, ACE inhibitors, Calcium Channel Blockers, and Alpha Blockers. The five groups of drugs were selected as the first stage of antihypertensive drugs because they do not cause significant side effects and do not cause tolerance to long-term administration (Saputro, 2021).

Problems in the management of hypertension that are often found are inaccuracies in the prescription of antihypertensive drugs. This phenomenon occurs in many countries, especially developing countries such as Indonesia. Previous research has shown varying degrees of accuracy in the use of antihypertensive drugs. An evaluation study on the accuracy of drugs and doses of antihypertensive drugs in outpatient hypertension patients at the *Ciputat Health Center* for the period of January–March 2015 showed the correct drug as much as 47.5% and the right dose as much as 42.5%. Another study on the analysis of the suitability of the type and dose of antihypertensive drugs in hypertensive patients at the *Sukabumi Inpatient Health Center* in Bandar Lampung showed results of 72% of the type of drug and 97% of the drug dose (Yansyah et al., 2019).

Data from the *Cilacap Regency Health Office* in 2018 shows that essential hypertension is ranked fifth out of the 10 most diseases with 18,016 cases. Based on the most prescribed drug group, cardiovascular drugs are 30.61%, with amlodipine as the most frequently prescribed drug (3.95%). Evaluation of drug prescribing in geriatric patients shows the importance of strict monitoring as it relates to increased morbidity, drug-related adverse events, and mortality. Of the total 3,808 drug requests, 6% were classified as potentially inappropriate medication (*PIM*) (Saraswati et al., 2020).

Previous research has shown variations in the level of rationality of the use of antihypertensive drugs in various health facilities. Herawati (2021) evaluated the rationality of the use of antihypertensive drugs in geriatric patients at *Dr. H. Bob Bazar Hospital, SKM South Lampung* with a focus on the correct diagnosis, the right indication of the disease, the right medication, the right dose, the right way of administration, and the right time interval of administration. Amabel (2023) evaluated the level of compliance with the use of antihypertensive drugs in outpatient hypertension patients at *Imanuel Hospital Bandar Lampung* with variables of gender, education level, employment status, age, and length of suffering from hypertension. Pratama (2021) evaluated the use of antihypertensive drugs in outpatient hypertension patients at the *Rawajitu Health Center* with a focus on the right disease, the right medication, the right dose, and the right patient[A1] [A2].

The urgency of this research lies in the need for a comprehensive evaluation of the use of antihypertensive drugs in private hospitals that have different service characteristics from government health facilities. Private hospitals generally have better resources and flexibility in drug selection, but also face challenges in terms of standardization of treatment protocols and cost-effectiveness. Evaluating the rationality of drug use is important to ensure that the therapy provided is not only clinically effective but also safe and economical.

This study aims to evaluate the use of antihypertensive drugs in outpatients at *Bandar Lampung Private Hospital* by using the right parameters of diagnosis, right disease indication, right drug selection, right dose, right way of administration, and right time interval of

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administration based on *JNC 8* guideline. The results of the study are expected to provide a comprehensive picture of the quality of pharmaceutical services in private hospitals and provide recommendations for improving the rationality of the use of antihypertensive drugs.

The contribution of this research includes the provision of empirical data on the pattern of use of antihypertensive drugs in private hospitals, the identification of areas that require improvement in hypertension management, and the formulation of recommendations for the optimization of antihypertensive therapy. This research is also expected to be a reference for other hospitals in developing rational and evidence-based antihypertensive drug use protocols.

METHOD

This study uses a non-experimental descriptive quantitative design with a retrospective approach. The retrospective method was chosen because the research, based on information from the medical records of hypertensive patients involving pre-existing events, allows a comprehensive analysis of the patterns of antihypertensive drug use over a given period of time.

Research Location and Time

The research was conducted at the *Bandar Lampung Private Hospital*, which is located at Jl. Soekarno Hatta No.1, Way Dadi, Sukarame, Bandar Lampung District, Lampung. The selection of this location is based on data accessibility, the representativeness of outpatient hypertension patients, and the completeness of medical records. Data collection was carried out for the period March–May 2024, with the research period taking place in the even semester of the 2024 academic year.

Research Tools and Materials

The material used in this study is the medical records of hypertension patients as a primary data source. The tools used for data collection include laptops for data processing, ballpoint pens for manual recording, and notebooks containing the identities of hypertension patients at the *Bandar Lampung Private Hospital*. The software used for data analysis is Microsoft Excel for data tabulation and SPSS for descriptive statistical analysis.

Population and Sample

The study population is all antihypertensive patients who were treated at the *Bandar Lampung Private Hospital* during the March–May 2024 period, with a total population of 1,418 patients. The study sample comprised all patients diagnosed with hypertension, listed in medical records, who received antihypertensive drugs from doctors, and redeemed drug prescriptions at private hospitals for the period March–May 2024.

The inclusion criteria include:

1. All hypertensive patients with a diagnosis of hypertension at the *Bandar Lampung Private Hospital* on outpatient care.
2. Medical records of patients who received antihypertensive drugs at *Bandar Lampung Private Hospital* in the March–May 2024 period.

Exclusion criteria include:

1. Incomplete, illegible, or damaged medical records.
2. Inpatient hypertension patients.
3. Non-hypertensive patients.

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Sample size calculation used the *Slovin* formula with a 10% error rate: n=N1+N(d2)$n = \frac{N}{1+N(d^2)}$

where:

- n = Number of samples
- N = Total population (1,418)
- d = Critical value (0.1)

$$n = \frac{1{,}418}{1+1{,}418 \times (0.1)^2} = \frac{1{,}418}{15.18} = 93.4$$

The calculation results showed a minimum sample count of 93 patients, but the researchers assigned 100 samples to improve the representativeness and strength of the analysis.

Research Variables

The independent variables in this study are age, gender, and degree of hypertension, which affect the pattern of use of antihypertensive drugs. The dependent variables are the accuracy of the use of drugs, which include the right diagnosis, the right indication of the disease, the right selection of drugs, the right dosage, the right way of administration, and the right time interval of administration.

Research Procedure

The orientation stage and preliminary study were carried out before the implementation of the research by preparing a survey permit and a research permit from the campus addressed to the *Bandar Lampung Private Hospital*. After obtaining permission to collect data from the hospital, the completeness of the patient's medical record data was checked.

Data Analysis

The data was analyzed descriptively by describing medical record data to illustrate the profile of hypertension patients at the *Bandar Lampung Private Hospital* for the March–May 2024 period. The percentage evaluation of the prescription of antihypertensive drugs is calculated using the following formulas:

1. % Correct Diagnosis = (Number of Cases Correct Diagnosis / Number of All Patients) × 100%
2. % Exact Disease Indication = (Exact Number of Cases Disease Indication / Total Patient) × 100%
3. % Exact Drug = (Number of Cases of Right Drug / Number of All Patients) × 100%
4. % Right Dose = (Number of Cases Right Dose / Number of All Patients) × 100%
5. % Right Way to Administer = (Right Number of Cases to Be Administered / Number of All Patients) × 100%
6. % On-time Delivery = (Number of Cases Timely Delivery / Total Number of Patients) × 100%

Evaluation Standards

Evaluation of the appropriateness of the use of antihypertensive drugs uses the *JNC 8 (Joint National Committee 8)* guideline as a reference standard. This guideline was chosen because it is a comprehensive evidence-based guide in the treatment of hypertension in adult patients. The assessment criteria include the suitability of diagnosis based on blood pressure, drug indications, selection of the type of drug, the accuracy of the dose, the method of administration, and the time interval of administration in accordance with the recommendations of *JNC 8* and the 2022 Indonesian Minister of Health.

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Validity and Reliability

The validity of the data is maintained through the use of official medical records as a primary data source and the application of strict inclusion–exclusion criteria. Reliability is ensured through consistency in data collection and the use of the same evaluation standards for all samples. Data verification is carried out through double-checking the data that has been collected to ensure the accuracy and completeness of the information.

RESULTS AND DISCUSSIONS

Characteristics of Hypertensive Patients

This study involved 100 outpatient hypertension patients at Bandar Lampung Private Hospital for the period March-May 2024. The demographic characteristics of patients show a distribution that reflects the epidemiological pattern of hypertension in Indonesia.

Table 1. Characteristics of Distribution of Hypertension Patients at Bandar Lampung Private Hospital for the March-May 2024 Period

Characteristics of Hypertensive Patients	Number (n=100)	Percentage (%)
Gender		
Man	42	42
Woman	58	58
Age		
<45 years old	10	10
45-60 years old	42	42
>60 years old	48	48
Degree of Hypertension		
Degree 1 (140/90-159/99 mmHg)	73	73
Degree 2 (160/100-179/109 mmHg)	14	14
Degree 3 (≥180/110 mmHg)	13	13

Based on gender, hypertension patients were dominated by women as many as 58 patients (58%) compared to 42 male patients (42%). These results are in line with Nature's (2022) research which shows that the prevalence of hypertension in women is higher (61%) than in men (39%). This phenomenon can be explained through hormonal changes that occur in women, especially after menopause. The vasoprotective mechanisms carried out by the hormone estrogen disappear after menopause, leading to an increased risk of hypertension (Regnault et al., 2018). Women over the age of 55 lose the activity of the hormone estrogen on the artery walls resulting in stiffness and decreased arterial elasticity (Protogerou et al., 2017).

The age distribution showed that the most hypertension patients were in the age group of >60 years with 48 patients (48%), followed by the age group of 45-60 years with 42 patients (42%), and the age group of <45 years with 10 patients (10%). This pattern is consistent with research by Hidayaturahman and Syafitri (2021) which showed that the most hypertensive patients were aged 60-69 years (51.25%). The increased risk of hypertension with age is caused by structural changes in large blood vessels, narrowing of the lumen, and increased stiffness of the blood vessel walls (Yunus et al., 2021).

Based on the degree of hypertension, most patients had 73 patients (73 patients with 140/90-159/99 mmHg) with hypertension, 14 patients (14 patients with grade 2 hypertension) (160/100-179 / 109 mmHg) and 13 patients with 3 degree hypertension (≥180/110 mmHg) with

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13 patients. The dominance of grade 1 hypertension indicates relatively good early detection and public awareness to seek treatment before hypertension reaches an advanced stage.

Patterns of Use of Antihypertensive Drugs

Table 2. Antihypertensive Drugs at Bandar Lampung Private Hospital for the March-May 2024 Period

Drug Classes	Quantity (n)	Percentage (%)
ACEI+CCB	18	18
CCB + ARB	18	18
CCB	15	15
ACEI	11	11
ARB	8	8
CCB+B-Blockers	7	7
ACEI + CCB + β-Blockers	4	4
ARB + CCB + β-Blockers	4	4
ARB + β-Blockers	4	4
ACEI + β-Blockers	4	4
ACEI + CCB + Diuretic	3	3
Other	4	4
Total	100	100

The combination of ACEI + CCB and CCB + ARB was the most preferred therapy with 18 patients (18%). The use of this combination is in accordance with the recommendations of the JNC 8 guideline which recommends combination therapy to achieve optimal blood pressure targets. The combination of CCB + ACEI provides synergistic effects in lowering blood pressure, protective effects of the kidneys, reduction of left ventricular mass, and reduction of vascular disease mediators (Syamsudin, 2011).

Table 3. Types of Antihypertensive Drugs in Bandar Lampung Private Hospitals for the March-May 2024 Period

Types of Drugs	Quantity (n)	Percentage (%)
Amlodipine 10mg	35	19.34
Candesartan 8mg	26	14.36
Amlodipine 5mg	25	13.81
Ramipril 5mg	24	13.26
Bisoprolol 2.5mg	19	10.50
Ramipril 10mg	10	5.52
Adalat Oros 30mg	9	4.97
Candesartan 16mg	8	4.42
Bisoprolol 5mg	7	3.87
Other	18	9.95
Total	181	100

Amlodipine 10mg was the most commonly used drug with 35 patients (19.34%), followed by candesartan 8mg in 26 patients (14.36%). The dominance of amlodipine is in line with the recommendations of JNC 8 which places CCB as a first-line therapy for hypertension. Amlodipine has a good efficacy and safety profile, a long half-life allows for administration once a day, as well as relatively minimal side effects.

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Table 4. Variations of Antihypertensive Drug Therapy at Bandar Lampung Private Hospital for the March-May 2024 Period

Variations of Antihypertensive Drug Therapy	Quantity (n)	Percentage (%)
2 Combination Therapy	52	52
Single Therapy	34	34
3 Combination Therapy	12	12
4 Combination Therapy	2	2
Total	100	100

Two-drug combination therapy dominated with 52 patients (52%), showing a tendency to use combination therapy in accordance with JNC guideline 8. The use of this combination indicates efforts to achieve optimal blood pressure targets, especially in patients with degree 2 hypertension or hypertension with complications.

Evaluation of the Rationality of the Use of Antihypertensive Drugs
Proper Dosage

Table 5. Proper Dosage Distribution

Medical Record Data	Standards of the Ministry of Health of the Republic of Indonesia 2019	Exact (%)	Incorrect (%)
Amlodipine 5mg	2.5-10mg/day	19.34	0
Amlodipine 10mg	2.5-10mg/day	13.81	0
Candesartan 8mg	8-32mg/day	14.36	0
Ramipril 5mg	2.5-20mg/day	13.26	0
Bisoprolol 2.5mg	2.5-10mg/day	9.39	1.1
Lisinopril 5mg	10-40mg/day	0	2.76
Adalat Oros 30mg	5-20mg/day	0	4.97
Other	-	40.14	0.16
Total		91	9

An evaluation of the accuracy of the dose showed that 165 patients (91%) received the correct dose, while 16 patients (9%) received the wrong dose. Dosing inaccuracies mainly occurred in Adalat Oros 30mg (4.97%) due to the dosage exceeding the daily recommendation, and Lisinopril 5mg (2.76%) due to doses below the recommended therapeutic range. These results show a high level of rationality in the dosage of antihypertensive drugs.

Exact Disease Indications

Table 6. Precise Distribution of Disease Indications

Medical Record Data	According to JNC Literature 8	Accuracy (%)
Hypertensive patients with complaints of dizziness, weakness, headache, shaking, chills	ACE inhibitors and ARBs are recommended for the initial therapy of hypertension by reducing the formation of angiotensin II. CCB is indicated for cardiovascular disorders with relaxation of the heart	100

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muscle. Beta blockers for hypertension and tachycardia by blocking beta receptors. Diuretics to reduce water retention.	
Total	**100**

All patients (100%) showed the accuracy of disease indications, indicating that the administration of antihypertensive drugs was in accordance with the patient's diagnosis and clinical condition. This reflects a good understanding of medical personnel about the indications for the use of antihypertensive drugs.

Right Drug Selection

Table 7. Proper Distribution of Drug Selection

Medical Record Data	Permenkes in 2022	Accuracy (%)
Single therapy (ACEI, CCB, ARB)	Grade 1 hypertension may be considered a single therapy for low-risk patients	100
Combination 2 therapy (ACEI/ARB + CCB/diuretic)	Patients with moderate-high risk of HT 1 and HT degree 2-3 can be given a combination of 2 drugs	100
3 combination therapy (ACEI/ARB + CCB + diuretics)	Next step of 3 drug combination	100
4 Combination Therapy	Combination of 3 drugs + spironolactone/other diuretics/alpha blockers/beta blockers	100
Total		**100**

The selection of drugs shows 100% accuracy, indicating that all therapies administered are in accordance with the hypertension management algorithm based on the degree of hypertension and the patient's cardiovascular risk. This reflects the implementation of good guidelines in clinical practice.

Accurate Diagnosis

Table 8. Precise Distribution of Diagnosis

Medical Record Data	According to JNC Literature 8	Accuracy (%)
Patients with indications of hypertension	Diagnosis of hypertension if systolic blood pressure is 140-159 mmHg and diastolic 90-99 mmHg	100
Total		**100**

The accuracy of the diagnosis reached 100%, indicating that all patients had been correctly diagnosed based on the blood pressure criteria set out in the JNC 8 guideline. This indicates an accurate and compliant diagnostic process.

The Right Way to Grant

Table 9. Distribution Is Right How to Provide

Medical Record Data	Delivery Route	Accuracy (%)
All antihypertensive drugs	Oral	100

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Total	**100**

All antihypertensive drugs are administered through the oral route (100%), which is the standard administration route for outpatient antihypertensive drugs. This shows accuracy in choosing the route of administration that is in accordance with the patient's condition and the type of drug.

Precise Interval Time of Delivery

Table 10. Precise Distribution of Dispensing Time Intervals

Types of Drugs	Timing of Delivery	Standards of the Ministry of Health of the Republic of Indonesia 2019	Exact (%)	Incorrect (%)
Amlodipine 5mg/10mg	1x a day	1x a day	33.15	0
Candesartan 8mg/16mg	1x a day	1x a day	18.78	0
Ramipril 5mg/10mg	1x a day	1x a day	18.78	0
Bisoprolol 2.5mg/5mg	1x a day	1x a day	14.37	0
Adalat Oros 30mg	1x a day	3-4x a day	0	4.97
Other	1x a day	1x a day	9.95	0
Total			**95.03**	**4.97**

The accuracy of the time interval of administration reached 95.03%, with inaccuracy only occurring in Adalat Oros 30mg (4.97%) which was given once a day when it should have been 3-4 times a day as recommended. Overall, these results show a good understanding of the frequency of antihypertensive medications.

The results of the study showed a high level of rationality for the use of antihypertensive drugs at the Bandar Lampung Private Hospital. The accuracy of diagnosis, disease indications, drug selection, and method of administration reaches 100%, reflecting the optimal implementation of guidelines in clinical practice. The accuracy of the dose reached 91% and the accuracy of the administration time interval reached 95.03%, indicating areas that still need improvement but are already in the good category.

The dominance of combination therapy (66%) is in accordance with the trend of modern hypertension treatment that prioritizes a combination approach to achieve optimal blood pressure targets. The use of amlodipine as the most common drug (33.15%) is consistent with the recommendations of international guidelines which place CCB as a first-line therapy with a good efficacy and safety profile.

The characteristics of patients dominated by women (58%) and the elderly group (48% >60 years) reflect the epidemiology of hypertension in Indonesia. The dominance of grade 1 hypertension (73%) indicates relatively good early detection, but also indicates the need for more effective primary prevention strategies.

Areas that require attention include optimizing the dosage of certain drugs such as Adalat Oros and Lisinopril, as well as adjusting the interval of Adalat Oros administration as recommended. Increasing the education of medical personnel about the optimal dosage and frequency of administering specific drugs can increase the rationality of drug use.

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This study has limitations in terms of generalizability because it was conducted in one private hospital. Multi-flashlight research with a larger sample is needed to get a more comprehensive picture of the use of antihypertensive drugs in Indonesia.

CONCLUSION

Based on the results of the evaluation study on the use of antihypertensive drugs in outpatients at the *Bandar Lampung Private Hospital* for the period March–May 2024, it can be concluded that the level of rationality in the use of antihypertensive drugs has reached a good standard. The evaluation showed an accuracy of diagnosis of 100%, correct disease indication of 100%, correct drug selection of 100%, correct method of administration of 100%, correct dosage of 91%, and correct time interval of administration of 95.03%. Patient characteristics were dominated by women (58%), the age group >60 years (48%), and *hypertension* of degree 1 (73%). Drug use patterns showed a preference for two-drug combination therapy (52%), with amlodipine 10 mg as the most commonly used drug (19.34%). The combinations of *ACEI + CCB* and *CCB + ARB* were the most preferred therapies (18% each). Areas that need improvement include dose optimization of certain drugs and adjustment of administration intervals, especially for *Adalat Oros* 30 mg, which showed inaccuracies in the frequency of administration. Overall, the implementation of the *JNC 8* guideline in the treatment of *hypertension* in this hospital has gone well, but continuous improvement is still needed to achieve optimal rationality in drug use. Recommendations for further research include the development of *multi-center* studies to improve the generalizability of results, evaluation of patient adherence to antihypertensive therapy, cost-effectiveness analysis of antihypertensive drug use, and studies on the use of antihypertensive drugs in patients with *comorbidities*. The results of this study are expected to serve as a reference for other hospitals in optimizing the use of antihypertensive drugs and improving the quality of clinical pharmacy services.

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