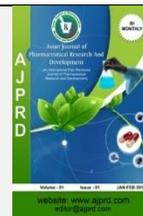


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Research Article

The Pattern of Hypertension Drug Utilization in Public Health Center in the Medan City

Sri Wahyuni, Khairunnisa K*, Urip Harahap

Department of Pharmacology, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, Indonesia

ABSTRACT

Background: Hypertension is a disease that can cause death as much as 12.8% worldwide. Hypertension is a silent killer that causes complications in Hypertension patients. Complications can be prevented by using anti-hypertension drugs. The aim of this study was to describe the pattern of drug utilization in several Public health centers in Medan.

Method: This non-experimental study involved 109 hypertension patients using cross-sectional methods. Samples were collected at several health centers in August and September 2020 using convenience sampling techniques.

Result: The results showed that the single drug type that was most widely used in this study was the Calcium Channel Blocker (CaCB) group (57.8%). The most widely used combination antihypertension drugs were Calcium Channel Blocker (CaCB) and Angiotensin 2 Receptor Blocker (ARB) (15.6%).

Conclusion: Based on the study results, it can be concluded that the pharmacologic management of antihypertension uses a single anti-hypertension drug (monotherapy) is more than the use of combination drugs (polytherapy).

Keywords: Hypertension, anti-hypertension medicine, usage pattern.

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*Address for Correspondence:

Khairunnisa K, Department of Pharmacology, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, Indonesia

INTRODUCTION

Hypertension is a disease that causes death as much as 12.8% worldwide. The number of hypertension patients according to World Health Organization (WHO) in the world in 2013 was 600 million people. WHO estimates that there will be an increase in cases of hypertension by around 80% by 2025.¹

Hypertension is a silent killer disease. Hypertension causes complications such as causing kidney disease, heart disease, stroke. Therefore, hypertension can cause patients to experience premature death.²

Hypertension complications can be prevented by non-pharmacological and pharmacological therapy. Non-pharmacological therapy involves making lifestyle changes such as losing weight, reducing stress, avoiding alcohol,

exercising, and getting enough rest. While pharmacological therapy is carried out using blood pressure-lowering drugs.³

Antihypertension drugs are classified into five categories, namely calcium channel blockers, diuretics, sympathetic inhibitors, direct arterioles vasodilators, and angiotensin antagonists.⁴ This study was conducted to determine the pattern of use of anti-hypertension drugs in several health centers in Medan.

MATERIALS AND METHODS:

Participants

This non-experimental research used a cross-sectional method that was conducted at several health centers in Medan. The number of patients included in this study was 109 patients using the convenience sampling technique.

The inclusion criteria for patients in this study were outpatients, aged ≥ 18 years, diagnosed with hypertension, and had used the drug for 2 months. While the exclusion criteria were pregnant or lactating women and patients undergoing hemodialysis.

Data on drug use in patients were analyzed by univariate analysis to describe descriptively the patterns of drug use in these patients.

Ethical consideration

This research was approved by the USU Faculty of Nursing Health Research Ethics Committee with number 2178 / VII / SP / 2020. All patients who participated in this study signed informed consent as evidence of willingness to become respondents.

RESULTS AND DISCUSSIONS

Hypertension is a chronic disease that requires pharmacological therapy to control blood pressure.

Hypertension management can be initiated by administering monotherapy drugs. Monotherapy drug administration aims to reduce systolic blood pressure by around 7-13 mmHg and reduce diastolic blood pressure by around 4-8 mmHg. Whereas the use of a combination of two antihypertension drugs aims to reduce systolic blood pressure > 20 mmHg or reduce diastolic blood pressure > 10 mmHg to achieve the targeted blood pressure.⁵The choice of antihypertension therapy must be made appropriately. If the use of therapy is carried out inappropriately, it can lead to therapy failure, complications, increased medical costs, and even death.⁶

In this study, data collection was carried out on the use of antihypertension drugs used by hypertension patients who went to Teladan and Amplas health centers in Medan. The use of drugs in hypertension patients is grouped into two, namely the use of monotherapy drugs (single) and polytherapy (two or more drugs) can be seen in Table 1.

Table: 1. Table number of drug use.

The number of drug use	Frequency (n=109)	Percentage (%)
Monotherapy	81	74,3
Polytherapy	28	25,4

In this study, it is known that the use of monotherapy drugs is more than the use of polytherapy, namely 81 people (74.3%). According to The Eighth Joint National Committee, non-black hypertension patients are recommended to use a single antihypertension drug class Calcium Channel Blocker (CaCB), Angiotensin 2 Receptor Blocker (ARB), Angiotensin Converting Enzym Inhibitor (ACEI) or thiazide

diuretic to control blood pressure.⁵In this study, the use of polytherapy drugs in this study was only 25.4%.

The pattern of use of antihypertension drugs by hypertension patients based on the class of drugs used can be seen in table 2.

Table: 2. Distribution table of antihypertensive drug use patterns

The number of drug use	Anti-hypertension Drug Class	Frequency (n=109)	Percentage (%)
monotherapy	CaCB	64	58,7
	ARB	14	12,8
	ACEI	2	1,8
	Beta Bloker	1	0,9
polytherapy	CaCB+ARB	17	15,6
	CaCB+Diuretik	2	1,8
	CaCB+ACEI	1	0,9
	CaCB+ Beta Bloker	1	0,9
	ARB+Diuretik	2	1,8
	ARB+ Beta Bloker	1	0,9
	CaCB+ARB+Beta Bloker	4	3,7

The type of monotherapy drug (single) that was most widely used in this study was the Calcium Channel Blocker (CaCB)

class of drugs totaling 64 people (58.7%). Weber et al., author of Clinical practice guidelines for the management of

hypertension in the community: a statement by the American Society of Hypertension and the International Society of Hypertension, recommending the use of monotherapy drugs with a simple regimen for hypertension patients.⁷ The goal is that patients can easily manage their time to take their medication and so they don't forget to take their medication. Because of, increasing age, the risk of developing hypertension is getting higher. In this study, the single most widely used type of monotherapy was amlodipine (CaCB). This is consistent with the recommendation of Weber *et al* because amlodipine is a drug with a once-daily regimen.⁷ The use of valsartan/irbesartan from the ARB class is the most widely used monotherapy drug after amlodipine. This is also following the recommendations of Weber *et al* because this drug also has a simple regimen of use, which is once a day.⁷ According to JNC 8, the CaCB class of drugs is an antihypertension drug used for coronary heart disease and diabetes mellitus patients. These drugs act by inhibiting the influx of calcium into arterial smooth muscle, causing decreased peripheral resistance and causing vasodilation.⁵

Research by Nasution A. *et al.* at four health centers in Medan showed that the most widely used drug in 107 patients was Captopril. Another study conducted by Astana Putri *et al.* at Sanglah Hospital showed that Captopril was also the single largest therapy used in 56 research subjects.⁹ The purpose of using Captopril according to JNC 8 is to avoid metabolic side effects in long-term use. Besides, the ACEI class of drugs also has a protective effect on the kidneys. But unfortunately, the most common side effect of captopril is causing a dry cough.⁵

REFERENCE

1. WHO. A global brief on hypertension. Silent killer, global public health crisis. Report of a WHO Consultation. 2013. Geneva: WHO.
2. Whelton, Carey RM., Aronow WS. Guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: executive summary: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Hypertension*. 2017; 71:136–139.
3. Chobanian, Bakris, GL., Black, HR., Cushman, WC., Green, LA., Izzo, JL Jr., *et al.* Seventh report of the Joint National Committee on
7. Weber MA, Schiffrin EL, White WB, Mann S, Lindholm LH, Kenerson JG, *et al.* Clinical practice guidelines for the management of hypertension in the community: a statement by the American Society of Hypertension and the International Society of Hypertension. *J Clin Hypertens (Greenwich)*. 2014; 16(1):14-26.
8. Nasution A, Khairunnisa, And Tanjung H R. Drug Therapy Problems In Management Of Hypertension Outpatients Admitted To Four Indonesian Primary Health Centers. *Asian Journal of Pharmaceutical and Clinical Research*. 2016; Vol. 9, no. 1, pp. 87-90,
5. The most common use of multiple drugs (polytherapy) in this study was a combination of Calcium Channel Blocker (CaCB) and Angiotensin 2 Receptor Blocker (ARB) at 15.6%. The choice of this combination is following the recommendations of the JNC 8 guideline because the combination is made from two different drug classes.⁵ This recommendation is also consistent with the recommendation of Weber *et al.* for the administration of a simple drug regimen to patients.⁷ This combination of Calcium Channel Blocker (CaCB) and Angiotensin 2 Receptor Blocker (ARB) is a once-daily regimen. This reduces the risk of patients forgetting to take antihypertension drugs.
6. The purpose of the combination of CaCB and ARB is to increase the effectiveness of the drug. According to research by Wanet *al.*, a combination of CaCB and ARB gave to patients can reduce the risk of stroke, oxidative stress, arterial rigidity, and vascular aging.¹⁰

CONCLUSION

Based on the study results, it can be concluded that the pharmacologic management of anti-hypertension uses a single anti-hypertension drug (monotherapy) is more than the use of combination drugs (polytherapy).

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CONFLICT OF INTEREST

All author have no conflict of interest to declare.

Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Hypertension*. 2003;42(6):206–211.

4. Muttaqin A. *Asuhan Keperawatan Klien Dengan Gangguan System Kardiovaskular dan Hematologi*. Jakarta: Salemba Medika. 2009; 50-55.
5. James PA, Oparil S, Carter BL, *et al.* Evidence-based guideline for the management of high blood pressure in adults. Report from the panel members appointed to the eighth Joint National Committee (JNC 8) *JAMA* 2013. 2014; 311(5): 507-20
6. Katzung BG. *Basic and Clinical Pharmacology*. Edisi ke 12. Jakarta. Salemba Medika. 2014.
9. Astana P, Luh S, Satriyasa, Bagus K. Gambaran Pola Penggunaan Obat Antihipertensi Pada Pasien Hipertensi Di Instalasi Rawat Inap Rsup Sanglah Denpasar Tahun 2016. *E-Jurnal Medika Udayana*. 2019; v. 8, n. 6
10. Wan X, Mab P, and Zhang AA. Promising Choice in Hypertension Treatment: Fixed-Dose Combinations. *Asian Journal of Pharmaceutil sciences*. 2014; 9:1-7.