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Evaluation of Antihypertensive Treatment Inoutpatients at Batang Beruh Helath Centre Sidikalang

Indra Ginting[1] , Asriwati Amirah[2], Mayang Sari[1], Vivi Febriani Berutu[3]

[1]*Lecturer of Pharmacy, Faculty of Pharmacy and Health, Helvetia Institute of Health, Indonesia*
[2]*Lecturer at the Faculty of Public Health, Helvetia Institute of Health, Indonesia*
[3]*Pharmacy Student, Faculty of Pharmacy and Health, Helvetia Health Institute, Indonesia*

**Corresponding Author: Indra Ginting*

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Abstract

Hypertension is a cardiovascular disease with a high prevalence and risk of death in developed and developing countries with blood pressure reach ≥140/90 mmHg. Hypertension is the 3rd cause of death after stroke and tuberculosis, reached 6.7% of the population of deaths at all ages in Indonesia. Results of Basic Health Research (Riskesdas) Balitbangkes showed that the national prevalence of hypertension reached 31.7%. The National Formulary (Fornas) is a list of drugs compiled based on the latest scientific evidence by the National Committee for the Compilation of the Fornas. Evaluation of the appropriateness of antihypertensive treatments in outpatients at Batang Beruh Health Centre Sidikalang seen from the National Formulary was the aim of this study. This research is non-experimental, quantitative descriptive was conducted in May - July 2019 at Batang Beruh Health Centre Jl. Pahlawan Sidikalang, Sidikalang District of Dairi, North Sumatra. The population was 231 hypertensive patients using antihypertensive drugs, with sampling using the Slovin formula, amounted to 70 respondents. Based on the research conducted, in the Calcium Antagonist group, the names of the antihypertensive drugs used are Amlodipine and Nifedipine. Meanwhile, in the ACEIs group, the drug used is Captopril. Whereas in the Angiotensin II receptor antagonist group, the drugs used are Micardis, Valsartan and Candesartan. Whereas in the Diuretic group, the antibiotic used is Furosemide.

Introduction

According to the Law of the Republic of Indonesia Number 36 of 2009 concerning health, health is a human right and one of the elements of welfare that must be realized in accordance with the ideals of the Indonesian people as referred to in Pancasila and the 1945 Constitution of the Republic of Indonesia. Health is a healthy condition, both physical, mental, spiritual and social which enable everyone to live productively socially and economically (Kementrian Kesehatan Republik Indonesia, 2009)

Hypertension is a cardiovascular disease with a high prevalence and risk of death in developed and developing countries. It is said to have hypertension if the blood pressure reaches ≥140 / 90 mmHg (Armilawaty, 2007). One of the newest guidelines that can be used as a reference in Indonesia is the 2014 guideline for the JNC VIII Joint National Committee.

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Recommendations for JNC VIII are made based on evidence from various randomized controlled studies. Two new and important points in the JNC VIII guideline are target changes.

Systolic blood pressure in patients aged 60 years and over becomes> 150 mmHg and the target blood pressure in adult patients with diabetes or chronic kidney disease changes to> 140/90 mmHg (Kepmenkes, 2016). Hypertension is the 3rd cause of death after stroke and tuberculosis, reaching 6.7% of the population of deaths at all ages in Indonesia. Results of Basic Health Research (Riskesdas) Balitbangkes showed that the national prevalence of hypertension reached 31.7% (James et al., 2014).

WHO data shows that worldwide, approximately 972 million people or 26.4% of people on earth have hypertension. This figure is likely to increase to 29.2% in 2025. Of the 972 people with hypertension, 333 million are in developed countries and the remaining 639 million are in developing countries including Indonesia. WHO establishes hypertension as the third risk factor for the etiology of death in the world. Hypertension causes 62% of stroke cases, 49% of heart attacks. 7 million premature deaths were caused by hypertension. The 2012 World Health Statistics reported about 51% of deaths from stroke and 45% of coronary heart disease. And 7.5 million deaths worldwide (Health, 2011).

The National Formulary (Fornas) is a list of drugs compiled based on the latest scientific evidence by the National Committee for the Compilation of the Fornas. Medicines that are included in the Fornas list of medicines are the most efficacious, safe and affordable drugs that are provided and used as a reference for writing prescriptions in the National Health Insurance (JKN) system. In addition, Fornas is part of the National Social Security System (SJSN). Therefore, it is necessary to compile a list of drugs used as a national reference for drug use in the SJSN health services to ensure accessibility and accessibility of drugs nationally in the National Formulary Based on the description above, the authors are interested in conducting research evaluating the use of antihypertensive drugs in outpatients at the Batang Beruh Sidikalang Public Health Center for the period January - June 2019.

Puskesmas is a health service facility that organizes public health efforts and first-level individual health efforts, by prioritizing promotive and reventive efforts, to achieve the highest public health status in its working area.

The establishment of inpatient health centers is based on the following policies (1) Puskesmas with inpatient rooms as intermediate referral centers in the referral system, functions to support efforts to reduce maternal and infant mortality, emergencies and limit the possibility of disability. (2) Implementing standard nursing practice on duty in the inpatient room of the health center in accordance with the applied procedure. (3) Involving patients and their families optimally in improving the implementation of nursing care.

According to WHO, hypertension is an increase in systolic pressure greater than or equal to 160 mmHg and / or diastolic pressure equal to or greater than 95 mmHg (Nasrin, 2003). Hypertension can be defined as a persistent blood pressure where the systolic pressure is above 140 mmHg and the diastolic pressure is above 90 mmHg (Tom, 1986). Hypertension is defined by the Joint National Committee on Detection (JIVC) as a pressure higher than 140/90 mmHg and is classified according to its degree of severity, ranging from normal high blood pressure (BP) to malignant hypertension.

Hypertension is high blood pressure or a medical term explaining hypertension is a condition where there is a disturbance in the blood pressure regulation mechanism (Mansjoer, 2000). Hypertension is categorized as mild if the diastolic pressure is between 95 - 104 mmHg, moderate hypertension if the diastolic pressure is between 105 and 114 mmHg, and severe

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hypertension if the diastolic pressure is 115 mmHg or more. This division is based on the increase in diastolic pressure because it is considered more serious than the increase in systolic. Hypertension is a persistent state of systolic pressure greater than 140 mmHg or diastolic pressure higher than 90 mmHg. This diagnosis can be confirmed by measuring the average blood pressure at 2 separate times (Sudoyo et al., 2006).

Based on the Regulation of the Minister of Health of the Republic of Indonesia No. 35 of 2014 (Ministry of Health of the Republic of Indonesia, 2014) concerning Standard Pharmaceutical Services in Pharmacies, a prescription is a written request from a Doctor or Dentist, to a pharmacist, both in paper and electronic form, to provide and deliver drugs to patients according to the appropriate regulations.

The National Formulary (Fornas) is a list of drugs compiled based on the latest scientific evidence by the National Committee for the Compilation of the Fornas. Medicines that are included in the Fornas list of medicines are the most efficacious, safe and affordable drugs that are provided and used as a reference for writing prescriptions in the National Health Insurance (JKN) system (Yuniarti et al., 2019; Yeni & Nadjib). In addition, Fornas is part of the National Social Security System (SJSN).

Therefore, it is necessary to compile a list of drugs to be used as a national reference for drug use in the SJSN health services to ensure accessibility and accessibility of drugs nationally in the National Formulary.

Drug selection criteria, namely the drug must have the best safety efficacy based on current and valid scientific evidence, have the most beneficial benefit-risk ratio (benfit-risk ratio), have a distribution license and indications approved by the POM, have a benefit-cost ratio (benefit-cost ratio) the highest, in this criterion does not include traditional medicines and food supplements.

Methods

This type of research is quantitative descriptive. The research carried out included non-experimental observational research, the data were taken retrospectively and the data were analyzed using descriptive methods. The research was conducted during May-July 2019. The research was conducted at the Batang Beruh Sidikalang Public Health Center Jl. Pahlawan Sidikalang, Kec. Sidikalang District of Dairi, North Sumatra. The tool used is a data collection sheet with a reference book consisting of the National Formulary. The research material is medical record data of hypertensive patients on outpatients at the Batang Beruh Sidikalang Community Health Center for the period January - June 2019. The medical record data contains patient descriptions (at least includes name, age), main complaints (complaints often felt by patients), disease diagnosis (Patients diagnosed with hypertension, data on the use of hypertension drugs. The study population was all hypertensive patients who were outpatients at the Batang Beruh Sidikalang Public Health Center for the period January - June 2019. The sample in this study were all hypertensive patients who went to the Batang Beruh Sidikalang Public Health Center. Purposive sampling, namely determining the sample based on the following inclusion criteria: (a) The patient was diagnosed with hypertension (b) Age 18 - 50 years. (c) Go to Puskesmas Batang Beruh Sidikalang (d) The patient received antihypertensive drugs.

The exclusion criteria were: (a) Patient diagnosed other than hypertension (b) Age beyond 18-50 years. (c) The treatment was not at the Batang Beruh Sidikalang Community Health Center (d) Patients who are not receiving antihypertensive drugs.

The formula for calculating the sample size is based on the Slovin formula, so the sample taken is 70 people by random method (random sampling).

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The research results obtained were recorded, grouped and analyzed using non-analytic descriptive analysis methods by comparing: (a) Patient characteristics, namely the percentage of gender and age distribution, diagnosis, and discharge status of patients diagnosed with hypertension. (b) Drug characteristics, namely the percentage of the distribution of the types of drugs used based on the amount of drugs given to patients. (c) Percentage of accuracy in using antihypertensives in terms of the right amount of drug, suitability of dosage.

Result and Discussion

Puskesmas Batang Beruh Sidikalang, having its address at Jl. Subulussalam - Sidikalang No.52, Batang Beruh, Sidikalang, Dairi Regency, North Sumatra 22217. With a total sample of 71 patients, during January-June 2019.

Table 1. Antihypertensives used in the Batang Beruh Sidikalang Community Health Center Based on Group

No	Antihypertensive group	Antihypertensive Drug Name	Dosage Form
1	Calcium Antagonists	Amlodipin	Tablet
		Nifedipin	
2	ACE Inhibitor	Captopril	Tablet
3	Antagonis Reseptor Angiotensin II	Micardis	Tablet
		Valsartan	Tablet
		Candesartan	Tablet
4	Diuretic	Furosemid	Tablet
5	Beta Blocker	Bisoprolol	Tablet

Based on table 4.1, there are 5 groups of antihypertensives used at the Batang Beruh Sidikalang Health Center. The 5 groups are calcium antagonists, ACEIs, Angiotensin II receptor antagonists, diuretics and beta blockers. In the Calcium Antagonist group, the names of the antihypertensive drugs used are: Amlodipine and Nifedipine. Meanwhile, in the ACEIs group, the drug used is Captopril. Whereas in the Angiotensin II receptor antagonist group, the drugs used are Micardis, Valsartan and Candesartan. Whereas in the Diuretic group, the antibiotic used is Furosemide. Whereas in the Beta Blocker group, Bisoprolol is used.

Table 2. Antihypertensives used in the Batang Beruh Sidikalang Community Health Center Based on Amount

Antibiotic Name	Number of Patient	Percentage
Amlodipine	66	63%
Nifedipin	1	1%
Captopril	1	1%
Micardis	3	3%
Valsartan	13	12%
Candesartan	14	13%
Furosemide	2	2%
Bisoprolol	6	5%

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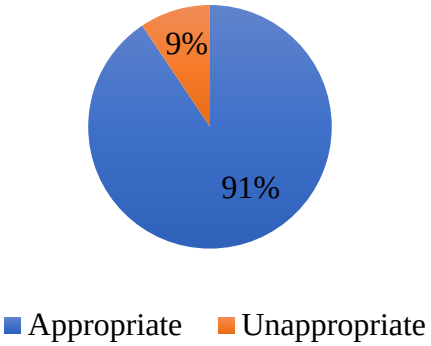

Figure 1. The suitability of the Antihypertensives used at the Batang Beruh Sidikalang Community Health Center

Based on the National Formulary Used at the Batang Beruh Sidikalang Health CenterBased on the data that has been obtained, it can be concluded that, antihypertensive prescribing at the Batang Beruh Health Center in Sidikalang has fulfilled the Fornas 91%.

There are 4 groups of antihypertensives used at the Batang Beruh Sidikalang Health Center. The 5 groups are calcium antagonists, ACEIs, Angiotensin II receptor antagonists, diuretics and beta blockers. In the Calcium Antagonist group, the names of the antihypertensive drugs used are: Amlodipine and Nifedipine. Meanwhile, in the ACEIs group, the drug used is Captopril. Whereas in the Angiotensin II receptor antagonist group, the drugs used are Micardis, Valsartan and Candesartan. Whereas in the diuretic group, the antihypertensive used is Furosemide. Whereas in the Beta Blocker group, Bisoprolol is used.

The most antihypertensive used was Amlodipine, with 66 patients. Amlodipine is a phase selective dihydropyridin derivative, and an agent that blocks calcium channels. Amlodipine is used to treat hypertension. Amlodipine can be given alone or in combination with other antihypertensive drugs. Amlodipine has high bioavailability, wide distribution volume, and long elimination half-life. Amlodipine concentrations in plasma decrease with a half-life of 35 hours. Amlodipine lowers blood pressure by relaxing arterial smooth muscle, which decreases total peripheral resistance and thereby decreases blood pressure. The process of contractility of cardiac muscle and vascular smooth muscle depends on the movement of extracellular calcium ions into cells via specific ion channels. Amlodipine inhibits calcium ions from entering across cell membranes selectively, with a greater effect on the fine blood vessels of muscle cells than on heart muscle cells. Amlodipine is also a very useful drug to treat hypertension emergency because the initial dose, which is 10 mg, can lower blood pressure within 10 minutes (Armilawaty, 2007).

The second is Candesartan, a total of 14 patients. They are similar in nature to ACE inhibitors, but these drugs do not inhibit the breakdown of bradykinin and other kinins, so they do not cause the persistent dry cough that usually interferes with therapy with ACE inhibitors. Therefore, this class of drugs is a useful alternative for patients who have to stop ACE inhibitors due to persistent cough (Armilawaty, 2007). The third is Valsartan, with 4 patients.

While Captopril was 1 patient and Micardis was 3 patients. Captopril prevents the body from producing angiotensin II (a hormone that makes blood vessels narrow) so that the blood vessels will keep on dilating. Blood will flow more easily in the blood vessels and lower overall blood pressure.

Bisoprolol in 6 patients. This type of hypertension medication slows the heart rate. This drug

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also keeps the heart from pumping blood too hard. This makes the blood pass through the blood vessels with low force so that the pressure inside the blood vessels decreases.

And the last one is Nifedipin 1 patient, and Furosemide as much as 2 patients. Diuretic drugs help the kidneys remove salt and water from the body. One result is that you have less volume of blood flowing in the veins. The low volume of blood flowing in the blood vessels causes a drop in blood pressure. Diuretic drugs, often referred to as "water pills," are usually the first type of hypertension medication a doctor will try.

Based on the data that has been obtained, it can be concluded that, antihypertensive prescribing at the Batang Beruh Health Center in Sidikalang has fulfilled the Fornas 91%. This is because in the data that has been summarized, there are drugs prescribed that are not in accordance with Fornas. Patients with the MR code 225 in January 2019 were prescribed Bisoprolol with a signa 2x1. Similar to patients with MR 149 in January 2019 were prescribed Bisoprolol with a signa 2x1. The same thing with patients with MR 1112 in April 2019 was prescribed Bisoprolol with a signa 2x1. Not in accordance with the restrictions on Fornas, namely, the number of 30 tablets per month.

In the data there is also a discrepancy in prescription according to Fornas restrictions, Candesartan prescribing with signa 2x1 in patients with MR code 2296 in January, MR 233 & 74 in March. And the last is Amlodipine and Valsartan, which were prescribed not according to Fornas with a signa 2x1. There were patients with MR codes 2296 and 532 for Amlodipine and MR 461 in February for Valsartan. Based on the interview with the doctor, this could happen, because the doctor's reference for prescribing was not only based on Fornas, but on the patient's clinical condition. Like Valsartan, the 2x1 prescribing was for hypertensive patients with concomitant heart failure. Meanwhile, the use of Candesartan, Amlodipine and Bisoprolol is 2x1 due to a doctor's mistake that is not in accordance with the Fornas reference for prescribing. It is necessary to give a warning to the doctor concerned who prescribed the drug, because it will result in clinical changes to the patient. The number of patients with male gender was 77 patients. Meanwhile, 18 female patients. The number of samples according to the inclusion observed the number of antibiotics used were 95 patients.

Conclusion

The prescription of antihypertensives at the Batang Beruh Health Center in Sidikalang fulfilled the National Fornas 91%. The most widely prescribed antihypertensive was Amlodipine, totaling 66 patients. Meanwhile, the use of Candesartan, Amlodipine and Bisoprolol is 2x1 because of the doctor's mistake which is not in accordance with the Fornas reference for prescribing.

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