Analysis of Antihypertensive Drug Prescription Patterns in Outpatients at the DTP Cihaurbeuti Health Center Health Service Unit

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ABSTRACT

Hypertension is a condition in which a person experiences an increase in blood pressure above normal, specifically systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg. Hypertension is a "silent killer," known as a prevalent cardiovascular disease. Hypertension is one of the main factors causing the number one death in the world. The aim of this study was to analyze the pattern of prescribing antihypertensive drugs in UPTD Health of DTP Cihaurbeuti Health Center in the period January-March 2020. The aim of this study was to analyze the pattern of prescribing antihypertensive drugs in UPTD Health of DTP Cihaurbeuti Health Center in the period January-March 2020. With the preparation stage method, study stage, data processing, and analysis.

Based on the results obtained in the study, namely the Prescription of antihypertensive drugs at the UPTD DTP Cihaurbeuti Health Center for the period January-March 2020, most of the patients were female (78.37%), aged 56-65 years (45.51%), and suffered from grade 2 hypertension (52.24%). ACEI class drugs (captopril) as much as 1.61%, CCB class (amlodipine) as much as 95.97% and diuretic class (furosemide) as much as 0.85%. Based on the drug class criteria of 100%. Drug type criteria of 100%.

Keywords : Hypertension, Antihypertensive drugs, JNC VII

INTRODUCTION

Hypertension is a condition in which a person experiences an increase in blood pressure above normal, specifically systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg. Hypertension is a "silent killer," known as a prevalent cardiovascular disease. Hypertension is one of the main factors causing the number one death in the world.(Khairiyah et al., 2023)

According to World Health Organization (WHO) data in 2015, it shows that around 1.13 billion people in the world suffer from hypertension, meaning that 1 in 3 people in the world are diagnosed with hypertension. Only 36.8% of them take medication, and as many as 9.4 million people die from hypertension. There are 45% of deaths from heart disease and 51% of deaths from stroke caused by hypertension. In addition to globally, hypertension is also one of the most common non-communicable diseases suffered by Indonesian people (57.6%). This is proven by the number of hypertension visits at first-level health facilities, which continues to increase every year.(Trirahmi Hardianti et al., 2022)

Hypertension treatment aims to reduce mortality and morbidity associated with target organ damage, such as heart failure, coronary heart disease, or chronic kidney disease. Pharmacological therapy can be in the form of a single antihypertensive drug or a combination. Combination antihypertensive drugs are needed if a single antihypertensive has not been able to control the desired blood pressure target. Commonly known antihypertensive drugs are diuretics, ACE inhibitors, Angiotensin Receptor Blockers, Calcium Channel Blockers, and Beta Blockers.(Khairiyah et al., 2023). Drug interactions occur through pharmacokinetic mechanisms (which affect drug delivery to the site of action) and pharmacodynamics (which can alter drug response).(Oktianti et al., 2023)

The aim of this study was to analyze the pattern of prescribing antihypertensive drugs in UPTD Health of DTP Cihaurbeuti Health Center in the period January-March 2020. based on the main therapeutic standards according to The Seventh Report of The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7). (Untari et al., 2018).According to JNC VII, hypertension or high blood pressure is a condition when diastolic blood pressure is >90 mmHg and systolic blood pressure is ≥140 mmHg or more (≥140/90 mmHg)

*7+.a.Classification of Hypertension.(Megasari, 2019)

1) **Hypertension based on high blood pressure**

Table 1. Blood pressure classification for adults aged ≥18 years according to JNC VII

Blood pressure classification	Systolic BP (mmHg)	Diastolic BP (mmHg)
Normal	<120	<80
Prehypertension	120 -139	80 - 89
Hypertension grade 1	140 - 159	90 - 99
Hypertension grade 2	≥160	≥100

TOOLS AND MATERIALS

1. Population

In this study, the population used was all medical records of outpatients at the UPTD DTP Cihaurbeuti Health Center in the period January-March 2020.

2. Sample

Sampling was carried out using the *purposive sampling technique* , namely determining the sample based on inclusion criteria.Criteria inclusion in study This is:

a. Record medical patient Which diagnosed main hypertension.

b. Record medical diagnosed patient hypertension aged 18-65 years.

c. Record medical patient Which diagnosed main hypertension Which complete and readable.

Criteria exclusion in study This is:

a. Record medical patient with diagnosis own complication disease .

b. Medical records of patients diagnosed with hypertension aged ≤ 18 years and ≥ 65 year.

c. Record medical patient Which No complete And No readable.

METHODS

1. Stage Preparation

Before conducting research, research preparations must first be carried out in the form of Preparation of a permit letter from Muhammadiyah Ciamis Health College regarding conducting research addressed to Bakesbangpol Ciamis. Bakesbangpol   will   make   a recommendation letter   for   the   implementation   of   data   collection/research/survey

addressed to the Ciamis Health Service. Service Health Ciamis emit letter permission taking data For Health Service Unit of DTP Cihaurbeuti Health Center. Besides That Also done search literature related study Which will done.

2. Stage Study

Election population record medical patient take care road at UPTD Health of DTP Cihaurbeuti Health Center during the period of January-March 2020. Election sample record medical patient hypertension Which fulfil criteria inclusion in this study. Collecting data in the form of blood pressure data, age , gender, type of medication used, dosage of medication given and rules for using the medication which are then written on the observation sheet. All data is processed, analyzed, and adjusted to rational standards of treatment. JNC VII Which covering group drug, type drug, therapy treatment, dosage and frequency of treatment.

3. Determine results, discussion And conclusion study.

Processing And Analysis Data

To determine the number and percentage (%) of compliance with the antihypertensive drug prescription pattern at the UPTD DTP Cihaurbeuti Health Center in the period January-March 2020. Which fulfil indicator group drug, type drug, therapy treatment, dose and frequency of treatment with JNC VII standards, the steps taken are:

Collecting and grouping medical records of patients who have a diagnosis of hypertension and those who do not have a diagnosis of hypertension, sorting medical records that are included in the inclusion criteria in this study, gathering data Which required from record medical And recipe covering patient age , gender, blood pressure, type of medication used, dose of medication given and rules for using the medication which are then written on the observation sheet, grouping the characteristics of research subjects includes age, gender and blood pressure, processing and analyze distribution use drug antihypertensive, processing and analyze distribution type regimen use drug antihypertensive, analyzing conformity prescription drug antihypertensive based on criteria for drug groups and types according to JNC VII standards, analyzing conformity prescription drug antihypertensive based on therapeutic treatment criteria according to JNC VII standards, analyzing conformity prescription drug antihypertensive based on drug dosage criteria according to JNC VII standards, analyzing conformity prescription drug antihypertensive based on drug use frequency

criteria according to JNC VII standards,presenting data in tabular form and calculating the number of drug prescripotions .

RESULTS

This prescription analysis is an effort made with the aim of analyzing the use of drugs given to patients to determine whether they are in accordance with their efficacy and safety based on the patient's clinical condition.

Use drug can stated rational if patient accept drug appropriate with his needs, For period time Which adequate And with the price that affordable . As for study about analysis pattern prescription drug This was conducted on outpatients with hypertension at the UPTD Kesehatan DTP Cihaurbeuti Health Center in the period January-March 2020.

A.   Respondent Characteristics

The purpose of collecting data on respondent characteristics is to determine the identity of respondents and to determine the profile of outpatient hypertension patients at the UPTD Kesehatan DTP Cihaurbeuti Health Center in the period January-March 2020 in general.

Table 2. Use of antihypertensives in outpatients at the DTP Cihaurbeuti Health Center Health Service Unit

No.	Prescription	Amount recipe	Percentage
1	Total recipe	5.277	100%
2	Recipe patient hypertension	762	14.44%
	inclusion	490	9.29%
	exclusion	272	5.15%
3	Recipe patient No hypertension	4.515	85.56%

Table 3. Description characteristics of research subjects

No.	Characteristics	Amount	Percentage(%)
	Type sex		
1	Man	106	21.63%
	Woman	384	78.37%
	Age (year)	0	0%
	18- 25	22	4.49%
2	26- 35	89	18.16%
	36- 45	156	31.84%
	46- 55	223	45.51%
	56- 65		
	Pressure blood	234	47.76%
3	Hypertension degrees 1	256	52.24%
	Hypertension degrees 2		

B. Use of Antihypertensives

From various type group drug antihypertensive, only 3 group Which available and prescribed for outpatients at the UPTD Health Center DTP Cihaurbeuti that is ACEI, CCB And diuretic. Therapy Which used Also varies, some monotherapy, there is also a combination of 2 antihypertensive drugs where the variation of this treatment is individual based on the patient's clinical condition due to a drug sometimes give effect Which not the same on One individual with other individuals. The following is a description of the distribution of antihypertensive drugs used at the UPTD Kesehatan Puskesmas DTP Cihaurbeuti for the period January-March 2020.

Table 4. Distribution of antihypertensive drug use in hypertension patients at the UPTD DTP Cihaurbeuti Health Center in the period January-March 2020

No	Group Antihypertensive	Type Drug	Amount Drug What is Prescribed	Percentage (%)
1	Diuretic	Furosemide	12	(2.42 %)
2	ACEI	Captopril	8	(1.61 %)
3	CCB	Amlodipine	476	(95 ,97 %)
	amount		496	(100%)

Table 5. Distribution of types of antihypertensive drug regimens in hypertensive patients

No	Type of Regimen	Frequency	Percentage (%)
1	Single	484	98.78 %
2	Combination	6	1.22 %

C. Analysis Compliance Prescription

   1. Compliance group And type drug

   There is various type type And group drug Which prescribed on Hypertensive patients undergoing outpatient treatment at the DTP Cihaurbeuti Health Center Health Service in the period January-March 2020.

Table 6. The suitability of antihypertensive drug prescriptions at the UPTD DTP Cihaurbeuti Health Center in the period January-March 2020 based on drug class criteria.

Diagnosis	Recipe in UPTD DTP Cihaurbeuti Health Center	Guidelines according to JNC VII	Compliance Percentage (%)
Hypertension degrees 1	ACEI	ACEI	100%
Hypertension degrees 2	CCB	CCB	
	Strong diuretic	Strong diuretic	

Table 7. Conformity of antihypertensive drug prescription at UPTD DTP Cihaurbeuti Health Center on period January-March 2020 based on criteria type of drug.

Diagnosis	Recipe in UPTD DTP Cihaurbeuti Health Center	Guidelines according to JNC VII	Compliance Percentage (%)
Hypertension degrees 1	Captopril	Captopril	
Hypertension degrees 2	Amlodipine	Amlodipine	(100%)
	Furosemide	Furosemide	

   2. Compliance therapeutic treatment

   Accuracy in selecting treatment therapy medicine is a match administration of antihypertensive drugs can be weighed based on the appropriateness of the class of therapy line, type and combination of drugs for hypertensive patients.

Table 8. The suitability of antihypertensive drug prescriptions at the UPTD DTP Cihaurbeuti Health Center in the period January-March 2020 based on treatment therapy criteria

Diagnosis	Prescription at UPTD Puskesmas DTP Cihaurbeuti	Guidelines According to JNC 7	Compliance Percentage (%)
Hypertension degrees 1 (n= 234)	Single Furosemide Captopril Amlodipine	Single between: Furosemide/Amlodipine/Captopril	234 (47.76%)
Hypertension degrees 2 (n=256)	Furosemide Captopril Single Amlodipine	Single	250 (51.02 %)
	Combination Furosemide + Amlodipine Captopril + Amlidipine	Combination Furosemide + Amlodipine Captopril + Amlidipine	6 (1.22 %)

   3. Compliance dose drug

   Dosage accuracy is the appropriateness of the dose of antihypertensive drugs with the

therapeutic dose range, viewed from the daily dose usage based on the condition. special patient.

Table 9. The suitability of antihypertensive drug prescriptions at the UPTD DTP Cihaurbeuti Health Center in the period January-March 2020 based on drug dosage criteria

Recipe in UPTD DTP Cihaurbeuti Health Center	Guidelines According to JNC 7	Compliance Percentage (%)
Furosemide 20-40 mg/day	Furosemide 20-80 mg/day	
Captopril 25-50 mg/day	Captopril 25-100 mg/day	490
Amlodipine 5-10 mg/day	Amlodipine 2.5-10 mg/day	(100%)
Total		(100%)

Table 10. The suitability of antihypertensive drug prescriptions at the UPTD DTP Cihaurbeuti Health Center in the period January-March 2020 based on the criteria for frequency of drug use.

Prescription at UPTD Puskesmas DTP Cihaurbeuti	Guidelines According to JNC	Percentage (%)
Furosemide 1 x 1	Furosemide 2 x 1	(97.55%)
Captopril 2 x 1	Captopril 2 x 1	
Amlodipine 1 x 1	Amlodipine 1 x 1	(2.45 %)
Total		(100%)

Table 11. Analysis of the appropriateness of antihypertensive prescriptions in hypertensive patients at UPTD Health Center DTP Cihaurbeuti on period January-March 2020 with JNC VII standards.

Criteria prescription suitability	Amount use drug	
	In accordance	No in accordance
Group drug	490	--
	(100%)	
Type drug	490	--
	(100%)	
Therapy treatment	240	250
	(48.98 %)	(51.02 %)
Dose	490	-
	(100%)	
Frequency	478	12
	(97.55 %)	(2.45 %)

Table 12. Conformity of antihypertensive drug prescriptions at the UPTD DTP Cihaurbeuti Health Center in the period January-March 2020 which met the indicators group, type drug, therapy treatment, dose And frequency

Compliance prescription drug antihypertensive	Amount	Percentage (%)
Prescription in accordance standard	235	(47.96 %)
Prescription not up to standard	255	(52.04 %)
H2 Which get therapy single	250	
Get therapy combination furosemide which is not in accordance with the drug dose	5	
Total	490	(100%)

DISCUSSION

Based on Respondent Characteristics Selected data on prescriptions for hypertension for the period January-March 2020 and fulfil criteria inclusion as object study is as much as 490 prescription sheets and medical records, while 272 prescription sheets and medical records were included in criteria exclusion. As for characteristics subject from study This can seen in Table 3.4. The results of the study showed that hypertension at the UPTD Health Center DTP Cihaurbeuti was more commonly suffered by 78.37% of women; age 56-65 year (45.51%); among them 47.76% suffer hypertension degrees 1; And 52.24 % suffer hypertension degrees 2.

Based on the data, Table 3.5, the most frequently prescribed antihypertensive drug is amlodipine (95.97%). Amlodipine is included in the CCB group, where this group is the first line in the treatment of hypertension in the elderly. This occurs because the elderly experience systolic hypertension more often than diastolic hypertension. Systolic hypertension increases the risk of damage to other organs in the elderly compared to diastolic hypertension. These data indicate that the CCB group is more capable of reducing systolic hypertension in the elderly, so that it can reduce the risk of further organ damage. These results are based on the number of respondents in this study who were >56 years old, so the use of the CCB group is the most widely used monotherapy. This condition will cause a decrease in blood pressure and reduce the burden on the heart, and thus improve heart function (Hilal & Brunton, 2013).

Table 3.6 explains the incidence of hypertension based on the type of regimen at the UPTD Kesehatan Puskesmas DTP Cihaurbeuti for the period January-March 2020. As many as 98.78% of hypertensive respondents received single treatment and 1.22% received combination treatment (Table 3.6). Based on JNC 7 guidelines, the use of single antihypertensive drugs is generally given to patients with grade 1 hypertension.

Tables 3.7 and 3.8 of the data explain that the prescription of antihypertensive drugs is categorized as standard if the class of drugs and types of drugs prescribed are by the JNC VII treatment guidelines. Based on research that has been conducted on 490 prescription sheets and medical records of outpatient hypertension patients at the UPTD Kesehatan DTP Puskesmas Cihaurbeuti during the period January-March 2020, the value of the suitability of

the selection of antihypertensive drugs based on the class and type of drug reached 100%. Prescription of antihypertensive drugs is categorized as standard because antihypertensive drugs of the ACEI (captopril), CCB (amlodipine) and diuretic (furosemide) groups are included in the class and type of drugs recommended by the JNC VII treatment standards and are given to patients with a diagnosis of grade 1 and grade 2 hypertension.In Table 3.9 Analysis of antihypertensive drug prescriptions at the DTP Cihaurbeuti Health Center Health Service Unit during the period January - March 2020, there were 240 patients (48.98%) whose antihypertensive drugs were given by the standards used, namely JNC 7 and there were 250 patients (51.02%) who were given antihypertensive drugs that did not meet the standards (Table 3.9). Drug incompatibility was due to the provision of inappropriate antihypertensive drugs, where there were 250 grade 2 hypertension patients who received therapy with one type of drug. According to JNC 7, grade 2 hypertension is less likely to be reduced with one type of drug, so the initial stage is with combination therapy. Combination therapy can lower blood pressure more with minimal side effects.

Based on data (Table 3.10 And Table 3.11) Which obtained, known that still there is 12 patient (2.45 %) accept antihypertensive Which No according to the frequency of use. The discrepancy based on frequency is caused by the use of furosemide that is not in accordance with that recommended by JNC 7 as *guidelines* . However, when compared with other sources such as PIO Nas (National Drug Information Center), hellosehat.com and detik.com, it states that the frequency for using furosemide is 1-2 times a day. This does not violate the rules for using furosemide because the dose given is not too high or too low for use every time And every the day. Only just If compared to with frequency usage that recommended by JNC VII Which chosen as *guidelines* Not yet in accordance. Because there are still many other sources besides the literature above that can be used as a reference and reference in the use of antihypertensive drugs other than JNC VII.

The data in Table 3.12 were obtained after analyzing the suitability of the prescription. With standard JNC VII, to fifth indicator that is group, Type of drug, treatment therapy, dose, and frequency are elements of rational drug use . WHO states that rational drug use is when patients receive appropriate treatment according to clinical indications with doses and durations that

meet the requirements and at affordable prices.(WHO,1999). Treatment of Respondent patient hypertension took care road in the UPTD DTP Cihaurbeuti Health Center in the January-March 2020 period was said to be in accordance with standard. If the fifth indicator on already been met by the standard JNC VII treatment.

Based on the data in table 3.13, it can be concluded that the percentage of compliance with antihypertensive drug prescriptions at the UPTD DTP Cihaurbeuti Health Center in the January-March 2020 period was 47.96% or 235 hypertensive patients received treatment in accordance with the JNC 7 guidelines, while 52.04% or 255 other hypertensive patients received treatment that did not comply with the JNC VII guidelines.

CONCLUSION

Prescription of antihypertensive drugs at the UPTD Health Center DTP Cihaurbeuti in the period January-March 2020 were mostly female patients (78.37%), aged 56-65 years (45.51%) and suffering from grade 2 hypertension (52.24%). The drugs used by hypertensive patients were the ACEI group (captopril) as much as 1.61%, the CCB group (amlodipine) as much as 95.97% and the diuretic group (furosemide) as much as 0.85%.

Analysis of the suitability of antihypertensive drug prescriptions at the UPTD Health Center DTP Cihaurbeuti in the period January-March with the JNC VII standard showed: based on the drug class criteria, it was 100%. drug type criteria, it was 100%. treatment therapy criteria, it was 48.98%. drug dose criteria, it was 100%. frequency of use criteria, it was 97.55%. Prescription of antihypertensive drugs at the UPTD Kesehatan DTP Cihaurbeuti Health Center in the period January-March 2020 that were in accordance with the JNC VII standard were 235 prescriptions (47.96%), and 255 prescriptions (52.04%) did not comply with the JNC VII standard.

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