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An Overview of Antihypertensive Combination Therapy Among Patients in the Referral Back Program at the UPTD Puskesmas Kuala Pembuang II, 2025

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Abstract. *Background: Hypertension is a chronic disease with high prevalence requiring continuous management to prevent cardiovascular complications. The Referral Back Program (PRB) facilitates routine medication services for stabel hypertensive patients at primary health care facilities. Objective: This study aimed to identify the demographic characteristics of hypertensive patients and describe the pattern of combination antihypertensive therapy among PRB patients at UPTD Puskesmas Kuala Pembuang II in 2025. Methods: A descriptive non-experimental study with a quantitative approach was conducted using retrospective data from the PRB register. The total sample consisted of 170 hypertensive patients. Results: Most patients were female and belonged to the 55-64 years age group. Combination therapy was used more frequently than monotherapy, with the Amlodipine and Candesartan combination being the most commonly prescribed regimen. The most frequently used single therapies were Amlodipine and Candesartan. Conclusion: Combination antihypertensive therapy was more predominantly used than monotherapy among PRB patients at UPTD Puskesmas Kuala Pembuang II, with patients predominantly female and in the older age group.*

Keywords: *Antihypertensive Therapy; Combination Therapy; Referral Back Program*

Abstrak. Latar Belakang: Hipertensi adalah penyakit kronis dengan prevalensi tinggi yang membutuhkan manajemen berkelanjutan untuk mencegah komplikasi kardiovaskular. Program Rujukan Kembali (PRB) memfasilitasi layanan pengobatan rutin untuk pasien hipertensi stabil di fasilitas kesehatan primer. Tujuan: Studi ini bertujuan untuk mengidentifikasi karakteristik demografis pasien hipertensi dan mendeskripsikan pola terapi antihipertensi kombinasi di antara pasien PRB di UPTD Puskesmas Kuala Pembuang II pada tahun 2025. Metode: Studi deskriptif non-eksperimental dengan pendekatan kuantitatif dilakukan menggunakan data retrospektif dari register PRB. Total sampel terdiri dari 170 pasien hipertensi. Hasil: Sebagian besar pasien adalah perempuan dan termasuk dalam kelompok usia 55-64 tahun. Terapi kombinasi lebih sering digunakan daripada monoterapi, dengan kombinasi Amlodipine dan Candesartan sebagai regimen yang paling sering diresepkan. Terapi tunggal yang paling sering digunakan adalah Amlodipine dan Candesartan. Kesimpulan: Terapi antihipertensi kombinasi lebih banyak digunakan daripada monoterapi di antara pasien PRB di UPTD Puskesmas Kuala Pembuang II, dengan pasien yang sebagian besar perempuan dan berada di kelompok usia yang lebih tua.

Kata kunci: Terapi Antihipertensi; Terapi Kombinasi; Program Rujukan Balik

1. INTRODUCTION

Hypertension is one of the most common and widespread medical conditions found today. This is driven by several factors, including unhealthy lifestyle choices such as frequently consuming fast food high in sodium, staying up late, and a lack of exercise. Another significant factor that increases a person's risk of developing hypertension is genetics (Taslim et al, 2020).

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Hypertension is a leading cause of mortality and morbidity in Indonesia, making the management of this disease a vital intervention across various healthcare facilities (Zaenurrohmah and Rachmayanti, 2017).

Hypertension is defined as a persistent diastolic blood pressure greater than 90 mmHg along with an increase in systolic blood pressure (140 mmHg). It is a condition where blood pressure rises abnormally and remains high over several check-ups. Specifically, it is defined as a persistent state where systolic pressure is above 140 mmHg and diastolic pressure is above 90 mmHg, measured during at least two separate visits (Kartini et al, 2023).

The low rate of controlled hypertension and poor medication adherence is often because most people do not realize they have the condition or they underestimate it, as hypertension often shows no symptoms or complaints. This leads many patients to neglect regular check-ups or treatment. Such conditions can worsen or speed up the chance of complications. While hypertension cannot be cured, it can be prevented or managed by taking medication consistently to keep blood pressure under control and prevent complications (Pradono et al, 2020).

Risk factors for hypertension are generally classified into two categories: which are modifiable and non-modifiable. Non-modifiable factors include age, genetics, ethnicity, and gender. Modifiable factors are related to lifestyle, such as excessive salt intake, obesity, smoking, alcohol consumption, coffee consumption habit, lack of physical activity, and stress (Putri et al, 2023).

According to Pharmaceutical Service Guidelines, hypertension management involves two approaches: non-pharmacological and pharmacological. Non-pharmacological strategies focus on a healthy lifestyle, including weight loss, reducing salt intake, exercise, limiting alcohol, and quitting smoking. Pharmacological therapy (medication) begins for Grade 1 hypertension patients whose blood pressure does not drop after more than 6 months of lifestyle changes, and for patients with Grade 2 hypertension or higher Grade (Kemenkes, 2019).

Previous research has shown that the combination of Candesartan-Amlodipine and Candesartan-Nifedipine are both equally effective in lowering blood pressure, with no

significant statistical difference (p>0,05) between the two over a three-month period (Permata et al, 2025).

Other older studies indicate that CCB are the most commonly used drug class (41.67%), while the CCB + ARB combination accounts for 46.51% of all combination therapies (Nababan et al, 2024).

In previous studies, the authors compared the effectiveness of different classes of antihypertensive medications and observed the usage of these drugs, both individually and in combination, across each therapeutic medication group.

The purpose of this study is to identify the demographic characteristics of hypertensive patients receiving combination therapy based on age, gender, and the specific pharmacological treatments given.

2. RESEARCH METHOD

This study used a descriptive, non-experimental method. It is a quantitative study using retrospective data from The Referral Back Program (PRB) register for the year 2025. The research was conducted at the UPTD Puskesmas Kuala Pembuang II, with the sample consisting of PRB participants diagnosed with hypertension based on the 2025 register.

3. RESULT AND DISCUSSION

A total of 170 hypertension patients were included in this study. Patient characteristics by gender and age group are shown in Table 1 and Table 2.

Table 1. Patient Distribution by Gender Characteristics

Number	Gender	Total	%
1	Male	42	24,7
2	Female	128	75,3
Total		170	100

Table 2. Patient Distribution by Age Characteristics

Number	Age	Total	%
1	>18-30 Years	1	0,5
2	31-44 Years	11	6,5
3	45-54 Years	28	16,5
4	55-64 Years	130	76,5
Total		170	100

Based on Table 1, it can be concluded that the majority of hypertension patients are female. Table 2 shows that most patients fall within the 55-64 age range.

Table 3. Distribution of Antihypertensive Medications

Number	Medication	Total	%
1	Amlodipine	48	28,2
2	Candesartan	21	12,4
3	Clopidogrel	1	0,6
4	Amlodipine + Candesartan	83	48,8
5	Candesartan + Bisoprolol	1	0,6
6	Candesartan + Clopidogrel	1	0,6
7	Candesartan + Aspilet	2	1,2
8	Amlodipine + Bisoprolol	1	0,6
9	Amlodipine + Aspilet	1	0,6
10	Amlodipine + Candesartan + Bisoprolol	10	5,9
11	Bisoprolol + Candesartan + Clopidrogel	1	0,6
Total		170	100

According to Table 3, combination therapy is used more frequently for hypertension patients in this group compared to single-drug therapy. The combination of

Amlodipine and Candesartan is the most frequently prescribed regimen. For single-drug therapy, Amlodipine and Candesartan are the most commonly used.

DISCUSSION

The National Health Insurance (JKN) provides health protection to ensure participants receive maintenance and basic health needs (Permenkes Nomor 6 Tahun 2022). Primary Health Care Facilities that further shortened as FKTP It is a healthcare facility that provides non-specialized individual health services for the purposes of observation, diagnosis, care, treatment, and/or other medical services. One JKN service through PRB, manages patients with stable chronic diseases (hypertension, diabetes, heart disease, etc.) allowing them to continue their routine medication at an FKTP based on a specialist's recommendation to improve their quality of life. This program offers easier access to medicine without long hospital waits and ensures treatment is more effective and closer to home. The mechanism for the PRB is as follows:

- Step 1: A specialist at the hospital provides a recommendation for the patient to be referred back to a Primary Health Care Facility (FKTP).
- Step 2: The patient registers as a PRB participant at either the FKTP or a *BPJS Kesehatan* branch office.
- Step 3: Routine medication is collected at the FKTP or a partner pharmacy.
- Step 4: The patient is given a PRB Participant book to record their treatment and monitor their health status (Zuliani & Sulung, 2022).

This study found that more women suffer from hypertension than men. Gender is a risk factor, with women being more susceptible, particularly during menopause. During menopause, significant hormonal changes can lead to weight gain, increasing the risk of hypertension (Kartini et al, 2019).

Several studies show patterns in the prevalence of hypertension based on gender that align with this research. Amaris, Suprapti, & Trilestari (2022) reported that out of 184 patients studied, 114 (62%) were female and 70 (38%) were male, indicating a dominance of female hypertension patients in primary facilities. Additionally, Wardhani, Zurriyani, & Cahyadi (2024) reported at an Internal Medicine Clinic that out of 52

hypertension patients, 35 (67.3%) were female and 17 (32.7%) were male. A study by Cahyadi et al. (2024) in Sumberame Village also showed that 87.5% of respondents were female compared to 12.5% male, further indicating higher case numbers among women in that population.

The higher prevalence of hypertension found in women is triggered by a decrease in estrogen hormones after menopause, which causes blood vessels to lose their elasticity (Sari & Susanti, 2016; Yunus, Aditya, & Eksa, 2021). Women who have undergone menopause have low estrogen levels. Estrogen functions to increase HDL levels, which play a vital role in maintaining blood vessel health. Consequently, in menopausal women, declining estrogen levels are followed by a decrease in HDL levels if not accompanied by a healthy lifestyle Riyadina, 2018).

Beyond gender, age is another significant risk factor for hypertension. Epidemiological studies often report that middle-aged to elderly individuals make up the largest age group. In Mahdi's (2019) hospital study, patients aged 60-70 years were the largest group, accounting for 305 cases (52.1%) out of 585 patients. Another study by Wardhani, Zurriyani, & Cahyadi (2024) at RSUD Meuraxa Banda Aceh showed that the age group >60 years dominated cases (50%), while the 45-59 age group was also quite significant. Furthermore, data from Cahyadi et al. (2024) showed that most respondents were in the 50-59 age group (42.5%), consistent with the pattern of increasing prevalence from middle age onward.

In this specific study, 100 participants used combination antihypertensive therapy, while 70 used monotherapy. The choice between single or combination therapy is based on the severity of the hypertension. Single therapy is used for patients with mild hypertension. Combination therapy is recommended for several reasons, like additive and synergistic effects, complementary properties, the ability to reduce side effects, omplementary mechanisms of action on specific target organs, improved patient compliance through fixed-dose combinations (Udayani et al, 2018).

Results from UPTD Puskesmas Kuala Pembuang II show that for the monotherapy group, the most common medications are Calcium Channel Blockers (CCB), specifically Amlodipine, and Angiotensin Receptor Blockers (ARB), specifically Candesartan.

Meanwhile, the most frequently prescribed combination therapy is Amlodipine and Candesartan, at 48.8%.

In Mahdi's (2019) research regarding the use of antihypertensive drug combinations at Unhas Hospital, out of 585 medical records, a two-drug combination therapy (CCB + ARB) was the most widely used, found in 160 cases (27.4%) compared to other combinations or monotherapy. In a study by Permata et al. (2025), it was shown that the combination of candesartan and amlodipine is one of the combinations frequently used for clinical evaluation. Although this study did not report the percentage of use within the general population, it emphasized that this combination was clinically selected due to its consistent blood pressure-lowering effects in a sample of 36 hypertensive patients. Additionally, Wulandari (2019) in the ILKES Journal found that 38% of patients received the candesartan + amlodipine combination as their primary therapy, confirming the consistency of this combination as a top choice in combination hypertension treatment.

The classification of hypertension medication based on the mechanism of action consists of renin-angiotensin system inhibitors, calcium antagonists, adrenergic inhibitors, and diuretics. From these classifications, five types of first-line drugs are recognized: angiotensin-converting enzyme inhibitors (ACE-I), angiotensin receptor blockers (ARB), calcium channel blockers (CCB), beta-adrenergic receptor blockers (β-Blockers), and diuretics (Ministry of Health, 2019). Antihypertensive drugs can be used as either monotherapy or combination therapy (Mahdi, 2019; Wulandari, 2019).

The addition of combination antihypertensive drugs must be administered if blood pressure targets are not achieved with monotherapy. If blood pressure remains uncontrolled with a two-drug combination therapy, then a third antihypertensive drug can be given. Increasing age will lead to systolic hypertension, which may be caused by the loss of elasticity and increased stiffness of the large arteries. Combination therapy is recommended in such specific conditions to achieve therapeutic targets and reduce the possible risk of severe hypertension (Ministry of Health, 2019).

The combination of calcium channel blockers and diuretics is most effective in lowering fluctuating or variable blood pressure. The combination of calcium channel blockers or diuretics with Renin-Angiotensin-Aldosterone System (RAAS) inhibitors

reduces systolic blood pressure variability (Permata, et al., 2025). Conversely, beta-blockers can increase systolic blood pressure variability (Mahdi, 2019).

Combination therapy in managing hypertension is based on its advantages over monotherapy, which include increasing the effectiveness of lowering blood pressure through different physiological mechanisms, the ability to block counterproductive compensatory responses of the body, and the reduction of blood pressure variability, which is crucial for reducing the risk of stroke and myocardial infarction, especially in grade two patients with high cardiovascular risk (Mahdi, 2019; Wulandari, 2019).

4. CONCLUSION

The conclusion of this study indicates that the prevalence of hypertension is higher among women and the elderly, triggered by the decline in estrogen levels post-menopause and the reduction in blood vessel elasticity as age increases. At the UPTD Puskesmas Kuala Pembuang II, the use of combination therapy is more dominant than monotherapy, with the combination of Amlodipine (CCB) and Candesartan (ARB) being the most frequently prescribed regimen. The selection of this therapeutic strategy is based on the patient's degree of hypertension, where combination therapy is superior in providing synergistic effects, lowering blood pressure variability to prevent stroke or myocardial infarction, and improving patient compliance through complementary mechanisms of action compared to monotherapy.

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