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Original Article

Patterns of Antihypertensive Drug Prescribing and Refill Adherence Among BPJS Referral-Back Patients: A Study at Pharmacy "X", Pontianak

Analisis Kepatuhan Pengambilan Ulang dan Pola Peresepan Obat Antihipertensi pada Pasien Program Rujuk Balik BPJS di Apotek "X" Kota Pontianak

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Abstract

High blood pressure often develops without obvious symptoms, causing many individuals to remain unaware of the condition until organ damage has already occurred. The absence of noticeable signs makes hypertension a major contributor to the increasing incidence of complications within the cardiovascular system. It has become a government priority to control hypertension through the National Health Insurance Program (JKN) BPJS, particularly the Referral Back Program (Program Rujuk Balik/PRB). This study aims to describe medication refill adherence and prescribing patterns of antihypertensive drugs among BPJS Kesehatan participants at "X" Pharmacy, Pontianak. This research employed a descriptive observational design with retrospective data from prescriptions and the Pharmacy–BPJS application for the period of October 2025. The analyzed data included sex, age, and the types of antihypertensive therapy used. Adherence was asessed using the Medication Possession Ratio (MPR) method. The results showed that medication refill adherence among PRB patients at Pharmacy "X" was predominantly in the adherent category. The most frequently prescribed antihypertensive drug was candesartan, an angiotensin receptor blocker (ARB), with a tendency toward combination therapy. Most patients were within the 60–75 age group and were predominantly female. In conclusion, medication refill adherence among PRB antihypertensive patients was generally good, supporting long-term therapeutic effectiveness. The prescribing patterns observed were largely consistent with clinical practice guidelines for hypertension management. Continuous education and monitoring are recommended to further improve adherence and therapeutic outcomes

Abstrak

Kondisi tekanan darah tinggi sering berkembang tanpa keluhan yang jelas, sehingga banyak penderitanya tidak menyadari keberadaannya hingga terjadi kerusakan organ. Ketidakterlihatan gejalanya membuat hipertensi berkontribusi besar terhadap meningkatnya kejadian komplikasi pada sistem kardiovaskular. Hipertensi menjadi fokus pemerintah untuk dikendalikan melalui Jaminan Kesehatan Nasional (JKN) BPJS yaitu Program Rujuk Balik (PRB). Penelitian ini bertujuan untuk menggambarkan kepatuhan pengambilan ulang dan pola peresepan obat antihipertensi pada pasien PRB di Apotek "X" Kota Pontianak. Desain penelitian yang digunakan adalah deskriptif observasional dengan pengumpulan data secara retrospektif dari resep dan aplikasi Apotek–BPJS pada periode Oktober 2025. Data yang dianalisis mencakup jenis kelamin, usia, serta jenis terapi antihipertensi yang digunakan. Analisis data menggunakan rumus MPR *(Medication Possession Ratio*) untuk mengukur kepatuhan. Hasil penelitian menunjukkan bahwa tingkat kepatuhan pengambilan ulang obat pada pasien PRB di Apotek "X" didominasi oleh kategori patuh. Obat antihipertensi yang paling sering diresepkan adalah kandesartan golongan ARB dengan kecenderungan penggunaan kombinasi. Karakteristik pasien sebagian besar berada diusia berkisar 60-75 tahun dengan mayoritas pasien perempuan. Kesimpulan penelitian ini yaitu kepatuhan pengambilan ulang obat antihipertensi pada pasien PRB tergolong baik untuk mendukung efektivitas terapi jangka panjang. Pola peresepan yang diperoleh umumnya telah sesuai dengan praktik klinis penatalaksanaan hipertensi. Upaya edukasi dan pemantauan secara berkelanjutan disarankan guna meningkatkan kepatuhan dan hasil terapi.

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INTRODUCTION

Hypertension is a chronic disease commonly referred to as a "silent killer" because it does not present specific symptoms, yet it significantly increases the risk of cardiovascular complications. In the general population, hypertension is widely known as high blood pressure. An individual is classified as hypertensive when the systolic blood pressure is ≥120 mmHg and the diastolic blood pressure is <80 mmHg or ≥90 mmHg[1]. Hypertension increases the risk of damage to vital organs, including the brain, heart, retina, kidneys, as well as causing increased thickness of major and peripheral blood vessels[2,3]. The World Health Organization (WHO) estimated that in 2024, approximately 1.4 billion people aged 30–79 years worldwide were living with hypertension, representing 33% of the population within this age group. In developing countries, approximately two-thirds of adults are reported to suffer from hypertension[4]. Indonesia is among developing countries with a high prevalence of hypertension, accompanied by an increasing trend reaching 29% over the past four years[5]. The prevalence of hypertension in Indonesia is reported at 31.18%, with Kalimantan recording the highest number of cases compared to other regions[6]. According to the 2023 Pontianak City Health Profile, hypertension ranked first among degenerative diseases, with a total of 77,079 cases[7].

Successful hypertension control is highly dependent on patient adherence to prescribed therapy. Medication adherence is influenced by multiple interrelated factors, including patient-related factors, treatment characteristics, healthcare systems, environmental, and social factors[8]. Non-adherent patients face a higher risk of recurrent hypertension, cardiovascular complications, increased healthcare costs, and even higher mortality rates[9]. Adherence to antihypertensive therapy often declines with longer treatment duration, particularly among patients requiring long-term medication and those who perceive themselves as being in good health[10].

Hypertension is one of the priority diseases targeted by the government through the National Health Insurance Program (JKN) administered by BPJS Kesehatan, specifically via the Referral Back Program (Program Rujuk Balik / PRB). Patients who have undergone evaluation by specialists in hospitals and are declared clinically stable for continued care may be managed at Primary Healthcare Facilities (Fasilitas Kesehatan Tingkat Pertama / FKTP), allowing referral back to FKTP or designated pharmacies. This program aims to improve the effectiveness of healthcare services for patients with chronic diseases. Patients receive long-term treatment for 30 days, using either single or combination antihypertensive therapy according to individual needs.

PRB medications are provided exclusively by pharmacies and pharmaceutical installations that collaborate with BPJS Kesehatan and are registered under the PRB scheme. BPJS Kesehatan data indicate that as of December 2023, only 1,789 pharmacies were actively collaborating with BPJS Kesehatan[11]. This program is intended for patients with stable chronic conditions who require long-term therapy at Primary Healthcare Facilities, such as community health centers or clinics. Participants can collect their monthly medications from designated PRB pharmacies using prescriptions issued by FKTP physicians. The primary objectives of PRB are to ensure continuity of therapy, medication availability, and improved efficiency of healthcare services.

A three-month preliminary study conducted at Pharmacy "X" in Pontianak City revealed that hypertension was the most prevalent condition among PRB patients, accounting for 44.44%, followed by other chronic diseases such as diabetes mellitus, heart disease, and asthma. The management of hypertension aims to control the disease through effective pharmacological therapy to reduce blood pressure, along with lifestyle modifications, thereby improving patients' quality of life and preventing complications. The selection of antihypertensive therapy considers both the effectiveness of blood pressure reduction and improvements in patients' quality of life. Therapeutic success

is largely determined by two key aspects: patient adherence to medication refills and the prescribing patterns of antihypertensive drugs by physicians. Irregular medication refills may reduce therapeutic effectiveness, while prescribing patterns that are inconsistent with national guidelines may increase the risk of adverse effects or drug interactions[12]. Recommended antihypertensive medications include thiazide diuretics, ACE inhibitors (Angiotensin-Converting Enzyme Inhibitors), ARBs (Angiotensin II Receptor Blockers), calcium channel blockers (CCBs), or combinations thereof, depending on patient conditions[12,13].

Several studies have reported varying levels of adherence among PRB patients with hypertension across different regions. Tumole et al. (2021) reported that 63% of hypertensive patients were adherent to medication refills at My Life Farma Pharmacy[10]. Similarly, Prihandiwati et al. (2022) found that 83.74% of patients were adherent to medication refills at Appo Farma Pharmacy[14]. Adherence may be influenced by factors such as age, educational level, family support, and distance to network pharmacies. The use of calcium channel blockers (CCBs) appears to be the predominant choice in hypertension therapy, as reflected in findings by Poppy et al. (2025), who reported a utilization rate of 67.6%, and Juliana et al. (2023), who reported a percentage of 54.87%[15,16].

Data on PRB patient adherence and the appropriateness of antihypertensive prescribing patterns in the Pontianak region remain limited, particularly at the pharmacy level, which serves as the frontline of pharmaceutical care services. Pharmacies play a strategic role in supporting therapeutic success through patient counseling, monitoring medication refills, and active communication with healthcare professionals. Therefore, it is important to conduct a study on the Analysis of Medication Refill Adherence and Antihypertensive Prescribing Patterns among BPJS Referral Back Program Patients at Pharmacy "X" in Pontianak City.

METHODS

This study was designed using a non-experimental approach and analyzed through a descriptive observational design with a retrospective method. Data were obtained from all BPJS Referral Back Program (PRB) prescriptions processed at Pharmacy X in Pontianak City during the period from August to October 2025. The study population consisted of all PRB patients at Pharmacy X in Pontianak City, totaling 332 samples. Prescriptions containing antihypertensive medications were included as inclusion criteria, while incomplete prescriptions were excluded. A total of 179 prescriptions were selected as study samples after undergoing a selection process based on the established criteria. Patient adherence to medication refills was assessed using the Medication Possession Ratio (MPR) approach. The MPR results were subsequently categorized into two groups: adherent (≥80%) and non-adherent (<80%). Prescribing patterns were analyzed based on patient characteristics, including sex and age, as well as by calculating the type and number of antihypertensive drugs per prescription and identifying the most frequently prescribed drug classes according to their therapeutic categories.

RESULT AND DISCUSSION

This study analyzed a total of 179 prescriptions that met the inclusion and exclusion criteria. The prescriptions were examined based on patient characteristics, including sex, age, prescribing patterns, and the level of patient adherence to medication refills among hypertensive patients enrolled in the BPJS Referral Back Program (PRB) at Pharmacy "X" in Pontianak during the period of August–November 2025. The results of the prescription analysis are presented according to the following characteristics.

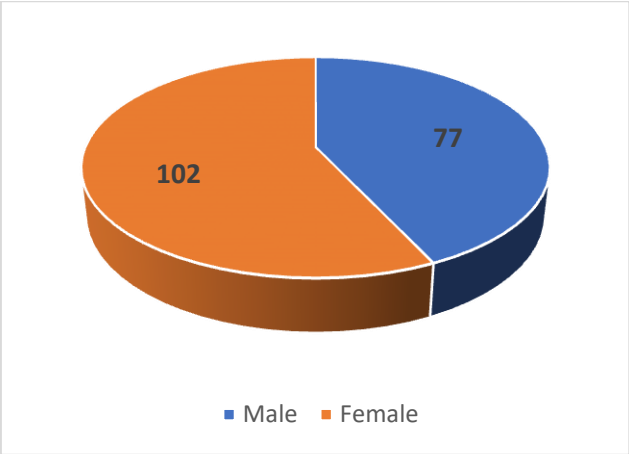


Figure 1. Gender Distribution of Patients

The study data indicate a predominance of hypertension cases among female patients, with 102 individuals (57.22%), while male patients accounted for 77 individuals (47.22%). These findings are consistent with the study by Juliana et al. (2023), which emphasized that sex is an important determinant of hypertension risk[16]. The increased risk observed in women, particularly after menopause, is associated with decreased estrogen levels that affect vascular regulation and autonomic nervous system function, thereby contributing to elevated blood pressure and an increased risk of cardiovascular events[17].

The relationship between sex and age in this study is consistent with previous findings. As shown in Figure 2, the majority of patients were in the 60–75 year age group, totaling 94 individuals (52%), which falls within the elderly category. Advancing age leads to physiological changes that may increase blood pressure. Age-related physiological alterations include arterial stiffening, autonomic nervous system dysfunction, disturbances in the renin–angiotensin–aldosterone system, and changes in renal function[18]. The second largest group affected by hypertension was adults aged 26–59 years, comprising 74 individuals.

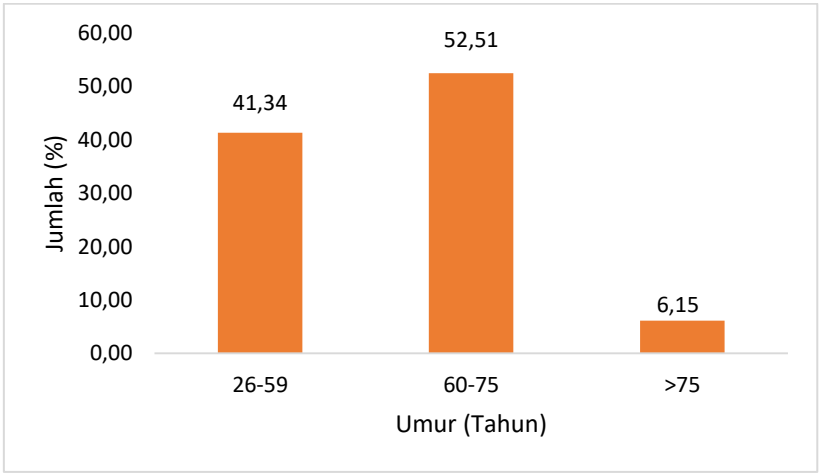
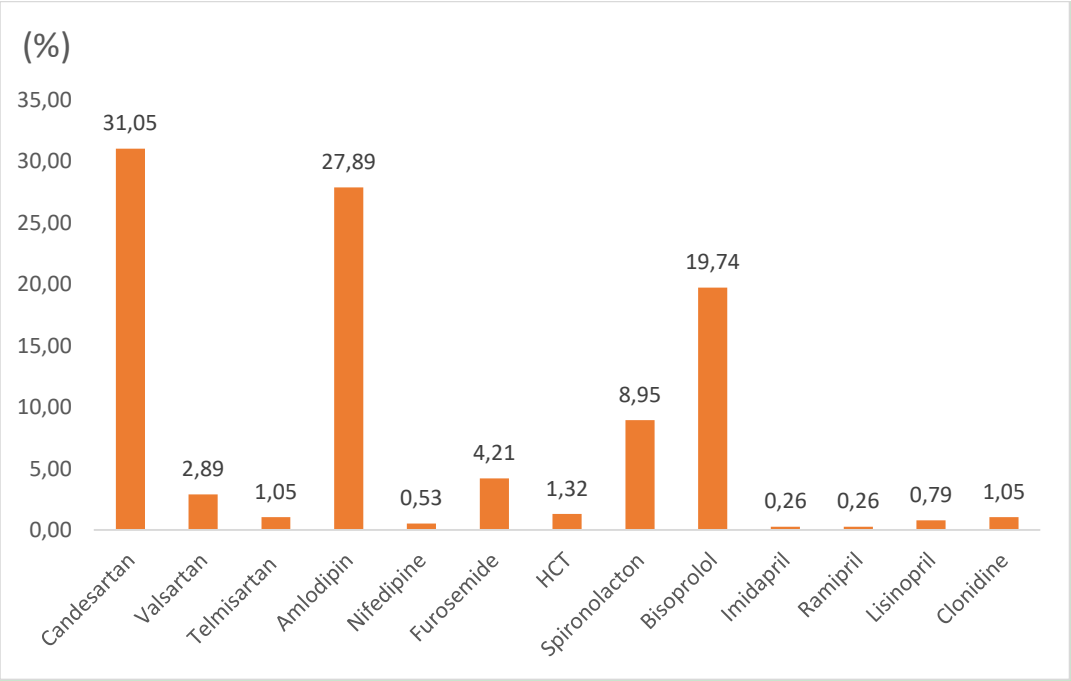


Figure 2. Age Distribution of Patients

Factors related to biological characteristics, such as sex, age, and genetic predisposition, constitute non-modifiable determinants of hypertension risk. Beyond these factors, several risk factors are preventable through behavioral modifications, particularly those related to lifestyle patterns. In the adult population, hypertension is often influenced by daily habits, including levels of physical activity, stress exposure, and unhealthy behaviors such as smoking and excessive alcohol consumption[19]. Previous studies have also demonstrated that high salt intake plays a significant role in increasing blood pressure and subsequently elevating the risk of hypertension[20].



Figur 3. Drug-Based Prescribing Patterns

Based on the analysis presented in Table 1, candesartan was the most frequently prescribed antihypertensive medication among PRB patients, with 118 prescriptions (31.05%). Amlodipine ranked second with 106 prescriptions (27.89%), followed by bisoprolol with 75 prescriptions (19.74%). This distribution indicates that angiotensin receptor blockers (ARBs), particularly candesartan, were the primary therapeutic choice at this facility. This trend differs from the findings of Muslim (2020) at Pharmacy X, which reported amlodipine as the most commonly prescribed antihypertensive among PRB patients, totaling 482 prescriptions (49%). Such discrepancies may reflect variations in patient clinical characteristics, changes in physicians' prescribing preferences, updates in therapeutic guidelines, or differences in medication availability within healthcare facilities[21]. This pattern may be attributed to the fact that PRB patients with hypertension who visit pharmacies often present with elevated blood pressure accompanied by comorbid conditions, such as cardiovascular disease, diabetes mellitus, or renal disorders. This observation is consistent with the JNC VII and JNC VIII guidelines, which recommend ARB-class medications—such as valsartan, candesartan, and telmisartan—as preferred first-line therapy for hypertensive patients with comorbidities including chronic kidney disease (CKD), diabetes, or heart failure.[2223]

Golongan	%
Calcium Channel Blockers (CCB)	28,42
Angiotensin Converting Enzyme inhibitors (ACEi)	1,32
Angiotensin II Receptor Blockers (ARB)	35,00
Beta Blocker	19,74
Diuretics	29,95
Agonis Adrenergik Alfa 2	1,05

Table 1. Karakteristik pola peresepan berdasarkan golongan obat

Based on Table 1, angiotensin receptor blockers (ARBs) were the most frequently used class of antihypertensive drugs. This finding differs from the study conducted by Yusuf (2022) at Kimia Farma Pharmacy, which reported calcium channel blockers (CCBs) as the most commonly prescribed antihypertensive agents, with 128 prescriptions (52.67%)[24]. This difference may be attributed to the fact

that PRB hypertensive patients visiting pharmacies often present with comorbid conditions such as cardiovascular disease, renal disorders, or diabetes mellitus. This observation is in line with the JNC VII and JNC VIII guidelines, which state that ARBs are recommended as first-line therapy for hypertensive patients with comorbid chronic kidney disease (CKD), cardiovascular disease, and/or diabetes, either as monotherapy or in combination with other antihypertensive agents[22,23]. ARBs exert their pharmacological effects by blocking angiotensin II type 1 (AT_1) receptors located in blood vessels, the heart, and the kidneys, thereby preventing angiotensin II from exerting its physiological effects. Blockade of AT_1 receptors results in arterial vasodilation, reduced peripheral vascular resistance, and decreased body fluid volume due to reduced aldosterone secretion. In addition to lowering blood pressure, ARBs provide renoprotective effects by reducing intraglomerular pressure and proteinuria, as well as preventing cardiac remodeling in patients with heart failure or post–myocardial infarction[25,26].

Drugs	Total	%
Single-Drug	51	28,49
Two-Drug Combination	70	39,11
Three-Drug Combination	45	25,14
Four-Drug Combination	12	6,70
Five-Drug Combination	1	0,56
Total	179	

Table 2. Pola penggunaan obat

Based on Table 2, the use of two-drug antihypertensive combinations was more frequent, accounting for 70 prescriptions (39.11%). This finding is consistent with the study conducted by Poppy (2025), which reported that two-drug combinations had the highest proportion, with 224 prescriptions (41.6%)[15]. This pattern may be attributed to the fact that PRB patients with hypertension who visit pharmacies often present with comorbid conditions such as renal disease, cardiovascular disease, and diabetes mellitus. To achieve a more optimal reduction in blood pressure, combination therapy involving multiple antihypertensive agents is frequently employed. Prolonged hypertension can lead to target organ damage, including the heart, kidneys, and blood vessels. The use of combination therapy allows blood pressure targets to be achieved more rapidly, thereby providing earlier protection to vital organs[27,28]. These findings are also consistent with the JNC VII and JNC VIII guidelines, which recommend combination antihypertensive therapy when patients have comorbid conditions or when blood pressure targets are not achieved after one month of single-agent therapy. Furthermore, the use of three or more antihypertensive agents is indicated for patients whose blood pressure remains above 130/80 mmHg despite adequate two-drug combination therapy. [1,22,23].

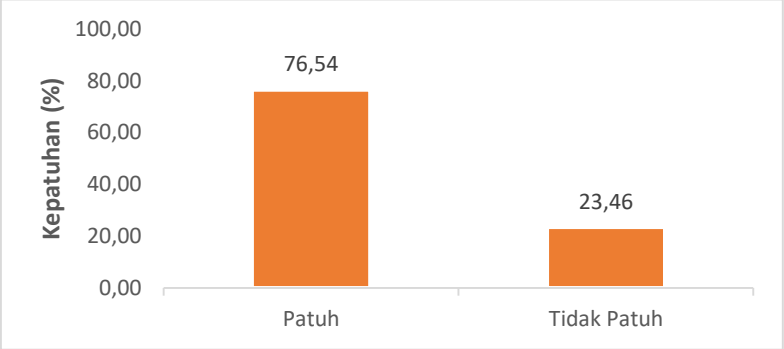


Figure 5. Kepatuhan Pengambilan Ulang Obat

The findings presented in Figure 5 indicate that during the August–October 2025 period at Pharmacy "X," a total of 137 patients were categorized as adherent, while 42 patients were classified as non-adherent. Patient adherence was assessed using the Medication Possession Ratio (MPR), which was calculated based on patients' visit histories. The MPR was determined by comparing the quantity of medication dispensed to patients with the total number of days within the treatment period, including the interval between the first and the last prescription refill prior to the study[29]. Patients were classified as adherent when the MPR value was ≥80%, whereas an MPR value ≤80% indicated non-adherence[30].

The majority of hypertensive patients at Pharmacy "X" in Pontianak City were adherent to medication refills, accounting for 76.54%, compared to 23.46% who were non-adherent. Adherence to medication refills reflects patients' compliance with prescribed therapy throughout the treatment period. Adherence to antihypertensive therapy is a key factor contributing to patients' success in achieving recommended blood pressure targets. Adequate adherence and understanding in implementing prescribed treatment play a crucial role in controlling blood pressure and preventing complications[31]. Patients who consistently adhere to their treatment regimens have a higher likelihood of achieving and maintaining stable, controlled blood pressure over the long term. Higher medication adherence among hypertensive patients is also associated with a significant improvement in quality of life [32].

Patients with health insurance tend to achieve better blood pressure control, although non-adherence may still occur in a small proportion of these patients[33]. PRB patients are individuals whose treatment costs are covered by national health insurance (BPJS), which may contribute to improved medication adherence. Other factors influencing patient adherence include access to healthcare services, level of knowledge, educational attainment, and family support[34]. In this study, only a small proportion of PRB patients were non-adherent to medication refills. Non-adherence among PRB patients may be influenced by various factors, such as limited knowledge, low confidence in therapy, patient behavior, suboptimal quality of healthcare services, inadequacies in supporting facilities, medication availability issues, lack of family support, and difficulties in obtaining medication. [35,36].

LIMITATION

This study has several limitations. It was conducted at a single pharmacy with a relatively short study period and a limited sample size; therefore, the findings cannot be broadly generalized. In addition, medication adherence was assessed based on prescription records and patient visit histories, which may not accurately reflect actual medication-taking behavior. Another limitation is the lack of available clinical information, such as the severity of hypertension or the presence of comorbidities, which may have influenced the interpretation of the results.

CONCLUSION

This study concludes that BPJS PRB patients at Pharmacy "X" in Pontianak City demonstrated a high level of adherence to medication refills, although a subgroup of patients still exhibited suboptimal adherence. The prescribing patterns of antihypertensive medications were dominated by the use of candesartan, an angiotensin receptor blocker (ARB), which is consistent with commonly accepted therapeutic practices in hypertension management. These findings underscore the importance of strengthening adherence monitoring and providing more intensive patient education to support the long-term success of antihypertensive therapy.

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