

Prescription Patterns of Antihypertensive Medications Among Prolanis Patients at the Outpatient Clinic of Ciracas District Public Health Center, East

Havist Fatharony¹, Liliek Nurhidayati¹, Nurita Andayani^{1*}

¹Faculty of Pharmacy, Univeristas Pancasila, South Jakarta, DKI Jakarta, Indonesia.

*Corresponding Author: nurita.andayani@univpancasila.ac.id

Received: 12 June 2026 / Accepted: 30 June 2026

ABSTRACT: Appropriate hypertension management in Chronic Disease Management Program (Prolanis) patients is crucial to control blood pressure and prevent long-term cardiovascular complications. This study aimed to evaluate the prescribing pattern of antihypertensive drugs in Prolanis patients in outpatient clinics. This descriptive observational study with a cross-sectional design analyzed prescription data from 832 hypertensive patients who met the inclusion criteria. The majority of patients were women (80.60%) with the largest age group being in the range of 41-59 years (61.10%) and age ≥60 years (31.10%). The prescribing pattern was dominated by monotherapy at 60.5% (n = 503), which massively used Calcium Channel Blocker (CCB) in the form of Amlodipine (96.8% of total monotherapy). Two-drug combination therapy was administered to 38.5% of patients (n = 320), with CCB + ACE Inhibitor (Amlodipine + Lisinopril) regimen as the most dominant choice (83.4%). Three-drug combination therapy was very rare (1.1%), but noted a minor polypharmacy anomaly in the form of duplication of Amlodipine preparation therapy. The antihypertensive prescribing pattern in Prolanis patients was largely in line with national and international clinical guidelines through the selection of Amlodipine and the effective combination of Amlodipine-Lisinopril. However, optimization of early initiation of two-drug combination therapy for productive age and supervision of rational prescribing need to be improved to ensure patient safety. Keywords: Amlodipine, Antihypertensive, Monotherapy, Prescribing Pattern, Prolanis, Combination Therapy.

KEYWORDS: Antihypertension; monotherapy, combination therapy; prescribing pattern, prolanis.

1. INTRODUCTION

Hypertension is a non-communicable disease and is one of the major health challenges at the global level because it often has no symptoms, but can cause serious complications such as heart disease, stroke, kidney failure, and premature death. Worldwide, hypertension remains a significant risk factor for cardiovascular disease because the number of sufferers continues to increase and blood pressure control has not achieved optimal results [1]. The World Health Organization (WHO) report also emphasized that approximately 80% of people with hypertension worldwide do not receive adequate treatment, so increasing the reach of hypertension treatment is one of the important strategies to overcome deaths from cardiovascular disease [2].

Hypertension, or high blood pressure, is a silent killer because in most cases it doesn't cause symptoms. High blood pressure is a major risk factor for heart attacks and strokes. Hypertension is divided into two groups: primary hypertension and secondary hypertension. Primary hypertension is hypertension that cannot be caused by changes in the heart and blood vessels. Secondary hypertension is hypertension caused by another or known disease [3].

In clinical practice, antihypertensive drugs used can come from several classes, including calcium channel blockers such as amlodipine, angiotensin converting enzyme inhibitors such as lisinopril or ramipril, angiotensin receptor blockers such as candesartan or valsartan, thiazide diuretics such as hydrochlorothiazide, and beta blockers in certain conditions. Blood pressure reduction is the primary goal of therapy, while the choice of drug class is adjusted to the patient's clinical condition, comorbidities, cardiovascular risk, tolerance, and drug availability [4]. Therefore, antihypertensive drug planning cannot be done in a general manner, but requires attention to actual prescribing patterns in the outpatient setting.

How to cite this article: Fatharony H, Nurhidayati L, Andayani N. Prescription Patterns of Antihypertensive Medications Among Prolanis Patients at the Outpatient Clinic of Ciracas District Public Health Center, East. *IjaclinPharm*. 2026; 3(1): 26-32.

Differences in patient patterns, comorbidities, formulary policies, and physician prescribing habits can lead to variations in antihypertensive drug needs between healthcare facilities.

Patient compliance with treatment is greatly influenced by the availability of drugs. In outpatient care settings, non-adherence can occur for various reasons, such as patients forgetting to take medication, side effects, cost issues, lack of understanding, or the unavailability of medications when patients pick up prescriptions [5]. Therefore, the role of the pharmaceutical installation is not only limited to drug distribution, but also ensures that frequently prescribed medications are always available so that patient treatment is not hampered. Adequate drug availability will support the continuity of therapy, increase patient confidence in services, and contribute to achieving the goals of hypertension treatment.

2. MATERIALS AND METHODS

2.1. Material

This study is a descriptive observational study with a retrospective approach and cross-sectional design. Data were collected simultaneously over time, then analyzed and presented to describe the profile of antihypertensive drug prescriptions systematically, accurately, and factually. This research data was secondary data taken from medical records and prescription sheets of Chronic Disease Management Program (PROLANIS) patients at the Outpatient Installation of the Ciaracas District Health Center during the period of February - April 2026. The sampling method used a total sampling technique based on predetermined inclusion and exclusion criteria. The number of sample in this reserach was 832 recipes.

2.2. Procedure

This study was conducted in several stages. The first stage was to determine the population, namely all prescription data for patients registered in the Chronic Disease Management (Prolanis) program who received antihypertensive drug therapy at the Outpatient Pharmacy Installation of the Ciracas District Community Health Center between February and April 2026. To obtain a specific population that aligns with the research objectives, direct screening was conducted at the population stage by applying the following inclusion and exclusion criteria. The inclusion criteria for this study were prescription data of Prolanis patients with a diagnosis of hypertension registered at the Ciracas District Health Center from February to April 2026, prescription data containing at least one type of antihypertensive drug, patients aged ≥ 18 years, and patients actively registered as BPJS Kesehatan participants. The exclusion criteria for this study were incomplete prescription data and patient prescription data that did not contain antihypertensive drugs. The second stage was to determine the variables of this study, they were age, gender, antihypertensive drug class with the CCB category (Amlodipine 5 mg & Amlodipine 10 mg); ACE Inhibitor (Lisinopril 10 mg); and Thiazide Diuretic Hydrochlorothiazide (HCT) 25 mg, and type of therapy (single therapy (1 type of drug) or combination therapy (≥ 2 types of drugs)). The third was data analysis using descriptive analysis to obtain an overview of sociodemographic data and drug use.

3. RESULTS

The demographic characteristics of hypertensive patients included in this study are presented in Table 1. A total of 832 patients were evaluated, with a predominance of female patients (671 patients; 80.6%) compared with male patients (161 patients; 19.4%). The higher proportion of female patients observed in this study may indicate differences in healthcare utilization patterns, disease awareness, and healthcare-seeking behavior among hypertensive populations. Previous studies have reported that gender-related factors, including biological changes and differences in healthcare access, may influence hypertension prevalence and management patterns [6,7].

Regarding age distribution, most patients were categorized in the 41–59 years age group (508 patients; 61.1%), followed by patients aged ≥ 60 years (259 patients; 31.1%), while patients aged 18–40 years represented the smallest proportion (65 patients; 7.8%). The predominance of middle-aged and older adults is consistent with the epidemiological pattern of hypertension, where increasing age is associated with progressive vascular changes, increased arterial stiffness, and a higher risk of elevated blood pressure [8].

The age distribution observed in this study is clinically relevant for antihypertensive therapy selection, as older patients frequently require individualized treatment approaches considering comorbidities,

cardiovascular risk, and potential medication-related adverse effects. Current hypertension management guidelines recommend that pharmacological treatment should be tailored according to patient characteristics and cardiovascular risk profile, with commonly recommended first-line antihypertensive agents including angiotensin-converting enzyme inhibitors (ACE inhibitors), angiotensin receptor blockers (ARBs), calcium channel blockers (CCBs), and thiazide or thiazide-like diuretics [1,9]. Therefore, understanding patient demographic characteristics is an important initial step in evaluating the appropriateness of antihypertensive prescribing patterns in hospital settings.

Tabel 1. Patiens characteristic.

Patients Characteristic (N= 832)		Count	Percentage
Gender	Male	161	19.40%
	Female	671	80.60%
Age	18 - 40 years	65	7.80%
	41 - 59 years	508	61.10%
	≥ 60 years	259	31.10%

Table 2. Distribution of antihypertensive medication regimens in outpatient prolans patients.

Therapy Class	Drug Class	Drug Name	Frequency	Percentage
Monotherapy	Calcium Channel Blocker (CCB)	Amlodipine 5 mg	183	36.4%
		Amlodipine 10 mg	304	60.4%
	Angiotensin-Converting Enzyme (ACE) Inhibitor	Lisinopril 10 mg	5	1%
	Thiazide Diuretic	Hydrochlorothiazide (HCT) 25 mg	11	2.2%
	Total of Monotherapy		503	60.5%
Combination Therapy				
Two-Drug Therapy	CCB + ACE Inhibitor	Amlodipine 5 mg + Lisinopril 10 mg	22	6.9%
		Amlodipine 10 mg + Lisinopril 10 mg	245	76.6%
	CCB + Thiazide Diuretic	Amlodipine 5 mg + Hydrochlorothiazide (HCT) 25 mg	8	2.5%
		Amlodipine 10 mg + Hydrochlorothiazide (HCT) 25 mg	43	13.4%
	ACE Inhibitor + Thiazide Diuretic	Lisinopril 10 mg + Hydrochlorothiazide (HCT) 25 mg	2	0.6%
		Total of Two-Drug Therapy		320
Three-Drug Therapy	CCB + ACE Inhibitor + Thiazide Diuretic	Amlodipine 5 mg + Lisinopril 10 mg + Hydrochlorothiazide (HCT) 25 mg	2	22.2%
		Amlodipine 10 mg + Lisinopril 10 mg + Hydrochlorothiazide (HCT) 25 mg	6	66.7%
	CCB + CCB + ACE Inhibitor	Amlodipine 5 mg + Amlodipine 10 mg + Lisinopril 10 mg	1	11.1%
		Total of Three-Drug Therapy		9

Total Drug	832	100%
------------	-----	------

The antihypertensive medication profile among hypertensive patients is presented in Table 2. Monotherapy constitutes the majority of the prescribed regimens, accounting for 60.5% (n = 503) of the total sample. Within this category, Calcium Channel Blockers (CCBs), specifically Amlodipine (5 mg and 10 mg), overwhelmingly dominate, comprising 96.8% of all monotherapy prescriptions (487 out of 503). In stark contrast, Angiotensin-Converting Enzyme (ACE) Inhibitors (Lisinopril 10 mg) and Thiazide Diuretics (Hydrochlorothiazide/HCT 25 mg) are minimally utilized at 1% and 2.2%, respectively. The heavy reliance on monotherapy observed in this data moderately diverges from current international and national clinical practice guidelines. The European Society of Cardiology/European Society of Hypertension (ESC/ESH) [10], the International Society of Hypertension (ISH) [11], and the Indonesian Society of Hypertension (InaSH) [12] universally recommend initiating hypertension treatment with a two-drug combination for most patients. Initial dual therapy is preferred because it achieves target blood pressure more rapidly, targets multiple pathophysiological pathways, and improves long-term patient adherence [10,12].

Monotherapy is generally reserved only for low-risk Stage 1 hypertension patients (systolic BP < 150 mmHg) or frail, elderly patients [10,11]. The high percentage of monotherapy in this setting may suggest either a large cohort of patients with mild/early-stage hypertension or a conservative prescribing habit among clinicians. However, the choice of Amlodipine as the premier monotherapy agent aligns well with both national and global standards. CCBs are highly effective in lowering blood pressure, possess extensive evidence for stroke prevention, and are frequently preferred in Asian populations due to their efficacy and metabolic neutrality [12,13]. Furthermore, in Indonesia's national health insurance system (BPJS Kesehatan), Amlodipine is highly accessible, cost-effective, and widely available across all tiers of healthcare facilities, heavily influencing its high prescription frequency [13].

Combination therapy accounts for 39.6% of the total drug profile, split into two-drug therapy (38.5%) and three-drug therapy (1.1%). The preferred dual-therapy combination is a CCB + ACE Inhibitor (Amlodipine + Lisinopril), accounting for 83.4% of all two-drug regimens (267 out of 320), with the 10 mg Amlodipine + 10 mg Lisinopril strength being the most frequent (76.6%). This is followed by CCB + Thiazide Diuretic (15.9%) and a very minor representation of ACE Inhibitor + Thiazide Diuretic (0.6%).

The strong preference for the CCB + ACE Inhibitor combination represents excellent alignment with international (AHA/ACC, ESC/ESH) and national (Indonesian Society of Hypertension or InaSH) guidelines [10,12,14]. This specific pairing is highly synergistic to enhanced the efficacy and as side-effect mitigation. CCBs induce vasodilation, which can trigger a compensatory activation of the Renin-Angiotensin-Aldosterone System (RAAS). Adding an ACE inhibitor counteracts this RAAS activation, providing superior blood pressure control [10]. A common side effect of high-dose Amlodipine (10 mg) is peripheral ankle edema. The addition of a RAAS blocker like Lisinopril induces venodilatation, significantly reducing the incidence and severity of CCB-induced edema, thereby improving patient tolerance [10,14]. Three-drug regimens are rarely used (1.1%). The vast majority of these (8 out of 9) utilize the guideline-recommended triple combination of CCB + ACE Inhibitor + Thiazide Diuretic. However, the table highlights a distinct clinical anomaly: 1 prescription (11.1% of triple therapy) consists of Amlodipine 5 mg + Amlodipine 10 mg + Lisinopril 10 mg. The standard escalation path for resistant or uncontrolled hypertension is a triple combination of a RAAS inhibitor, a CCB, and a thiazide/thiazide-like diuretic [10,11]. The single prescription containing two different strengths of the same drug (Amlodipine 5 mg + Amlodipine 10 mg) alongside Lisinopril represents a therapeutic duplication error or an irrational prescribing practice. Clinically, there is no pharmacological justification for prescribing two different doses of the same CCB concurrently; if a higher dose is required, the prescription should simply be optimized to the maximum tolerated single dose (e.g., Amlodipine 10 mg) while adding a separate drug class, such as a diuretic, to address volume overload [11,12].

4. DISCUSSION

The demographic characteristics of the 832 patients showed that the majority of subjects were female (80.60%) and most were in the middle-aged to elderly age group, with an age range of 41–59 years at 61.10% and age ≥60 years at 31.10%. The dominance of female patients in this sample is in line with several epidemiological studies in Indonesia which show that women often have higher levels of awareness and health-seeking behavior in primary health facilities than men [13]. In addition, the high percentage of patients over 40 years of age (total 92.2%) reflects the pathophysiology of hypertension, where prevalence increases significantly with age due to cellular aging processes, increased vascular stiffness, and decreased elasticity of

arterial blood vessels [11,15]). When correlated with the treatment profile in previous data which showed a massive dominance of Calcium Channel Blocker (CCB) monotherapy in the form of Amlodipine, the age characteristics of these patients provide strong clinical rationale. Based on guidelines from the International Society of Hypertension (ISH) [11] and the Indonesian Society of Hypertension (InaSH) [12], the CCB group is a very effective first-line therapy for the elderly group (age ≥ 60 years, which makes up 31.10% of the total sample). CCB works very well in treating isolated systolic hypertension which is commonly found in the elderly due to arterial stiffness [11,12]. However, for the 41–59 age group which is the largest majority (61.10%), the latest international guidelines such as those from ESC/ESH suggest that therapy should not stop at monotherapy alone, but should be initiated immediately with a combination of two drugs [10]. This aims to achieve blood pressure targets more aggressively and comprehensively to protect target organs from long-term cardiovascular complications in productive age [10,11]. The relationship between gender characteristics, age, and drug profile is also very crucial in terms of patient safety. In the characteristics table, the young adult age group (18–40 years) only makes up a small portion, namely 7.80%. From a clinical perspective, the low number of patients of childbearing age minimizes the risk of teratogenicity in this population. National and international guidelines emphasize that RAAS inhibitor drugs, such as ACE inhibitors (Lisinopril), found in the combination profile in previous data, are absolutely contraindicated in pregnant women because they can cause fetal defects [10,12]. Therefore, the fact that the majority of the patient population are women over 41 years of age (most of whom have entered perimenopause or postmenopause) provides clinicians with a sense of security in widely prescribing CCB + ACE inhibitor (Amlodipine + Lisinopril) combination therapy without major concerns about reproductive risks [10,15].

The present study also found that the combination of a calcium channel blocker (CCB) and an angiotensin-converting enzyme inhibitor (ACEI) was prescribed more frequently than the combination of a CCB and an angiotensin II receptor blocker (ARB). This prescribing pattern may appear unexpected because both ACEIs and ARBs are recommended as first-line antihypertensive agents by current international guidelines. However, the predominance of the CCB–ACEI combination is likely attributable to healthcare system factors, including formulary policies, drug procurement systems, and pharmacoeconomic considerations, rather than differences in clinical efficacy. According to the 2023 European Society of Hypertension (ESH) and the 2020 International Society of Hypertension (ISH) guidelines, both ACEIs and ARBs are equally recommended as first-line agents, either as monotherapy or in combination with CCBs or thiazide/thiazide-like diuretics for patients requiring combination therapy. Large randomized clinical trials and meta-analyses have demonstrated that ACEI–CCB and ARB–CCB combinations provide comparable reductions in blood pressure and similar cardiovascular and renal protection. Consequently, current guidelines do not recommend one combination over the other based solely on antihypertensive efficacy [4,11].

The higher utilization of the CCB–ACEI combination observed in this study is therefore more likely related to the implementation of Indonesia's National Formulary (Formularium Nasional or Fornas) and the reimbursement policies of the National Health Insurance (JKN/BPJS Kesehatan). In primary healthcare facilities, antihypertensive prescribing is generally guided by the National Formulary, which emphasizes the use of cost-effective generic medicines. ACE inhibitors such as lisinopril and captopril are widely available as inexpensive generic drugs and are routinely included in procurement systems at public health centers. In contrast, many ARBs, including candesartan, irbesartan, and telmisartan, remain relatively more expensive and may have more limited availability depending on regional procurement and local formulary implementation. Therefore, prescribing practices are influenced not only by evidence-based recommendations but also by medication accessibility and healthcare financing policies [16,17]. Another possible explanation is the recommended treatment algorithm for renin-angiotensin system (RAS) inhibitors. Clinical practice guidelines generally recommend initiating treatment with either an ACEI or an ARB however ARBs are commonly reserved for patients who develop intolerance to ACEIs, particularly persistent dry cough or, less frequently, angioedema. ACEI-induced cough is thought to result from the accumulation of bradykinin and substance P due to inhibition of angiotensin-converting enzyme and has been reported in approximately 5–20% of treated patients. Because ARBs do not inhibit bradykinin degradation, they exhibit a substantially lower incidence of cough and are frequently prescribed as alternative therapy rather than first-choice therapy in patients who tolerate ACEIs well [4,11,18]. According to a pharmacoeconomic perspective, ACE inhibitors are generally associated with lower acquisition costs than ARBs while providing similar cardiovascular benefits in most patients with uncomplicated hypertension. Several economic evaluations have demonstrated that ACEIs remain among the most cost-effective antihypertensive agents, particularly in publicly funded healthcare systems where budget constraints influence drug selection. Consequently, healthcare providers

working within national insurance systems may preferentially prescribe ACEIs before considering ARBs unless specific clinical indications or intolerance exist [19]. The findings of this study suggest that antihypertensive prescribing patterns are influenced not only by international evidence-based guidelines but also by local health policy, formulary restrictions, medication availability, and cost-effectiveness considerations. Similar prescribing trends have been reported in other countries with publicly funded healthcare systems, where ACEIs continue to be prescribed more frequently than ARBs despite comparable therapeutic efficacy. Therefore, the predominance of the CCB-ACEI combination observed in this study likely reflects the implementation of rational drug use policies within the Indonesian National Health Insurance system rather than a preference based on superior clinical outcomes.

5. CONCLUSION

Based on the results of a study of 832 hypertensive patients, it can be concluded that the majority of subjects were women (80.60%) and in the middle-aged to elderly age group, with the largest percentage in the 41–59 year range (61.10%). These age characteristics align with the clinical profile of degenerative blood vessel pathophysiology, which increases significantly after the age of 40. In terms of treatment patterns, monotherapy remains the primary choice (60.5%), with the calcium channel blocker (CCB), Amlodipine, dominating the treatment regimen (96.8%). Meanwhile, two-drug combination therapy was used by 38.5% of patients, with the synergistic CCB + ACE inhibitor (Amlodipine + Lisinopril) being the most commonly chosen dual therapy regimen (83.4%). In general, the choice of medication, such as the Amlodipine and Lisinopril combination in this study, demonstrated excellent adherence to national (InaSH) and international (ISH/ESC) clinical guidelines, given its high efficacy in reducing cardiovascular risk and its efficient availability within the healthcare system. However, two important clinical evaluation points remain are to optimization of early combination therapy and the dominance of monotherapy in the productive age group (41–59 years) needs to be reviewed, as recent guidelines recommend immediate initiation with a two-drug combination to more aggressively achieve blood pressure targets. The anomaly of duplicate therapy (Amlodipine 5 mg + Amlodipine 10 mg) in the triple-drug therapy group underscores the importance of medication reconciliation and increased prescribing accuracy to ensure patient safety.

Acknowledgements:

Author contributions: Concept – HF, LN, NA; Design – NA; Supervision – HF; Resources – HF, LN, NA; Materials – HF; Data Collection and/or Processing – HF, NA; Analysis and/or Interpretation – HF, LN, NA; Literature Search – HF, LN, NA; Writing – NA.; Critical Reviews – HF, LN, NA.

Conflict of interest statement: The authors declared no conflict of interest in the manuscript.

REFERENCES

- [1] Zhou, Bin, et al. "Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019: a pooled analysis of 1201 population-representative studies with 104 million participants." *The lancet*. 2021; 398(10304): 957-980.
- [2] World Health Organization. *Global report on hypertension: the race against a silent killer*. Geneva: World Health Organization. 2023.
- [3] Febriawati, Henni, et al. Pelaksanaan Program Pengelolaan Penyakit Kronis (Prolanis). *Citra Delima Scientific Journal of Citra Internasional Institute*. 2022; 6(2): 105-110.
- [4] Mancia Giuseppe, Kreutz Reinhold, Brunstrom Mattias, Burnier Michel, Grassi Guido, et al.. "2023 ESH Guidelines for the management of arterial hypertension The Task Force for the management of arterial hypertension of the European Society of Hypertension: Endorsed by the International Society of Hypertension (ISH) and the European Renal Association (ERA). *Journal Of Hypertension*. 2023; 41(1): 1874, 2023.

- [5] Saputri, Eka Oktaviani, Enrico Adhitya Rinaldi, and Tinon Ambarini. "Pengaruh Ketersediaan Obat, Waktu Tunggu Resep, dan Pemberian Informasi Obat Terhadap Loyalitas Pasien Rawat Jalan Di RS Islam Al Muchtar Karawang." *Jurnal Manajemen dan Administrasi Rumah Sakit Indonesia (MARSI)*. 2026; 10(1): 52-67.
- [6] World Health Organization. Guideline for the pharmacological treatment of hypertension in adults. Geneva: World Health Organization; 2021.
- [7] Mills KT, Stefanescu A, He J. The global epidemiology of hypertension. *Nat Rev Nephrol*. 2020;16(4):223-237.
- [8] Oliveros E, Patel H, Kyung S, Fugar S, Goldberg A, Madan N, et al. Hypertension in older adults: Assessment, management, and challenges. *Clin Cardiol*. 2020;43(2):99-107.
- [9] McEvoy JW, McCarthy CP, Bruno RM, Brouwers S, Canavan MD, Ceconi C, et al. 2024 ESC Guidelines for the management of elevated blood pressure and hypertension. *Eur Heart J*. 2024;45(38):3912-4018.
- [10] Williams B, Mancia G, Spiering W, Agabiti Rosei E, Azizi M, Burnier M, et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension. *Eur Heart J*. 2018;39(33):3021-3104.
- [11] Unger T, Borghi C, Charchar F, Khan NA, Poulter NR, Prabhakaran D, et al. International Society of Hypertension Global Hypertension Practice Guidelines. *Hypertension*. 2020;75(6):1334-1357.
- [12] Indonesian Society of Hypertension (InaSH). Konsensus Penatalaksanaan Hipertensi 2021. Jakarta: InaSH; 2021.
- [13] Puspitasari IM, Sinuraya AL, Arisanti N, Alfian SD. Evaluation of antihypertensive medication utilization and blood pressure control in primary care facilities in Indonesia. *J Multidiscip Healthc*. 2020; 13:1633-41.
- [14] Whelton PK, Carey RM, Aronow WS, Casey DE, Collins KJ, Dennison Himmelfarb C, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults. *Hypertension*. 2018;71(6): 1269-1324.
- [15] Maas AH, Rosano G, Cifkova R, Chieffo A, van Dijken S, Rieska M, et al. Cardiovascular health in women: a statement from the European Society of Cardiology Staff for the European Society of Cardiology. *Eur Heart J*. 2021;42(12):1161-1169.
- [16] Kementerian Kesehatan Republik Indonesia. Formularium Nasional. Jakarta: Ministry of Health of the Republic of Indonesia. 2025.
- [17] BPJS Kesehatan. Panduan Pelayanan Program Jaminan Kesehatan Nasional. Jakarta: BPJS Kesehatan. 2024.
- [18] Burnier M, Egan BM. Adherence in hypertension. *Circ Res*. 2019;124(7):1124-1140.
- [19] Thomopoulos C, Parati G, Zanchetti A. Effects of blood pressure-lowering treatment on cardiovascular outcomes and cost-effectiveness: overview of meta-analyses. *J Hypertens*. 2020;38(11):2169-2179.