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Original Article

Chronic Disease Medicine Prices and Availability Under Indonesia's National Health Social Security Agency (BPJS): A Cross-sectional Study from Jakarta and Yogyakarta

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Abstract

This study aims to analyze the gap between financing mechanisms and the realities of the medicine market within the National Health Social Security Agency (BPJS) for chronic diseases in Indonesia. The article examines variations in procurement prices and medicine availability, and their implications for the financial sustainability of healthcare facilities and patient access. The cross-sectional study uses secondary data on procurement prices together with observations on the availability of chronic disease medicines in hospitals and pharmacies in Jakarta and Yogyakarta in 2024. The data were analyzed to identify patterns of variation and gaps between procurement prices and BPJS reimbursement levels. The results show price variation between facilities and regions, with medicine availability higher in pharmacies than in hospitals. BPJS reimbursement rates for some medicines do not cover procurement costs, which may cause financial losses for healthcare facilities and threaten supply sustainability. These findings point to weaknesses in BPJS medicine reimbursement and price-negotiation mechanisms. The recommendations call for pricing mechanisms that are more responsive to market dynamics, greater price transparency, and harmonized procurement policies to ensure sustainable access to chronic disease medicines. This Indonesian case study offers lessons for middle-income countries implementing national health insurance to achieve universal health coverage.

Keywords

Medicine prices, medicine availability, BPJS, medicine price reimbursement, Indonesia

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Introduction

Medicine prices significantly affect access to quality healthcare services in Indonesia, a developing country with a large population. High prices are a major barrier for patients, particularly those in lower-middle-income groups, and they affect both individual well-being and overall societal productivity.[1–4]

These challenges are further complicated by the increasing prevalence of chronic diseases such as diabetes, hypertension, heart disease, and cancer. These diseases require long-term treatment, making medicine prices a determining factor in the sustainability of care.[5–7] To address

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this issue, the Indonesian government has implemented the National Health Insurance (JKN) program, which is administered by the National Health Social Security Agency (BPJS Kesehatan; hereafter referred to as BPJS.[8] For patients with chronic diseases, the inability to purchase medication on a regular basis can lead to more serious health complications, raise healthcare costs, and ultimately reduce quality of life.[9] The program aims to provide health protection for all citizens, including access to essential medicines,[10,11] and to support universal health coverage (UHC) as set out by the World Health Organization. Access to medicines is essential for sustaining UHC.[12]

Despite the expansion of JKN membership coverage and the availability of dedicated mechanisms for delivering medicines to patients with chronic diseases, the system still faces various challenges. Budget constraints, high claims for chronic disease medications, and the unequal distribution of healthcare services, particularly in remote areas, are recurring issues.[11,12]

As a result, complaints about delays in the provision of medicines and limited availability remain common.[13] In addition, empirical evidence regarding the adequacy of the availability, pricing, and financing of chronic disease medicines within the JKN context remains limited, while in-depth analysis of the alignment between BPJS reimbursement rates, medicine procurement prices, and their implications for medicine supply at the health facility level remains relatively underexplored.

In addition, the structure of the Indonesian medicine market, which involves a range of stakeholders, from manufacturers and distributors to pharmacies and hospitals, also influences medicine price dynamics. Government policies, such as ceiling retail price regulations and incentives for generic medicine production, have been implemented to control medicine prices. The effectiveness of these policies, however, requires further evaluation, given the significant price disparity between generic and branded medicines and the uneven distribution of medicines across regions.[10,14,15]

This article aims to analyze operational gaps in procurement prices, availability, and BPJS reimbursement rates, key factors that impact medicine inventory management in healthcare facilities, by surveying health facilities in Jakarta and Yogyakarta. By focusing on these areas, the study seeks to clarify how discrepancies among procurement prices, availability, and reimbursement rates affect access to chronic disease medicines. Studying these issues at the facility level is expected to provide technical recommendations for policymakers and healthcare providers to improve the medicine financing system within the JKN program and support the effective implementation of UHC.

Methods

This study employed a quantitative, cross-sectional design using retrospective secondary data. Primary data were obtained through direct observation of medicine availability in hospitals and pharmacies, whereas secondary data on procurement prices and BPJS reimbursement rates were extracted from existing records. The retrospective analysis of secondary data was conducted to assess price variation and discrepancies between procurement prices and reimbursement rates within a cross-sectional design.

All study data were collected from August to September 2024. Therefore, all procurement price observations presented in Table 3 were collected before October 23, 2024. Accordingly, Ministry of Health Decree No. HK.01.07/MENKES/503/2024 was used as the applicable reference for the reimbursement values in this study, as it was in effect during the data collection period. Decree No. HK.01.07/MENKES/1665/2024, which revoked Decree No. HK.01.07/MENKES/503/2024, was issued subsequently on October 23, 2024.

The study locations were the Special Regions of Jakarta and Yogyakarta in Indonesia. The researchers selected these provinces purposively. Jakarta and Yogyakarta were selected because they are major urban provinces in Indonesia with relatively well-developed healthcare infrastructure, thus having a complete medical distribution chain and easy access to healthcare services at all levels. The sample collection sites were hospitals and referral pharmacies.

The flow diagram of the method is shown in Figure 1.

Operational Definition

The following are operational definitions of several standard terms used in healthcare services in Indonesia.

The National Health Social Security Agency, hereinafter referred to as BPJS, is a government institution responsible for administering a health insurance program for all Indonesians. Individuals with a fixed income are required to pay monthly premiums at affordable rates, whereas low-income individuals have their premiums paid by the government.[16,17] BPJS aims for universal coverage, and BPJS membership currently approaches 100% of the Indonesian population, or 284,337,094 people.[18]

Referral pharmacies (PRB pharmacies) are pharmacies that work with BPJS to provide medication services to BPJS members with chronic diseases that are in a stable condition and require long-term treatment. When such chronic diseases are detected or diagnosed, patients are referred to a hospital, where they see a specialist and receive medication. Once the patient's condition is stable and controlled, the patient is returned to the primary healthcare facility (FKTP). Furthermore, with FKTP endorsement, patients can collect their chronic disease medications at PRB pharmacies, which offer greater convenience. Conditions treated under the referral program include diabetes mellitus, hypertension, heart disease, asthma, chronic obstructive pulmonary disease, epilepsy, schizophrenia, systemic lupus erythematosus, and stroke.[19]

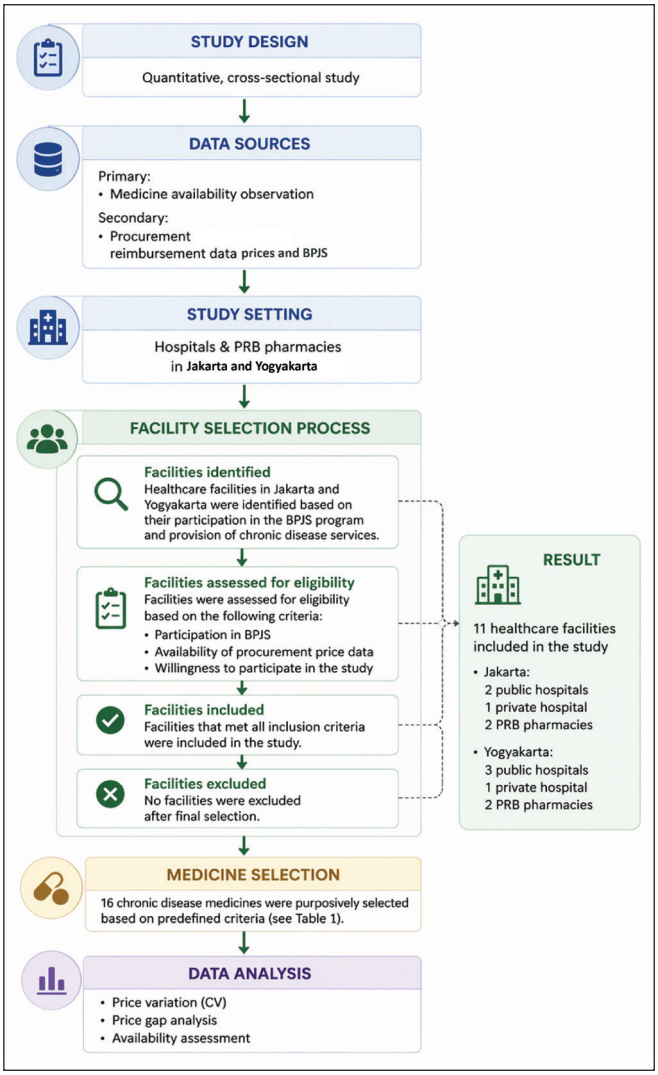

Figure 1. Flow Diagram of Study Design and Facility Selection.

Note: BPJS: National Health Social Security Agency, PRB: Retail Pharmacies in Collaboration with BPJS.

Samples

The researchers purposively selected sample locations, comprising government hospitals, private hospitals, and PRB pharmacies in each province.

The study locations included two public hospitals in Jakarta, one private hospital, and two PRB pharmacies. In Yogyakarta, the study location consisted of three public hospitals, one private hospital, and two PRB pharmacies. A list of eligible healthcare facilities in each province was first identified based on their participation in the JKN program and the provision of chronic disease services. Facilities were then assessed for eligibility according to the study criteria, including the availability of procurement data and willingness to participate. Based on these considerations, 11 facilities were purposively selected for the study. No facilities were excluded after final selection (see Figure 1).

The researchers purposively selected medicine samples that met at least two of the following three criteria: (a) Medications for chronic diseases that are readily available at both hospitals and PRB pharmacies; (b) medications with widespread use; and (c) medications with relatively high prices. The variables studied were the names of the medicines (generic and branded), the procurement price from distributors, the reimbursement price from BPJS, and the availability of each medicine. This produced 16 medicine samples, as shown in Table 1.

During the time of the study, around 489 medicine items were listed under the PRB medicine program, representing around 80 generic medicines with different strengths and dosage forms, based on Ministry of Health Decree No. 503/2024.[20] From this population, 16 medicine samples were selected to represent commonly used chronic disease medicines with a range of price characteristics and procurement patterns. Before the main study, a pilot assessment was conducted in a PRB pharmacy and a hospital in Bekasi, West Java, to confirm the availability and suitability of the selected medicines within the study settings. On the basis of the pilot findings, one to two medicine items were adjusted before final data collection.

A formal sample-size calculation was not applicable to this study design because the study employed a purposive sampling approach rather than a statistically representative sampling strategy. Medicine samples were selected using a purposive sampling approach to capture variation across different types of healthcare facilities and commonly used chronic disease medicines, rather than achieving statistical representativeness. The inclusion of multiple facility types across two provinces, together with a selection of widely used medicines with varying price characteristics, was considered sufficient to explore patterns of price variation, availability, and reimbursement gaps within the BPJS system.

Ethical Approval

Ethics Approval No. 114/KE.03/SK/06/2024 for the health research was obtained from the Health Research Ethics Committee, National Research and Innovation Agency (NRIA), Republic of Indonesia. In accordance with the ethics approval, written informed consent was obtained from the person in charge of each healthcare facility before the survey.

Data Analysis

Quantitative data were analyzed using descriptive statistical methods and are presented in tables and figures. The analysis included medicine availability and procurement prices across provinces and types of healthcare facilities. Medicine availability refers to the minimum availability of one unit of a

Table 1. Basket of 16 Medicines Analyzed.

Name of Medicines	Selected Presentation	Therapy Indication
Acarbose	Tablet 50 mg	Diabetes
Amlodipine	Tablet or capsule 5 mg	Hypertension
Insulin Aspart Protamine	Insulin aspart 70/30, 100 IU/mL injection	Diabetes
Acetylsalicylic acid (aspirin)	Tablet 80 mg	Antiplatelet agent
Bisoprolol	Tablet 2.5 mg	Heart disease, hypertension
Captopril	Tablet 25 mg	Hypertension
Diltiazem	Tablet, slow-release 100 mg	Angina
Furosemide	Tablet or capsule 40 mg	Diuretic
Glimepiride	Tablet 2 mg	Diabetes
Isosorbide dinitrate	Tablet 5 mg	Angina
Candesartan	Tablet 8 mg	Hypertension
Clopidogrel	Tablet 75 mg	Antiplatelet agent
Metformin	Tablet or capsule 500 mg	Diabetes
Nifedipine	Oral tablet 30 mg	Hypertension
Salbutamol inhaler	Inhaler 100 mcg	Asthma
Simvastatin	Tablet 20 mg	Hyperlipidemia

specific medicine at the time of data collection. Procurement price is the price of the medicine in the smallest available dosage form, as obtained by hospitals or pharmacies from pharmaceutical wholesalers (PBFs) or distributors.

Price variation across distributors for the same generic medicine was assessed using the percentage price variation, which was calculated as follows:

$$\text{Price variation } (\%) = \left(\frac{\text{Highest price} - \text{Lowest price}}{\text{Lowest price}} \right) \times 100$$

To assess the discrepancies between procurement prices and reimbursement levels, the difference between the national medicine claim price under the BPJS reimbursement scheme (as set out in Ministry of Health Decree No. 503/2024) and the actual procurement price was calculated as follows:

$$\text{Price difference } (\%) = \left(\frac{\text{Claim price} - \text{Procurement price}}{\text{Procurement price}} \right) \times 100$$

Price variability for medicines with the same trademark name was further evaluated using the coefficient of variation (CV),[21] calculated as:

$$\text{CV}(\%) = \left(\frac{\text{Standard deviation}}{\text{Mean}} \right) \times 100$$

Procurement transactions were used as the unit of analysis, with each individual transaction treated as one observation. Transactions involving the same medicine and distributor were retained when they represented separate procurement transactions. Before analysis, the data were cleaned and verified against the original data sources. Missing or invalid price values were excluded from the medicine-level statistical calculations and were not imputed. No weighting was applied; therefore, each valid procurement transaction contributed equally to the descriptive statistics.

For data aggregation, transactions were grouped by medicine/trademark name. The number of distributors was calculated based on the number of unique PBF codes supplying each medicine, whereas the number of procurement transactions represented the number of valid transactions contributing to the price calculations. The mean, sample standard deviation (SD), minimum, maximum, and CV were calculated from the transaction prices. The sample SD was calculated using $n - 1$ as the denominator.

All analyses were conducted using Microsoft Excel 2010 (Microsoft Corporation, Redmond, WA, USA).

Results and Discussion

All medicine-related results presented in Figures 2 and 3 and Tables 2 and 3 refer to the sample locations described in the Methods section. The Jakarta locations consisted of two public hospitals, one private hospital, and two PRB pharmacies, whereas the Yogyakarta locations consisted of three public hospitals, one private hospital, and two PRB pharmacies. The following sections present both the observed findings and their interpretation to provide a comprehensive understanding of medicine availability and pricing within the study settings.

Figure 2 presents the distribution of medicine availability across Jakarta and Yogyakarta and across facility types. Overall, availability appears broadly similar between the two regions, with slightly higher availability observed in Jakarta. A notable exception was aspirin, which was not available in pharmacies in Jakarta at the time of the survey. In general,

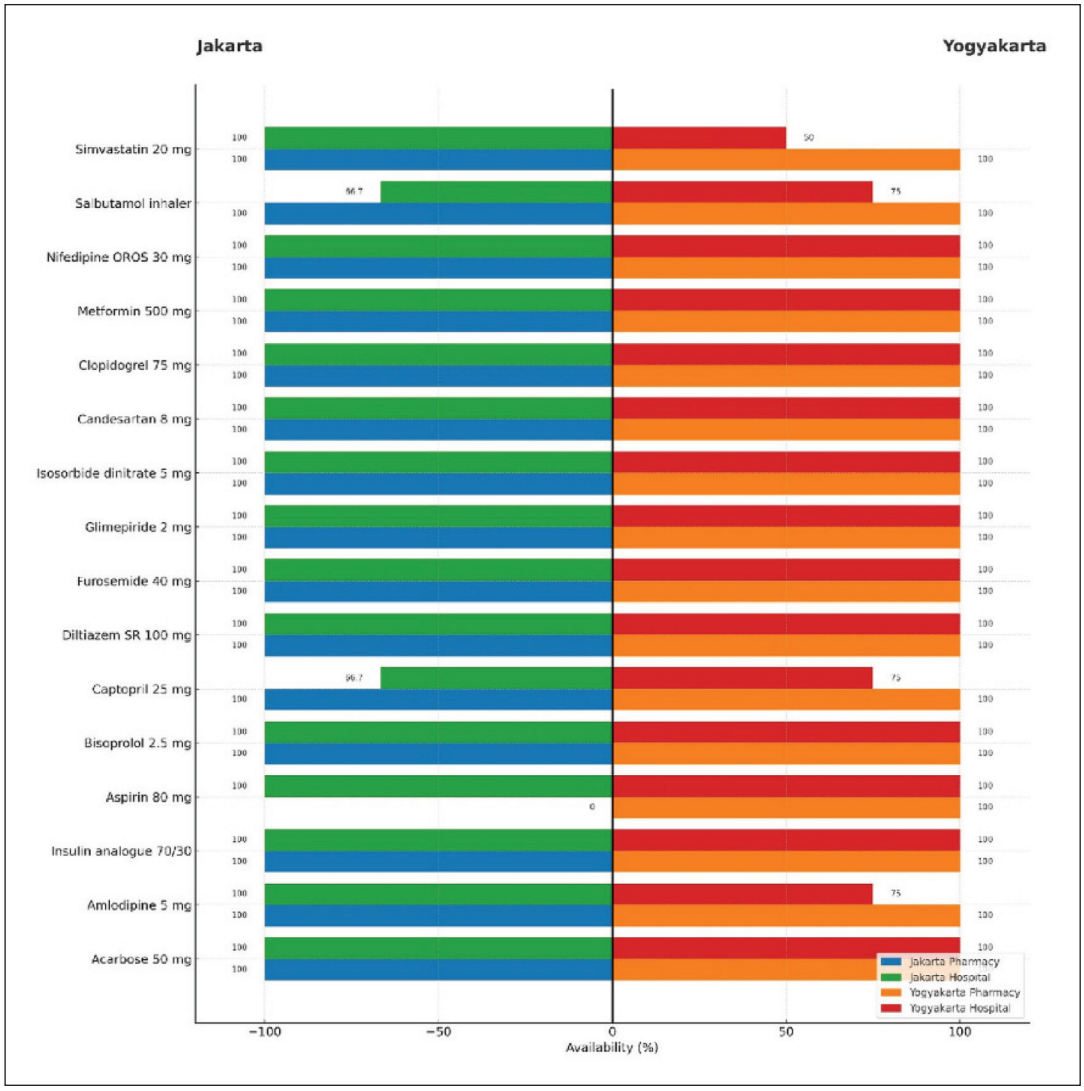

Figure 2. Medicine Availability in Jakarta and Yogyakarta by Healthcare Facility Type.

medicine availability tended to be higher in pharmacies than in hospitals overall. Detailed data on medicine availability are reported in the supplementary materials.

The study results indicate that the availability of BPJS medicines is generally good, although five medicine samples showed availability below 100%. These are: Amlodipine 5 mg tablets/caps in hospitals in Yogyakarta (75%); acetylsalicylic acid (aspirin) 80 mg tablets in pharmacies in Jakarta (0%); captopril 25 mg tablets in hospitals in Jakarta (66.7%) and in hospitals in Yogyakarta (75%); salbutamol inhaler 100 mcg in hospitals in Jakarta (66.7%) and in hospitals in Yogyakarta (75%); and simvastatin 20 mg in hospitals in Yogyakarta (50%). In another study in Indonesia, the availability of medicines in healthcare facilities ranged from 60.58% to 76.6%.[22] This situation indicates the need for better planning and procurement of medicines.

It is worth noting, however, that aspirin 80 mg was out of stock at all pharmacies in Jakarta at the time of data collection, which may reflect a temporary stockout or limited availability in the sampled settings. Pharmacies typically procure medications in small quantities because their use is lower than in hospitals. As a result, if a medicine runs out at the distributor or in the market, pharmacies do not hold a reserve stock. The supply-chain system indicates that retail pharmacies generally obtain medicines from PBFs and procure quantities sufficient to meet sales demand.[23,24] In contrast, hospitals tend to procure medicines based on planned needs and through structured procurement mechanisms such as e-catalogs or tenders, resulting in larger and more scheduled procurement.[10,25]

In addition, the occurrence of shortages of 80 mg aspirin tablets at all surveyed pharmacies in Jakarta is notable. This may reflect local forecasting, distributor, or supply-chain limitations, thereby failing to meet medicine needs at certain times.[26]

Research by Fanda et al. (2024) indicates that the availability of essential medicines in primary healthcare facilities in Indonesia is generally good. Even so, regional inequality

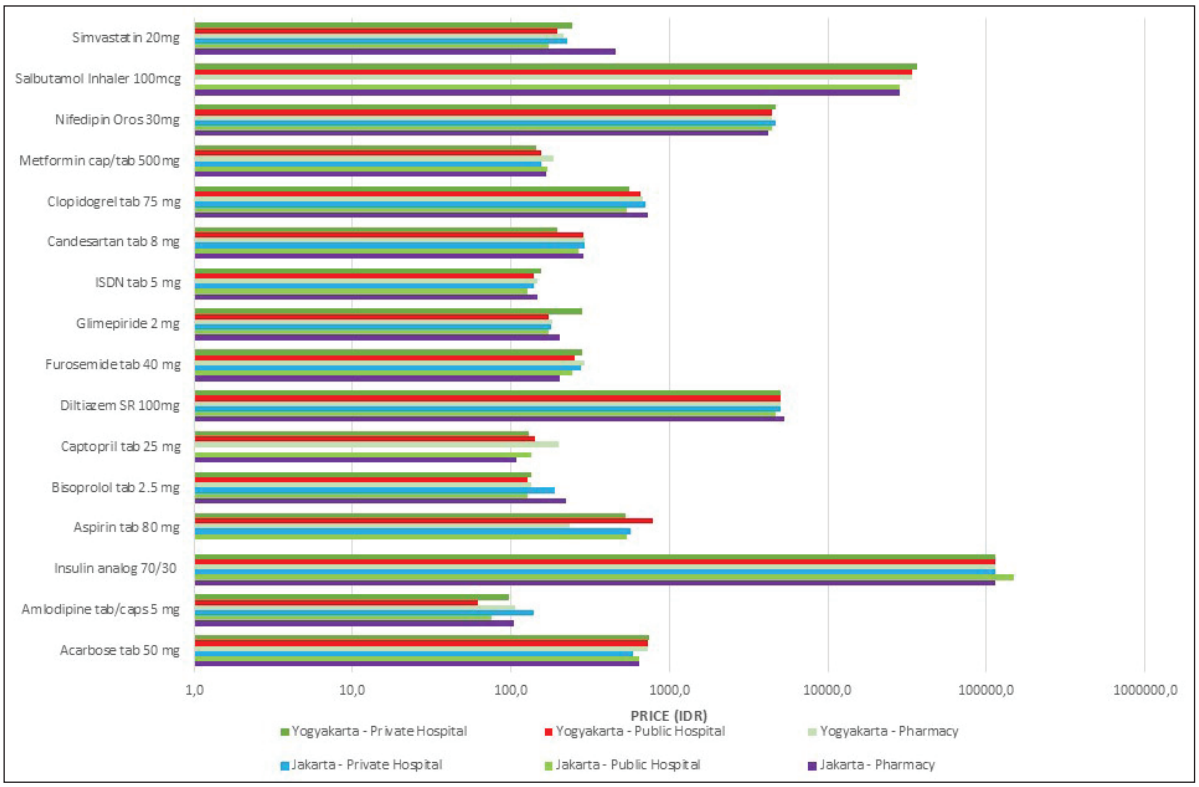

Figure 3. Average Procurement Medicine Prices in Jakarta and Yogyakarta by Healthcare Facility Type.

Table 2. Price Variations for Medicines with the Same Trademark Name.

Medicine Name	No. of Distributors	No. of Procurement Transactions (1443)	Mean (IDR)	SD	Min (IDR)	Max (IDR)	CV	CV Categories
Acarbose tab 50 mg	4	87	706	58	500	751	8.2	Low
Amlodipine tab/caps 5 mg	10	67	96	47	50	255	48.6	High
Insulin aspart protamine/ insulin aspart 70/30, 100 IU/mL injection	6	123	118,087	16,240	113,018	169,697	13.8	Medium
Acetylsalicylic acid (aspirin)	10	65	614	369	216	1470	60.1	High
Bisoprolol tab 2.5 mg	4	115	153	83	123	528	54.5	High
Captopril tab 25 mg	7	39	131	33	107	200	25.0	Medium
Diltiazem SR 100 mg	2	86	5,066	222	4,558	5,458	4.4	Low
Furosemide cap/tab 40 mg	7	57	252	59	135	418	23.5	Medium
Glimepiride 2 mg	3	92	197	46	144	295	23.4	Medium
Isosorbide dinitrate tab 5 mg	5	47	144	10	140	175	7.2	Low
Candesartan tab 8 mg	3	109	272	55	86	300	20.2	Medium
Clopidogrel tab 75 mg	5	123	644	150	200	1,384	23.3	Medium
Metformin cap/tab 500 mg	3	147	162	27	91	294	16.4	Medium
Nifedipine Oros 30 mg	4	140	4,478	239	3,852	5,184	5.3	Low
Salbutamol inhaler 100 mcg	8	53	31,973	5,160	26,480	40,000	16.1	Medium
Simvastatin 20 mg	5	93	274	190	156	860	69.2	High

Notes: Prices were calculated using individual procurement transactions as the unit of analysis. "Number of distributors" indicates the number of unique PBF codes supplying each medicine, whereas "number of procurement transactions (*n*)" indicates the number of valid procurement transactions contributing to the calculation of the descriptive statistics (mean, SD, minimum, maximum, and CV). No weighting was applied; each valid procurement transaction was treated as one observation. IDR: Indonesian rupiah currency, CV: Coefficient of variation, CV < 10 is low, CV: 10–30 is middle, CV > 30 is high.

Table 3. Percentage Difference in Procurement Price of Healthcare Facilities Compared to the National Medicine Claim Price of BPJS.

Medicine Name	*National Claim Price 2024	Jakarta				Yogyakarta			
		Pharmacy	Difference (%)	Hospital	Difference (%)	Pharmacy	Difference (%)	Hospital	Difference (%)
Acarbose tab 50 mg	700	646.0	8.4	630.5	11.0	731.6	−4.3%	736.3	−4.9%
Amlodipine tab/caps 5 mg	144	105.1	37.0	119.6	20.4	106.2	*35.6%*	80.4	*79.1%*
Insulin aspart protamine/insulin aspart 70/30. 100 IU/mL injection	113,018	113,018	0.0	140,125	−19.3	113.018	0.0%	113.018	0.0%
Acetylsalicylic acid (aspirin) tab 80 mg	215	*NA	*NA	542.0	−60.3	234.3	−8.2%	662.7	**−67.6%**
Bisoprolol tab 2.5 mg	124	223.7	−44.6	156.0	−20.5	133.7	−7.2%	130.7	−5.1%
Captopril tab 25 mg	107	108.0	−0.9	135.3	−20.9	200.0	**−46.5%**	140.8	**−24.0%**
Diltiazem SR 100 mg	5059	5327.0	−5.0	4847.9	4.4	5059.0	0.0%	5068.6	−0.2%
Furosemide cap/tab 40 mg	210	203.3	3.3	251.7	−16.6	291.0	**−27.8%**	265.1	−20.8%
Glimepiride 2 mg	175	204.7	−14.5	176.9	−1.1	183.9	−4.9%	212.2	−17.5%
Isosorbide dinitrate tab 5 mg	113	147.2	−23.2	132.8	−14.9	147.0	**−23.1%**	145.8	**−22.5%**
Candesartan tab 8 mg	285	286.5	−0.5	279.7	1.9	293.5	−2.9%	248.5	14.7%
Clopidogrel tab 75 mg	735	734.8	0.0	622.4	18.1	684.2	7.4%	617.8	19.0%
Metformin cap/tab 500 mg	162	166.5	−2.7	162.3	−0.2	186.1	−12.9%	148.7	8.9%
Nifedipine Oros 30 mg	4245	4178.8	1.6	4566.4	−7.0	4413.3	−3.8%	4566.9	−7.0%
Salbutamol inhaler 100 mcg	28461	28506.6	−0.2	28317.6	0.5	33990.3	−16.3%	34880.1	−18.4%
Simvastatin 20 mg	174	459.5	−62.1	202.3	−14.0	216.2	−19.5%	224.8	**−22.6%**

Notes: *National Claim Price 2024 = Ministry of Health Decree No. HK.01.07/MENKES/503/2024.
*NA = Medicine not available at the time of data collection.

persists because of differences in logistical capacity and procurement planning.[14] It can therefore be said that the JKN system has increased the availability of medicines, but implementation in the field has not been fully equitable.

Figure 3 illustrates the distribution of medicine procurement prices across the study sites in Jakarta and Yogyakarta provinces and across facility types. The data show considerable variation, with some medicines priced higher in some facilities and others priced lower. This suggests differences in procurement practices across healthcare settings. Similar patterns of variation in procurement prices have been reported in Indonesia's generic medicine policy,[27] as well as during the implementation of BPJS in 2014 with evidence from Jakarta.[28]

Table 2 also shows significant price variation for the same medicines across different distributors, for both generic and brand-name products. High coefficients of variation were observed for amlodipine 5 mg tablets/capsules, aspirin 80 mg tablets, bisoprolol 2.5 mg tablets, and simvastatin 20 mg. This substantial variation likely reflects the structure of the Indonesian pharmaceutical market, which is marked by a large number of distributors, diverse margin policies, and varying discount practices across distribution channels. As a result, healthcare facilities may procure medicines at suboptimal prices if they lack negotiation capacity or transparent pricing information.[29]

In Indonesia, healthcare facilities obtain medicines from distributors known as PBFs.[30] There are currently more than 1,500 PBFs (not including branches) operating in Indonesia.[31] For medicines used in BPJS services, healthcare facilities can buy them through the e-purchasing mechanism managed by the Government Goods/Services Procurement Policy Agency (LKPP). PBFs appointed by the pharmaceutical industry then process orders from the e-catalog. LKPP conducts tenders for distributors that register their products, and successful distributors are listed in the e-catalog, together with product specifications and agreed prices. Healthcare facilities that work with BPJS can access the e-catalog and purchase medicines directly.[30] Healthcare facilities may, however, also buy medicines outside the e-catalog. In such cases, direct price negotiations take place between healthcare facilities and PBFs, leading to price differences between facilities and distributors.[25] This dual procurement mechanism contributes further to the observed price variation.

Table 3 shows that government reimbursement prices for chronic disease medicines are often lower than the procurement prices that healthcare facilities pay to distributors. In addition to these reimbursement rates, pharmacies and hospitals are allowed to add a pharmaceutical service component of up to 20%. Even so, several medicines still have reimbursement levels that are more than 20% below procurement prices. These include bisoprolol 2.5 mg tablets (44.6%), ISDN 5 mg tablets (23.2%), and simvastatin 20 mg tablets (62.1%). Similar patterns are observed across facilities, including aspirin 80 mg in hospitals in Jakarta (60.3%); captopril 25 mg (46.5%), furosemide 40 mg (27.8%), and ISDN 5 mg (23.1%) in pharmacies in Yogyakarta; and aspirin 80 mg (67.6%), captopril 25 mg (24%), ISDN 5 mg (22.5%), and simvastatin 20 mg (22.6%) in hospitals in Yogyakarta. A different pattern was observed for amlodipine 5 mg

tablets/capsules, for which the national claim price exceeded procurement prices by more than 20% in both Jakarta and Yogyakarta.

These findings point to a mismatch between the BPJS reimbursement rates stipulated in the Ministry of Health Decree No. HK.01.07/MENKES/503/2024[20] and the actual procurement prices observed at the facility level (Table 3). Where reimbursement prices are lower than procurement costs, healthcare facilities may incur financial losses on certain medicines. Conversely, where reimbursement exceeds procurement costs, facilities may generate a margin. This imbalance suggests that the current pricing structure within the JKN system does not always reflect actual market conditions.

Independent analyses further support this observation, highlighting that tracking pharmaceutical expenditure structures within the JKN system faces significant challenges due to fragmented data sources, which hampers comprehensive expenditure tracking and cost analysis.[32] Similar concerns have also been reported in Indonesia, where studies evaluating e-catalog and e-purchasing mechanisms have identified challenges related to procurement implementation, supplier participation, budgeting, and alignment between procurement processes and medicine availability.[33–35]

In practice, BPJS regulations allow healthcare facilities to add pharmaceutical service components ranging from 5% to 20%, depending on the size of the medicine claim. Where the negative difference between reimbursement and procurement prices exceeds this allowable margin, however, healthcare facilities must absorb the loss. These losses are often offset through cross-subsidization, using medicines with positive margins. Although this mechanism may help to maintain financial balance, it can also influence procurement decisions. In particular, healthcare facilities may become less willing to stock medicines that consistently produce losses. This may lead to patients being asked to obtain medicines outside the facility, as observed in settings where medicine unavailability forces patients to seek alternative sources.[36] As a result, access to BPJS-covered medicines may be compromised, particularly for patients with chronic conditions who require continuous treatment.

Interestingly, unlike most medicines, the procurement price for insulin aspart protamine/insulin aspart 70/30 (100 IU/mL injection) is identical to the national claim price at most facilities. This pattern is likely to have several causes. As a biologic product, insulin typically involves demanding production and regulatory complexities that may limit market entry; globally, this market structure often results in limited supplier numbers and constrained price competition in low- and middle-income settings.[37] In addition, one possible explanation is that the relatively high unit price of insulin may encourage distributors and healthcare facilities to adopt more conservative pricing strategies that are aligned with national claim prices. However, this hypothesis was not examined in the present study.

These findings also point to broader structural issues in pharmaceutical procurement systems. In countries such as Denmark, a central agency (Amgros) procures hospital medicines, resulting in a relatively effective pharmaceutical market structure. Purchasing medicines through a central agency reduces price uncertainty and increases equity among facilities, as Amgros-controlled purchasing does.[38] Similarly, centralized procurement policies in Shenzhen and Portugal have shown positive impacts on price reduction and improved access to medicines.[39,40] These models suggest that more coordinated procurement strategies may help to reduce price disparities and improve the alignment between procurement costs and reimbursement mechanisms.

The government therefore needs to conduct a comprehensive review and evaluation of medicine pricing and availability policies within the BPJS system. At present, healthcare facilities have the flexibility to negotiate directly with distributors, while the government has implemented centralized negotiations through e-purchasing mechanisms. The use of both individual (direct) and centralized procurement approaches has the potential to increase medicine price variation and may discourage healthcare facilities from procuring medicines through e-purchasing.[34,35]

In addition, several studies report that BPJS medicine procurement by healthcare facilities through e-purchasing is still limited. This is due to technical, human resource, and logistical issues, as well as mismatches in product specifications.[34,35,41] This situation makes BPJS medicine prices less transparent and harder to control at the national level. Ultimately, limited transparency and procurement effectiveness can disrupt medicine availability, which directly affects public access to the medications they need.

Overall, the implications of this study extend beyond the Indonesian national context and contribute to the broader discussion on the financial sustainability of universal health insurance schemes.

This study has several limitations and potential sources of bias. The use of a purposive sampling approach may introduce selection bias and limit the representativeness of the sample, thereby affecting the external validity and generalizability of the findings to other regions and healthcare settings in Indonesia. The cross-sectional design captures data at a single point in time and does not account for temporal variations in medicine prices and availability. In addition, the analysis of procurement prices and reimbursement data relied on secondary sources, which may be subject to information bias because of data completeness and recording limitations. Measurement bias in assessing medicine availability may also occur, as it was based on direct observation at a single point in time; however, this was minimized by applying a standardized observation approach across all facilities.

Conclusion

The results obtained in this study reveal significant gaps in BPJS's pharmaceutical policy for chronic disease management.

Optimizing the procurement system, improving the consistency of medicine distribution, and increasing transparency in pricing mechanisms at the healthcare facility level are key areas for improvement. In addition, reimbursement tariffs need to be designed more equitably, so that they neither cause losses for healthcare facilities nor create excessive financial incentives that could distort medication management practices. Improving these elements is essential to ensuring the effectiveness of medication management within the JKN system and ensuring sustainable access to essential medications for patients with chronic diseases. This analysis of the BPJS system offers policymakers in middle-income countries pursuing sustainable UHC valuable insights.

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Authors' Contribution

All authors made substantial contributions to conception and design, acquisition of data, or analysis, and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work. All the authors are eligible to be authors as per the International Committee of Medical Journal Editors requirements/guidelines.

Consent to Participate

Informed consent was obtained from all participants prior to their participation in the study.

Consent for Publication

Not applicable.

Data Availability Statement

All the data is available with the authors and shall be provided upon request.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval

Ethical approval details are given in the "Materials and Methods" section.

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The authors used ChatGPT (OpenAI) and Grammarly solely for language editing, grammar correction, readability improvement, formatting assistance. The manuscript also underwent professional English proofreading. These tools and services were not used to generate research data, perform statistical analyses, create figures presenting study results, interpret results, draw scientific conclusions, or replace the authors' scientific judgment. The authors reviewed and edited all artificial intelligence-assisted content as needed and take full responsibility for the accuracy, integrity, and final content of the manuscript.

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