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Evaluation of E-Catalog Drug Prices within Indonesia's Pharmaceutical Sector under the Universal Health Coverage Era

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ABSTRACT

Following the introduction of Indonesia's Universal Health Coverage (UHC) policy, the drug procurement mechanism shifted to an e-catalog system. However, the consequences of this transition for the country's pharmaceutical industry remain uncertain and insufficiently examined. This study aims to evaluate how the UHC policy has influenced drug pricing practices within Indonesia's pharmaceutical sector. Data were collected from three pharmaceutical companies that successfully won e-catalog tenders. Drug prices for 2013 were sourced from the Drug Price Ceiling List, while those for 2015 and 2018 were obtained from the e-catalogue listings. The price data were compared across these years to identify trends and measure the extent of price variations. A price index analysis, adapted from the Median Price Ratio (MPR) method, was applied to compare 2013 prices with regional drug prices in 2015 and 2018 using Microsoft Excel. The findings revealed both increases and decreases in drug prices between the pre-UHC period (2013) and the post-UHC periods (2015 and 2018). Price increases ranged from 0.01–6.15 in 2015 and 0.01–6.46 in 2018, while reductions varied between 0.04–0.75 in 2015 and 0.01–0.83 in 2018. Drug pricing patterns in Indonesia showed notable fluctuations from the pre-UHC period (2013) through the UHC implementation years (2015 and 2018), with both upward and downward price adjustments observed.

Keywords: Pharmaceutical industry, UHC, E-catalog, Drug prices

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Introduction

The Universal Health Coverage (UHC) initiative is part of Indonesia's National Social Protection System (SJSN) established under Law No. 40 of 2004, which ensures that patients receive health insurance benefits, including access to medicines. To support this policy, drug supply and procurement are regulated through the National Formulary (Fornas), serving as a reference for healthcare facilities in obtaining safe, high-quality, and affordable medicines. Based on Presidential Regulation (Perpres) No. 157 of 2014, drug procurement under the UHC framework is conducted via an electronic catalog (e-catalog) system. This transition from the traditional procurement model to a digital one aims to prevent inflated pricing and mark-ups [1]. The e-catalog operates as an integrated information management platform linking key stakeholders—namely the National Public Procurement Agency (LKPP), Ministry of Health, National Agency of Drug and Food Control (POM), pharmaceutical producers, distributors, and healthcare institutions (hospitals and health centers)—to streamline the UHC drug procurement process [2].

Under the UHC system, drug prices have generally decreased as part of efforts to uphold both cost efficiency and quality assurance, thereby ensuring equitable access to essential healthcare services [3]. The e-catalog mechanism promotes low and standardized pricing, where the Ministry of Health and LKPP jointly determine the Self-Estimated Price (HPS) [4]. Pharmaceutical manufacturers bidding above this threshold are disqualified from tender selection. Consequently, industries compete by reducing their selling prices to secure e-catalog contracts, a strategy proven effective in lowering overall drug costs [5].

The implementation of UHC through BPJS Health Insurance emphasizes the use of generic medicines. According to the Ministry of Health Regulation No. HK.02.02/MENKES/068/2010, all government healthcare facilities must prioritize generic drugs for both outpatient and inpatient treatments. This policy has driven a shift in public consumption patterns from branded to generic drugs. Permata *et al*. (2020) [6] reported an increase in the procurement of generic and branded generics at Fatmawati Hospital through the e-catalog system. Similarly, European research has demonstrated that generic drug competition contributes to lowering medicine prices [7]. A study by Anggriani (2019) [8] at Jakarta Islamic Hospital (Cempaka Putih) revealed that both patent and generic drug prices in the e-catalog dropped by as much as 82.36%. To meet the rising demand for generics, pharmaceutical companies have adapted their production strategies by expanding generic output and reducing branded drug production [8].

The impact of UHC implementation has been evidenced by several studies. Anggriani *et al*. (2019) [8] documented a drastic decline in drug prices—over 80%—at the Jakarta Islamic Hospital, while Dewi *et al*. (2015) found that pharmacy expenses in Yogyakarta (DIY) varied depending on the type of collaboration between pharmacies, BPJS Health, and primary health facilities. These studies highlight that UHC significantly affects hospitals and pharmacies; however, limited research has explored its influence on the pharmaceutical industry itself. Therefore, this study seeks to assess how UHC policy implementation has affected Indonesia's pharmaceutical sector, focusing specifically on price variations in e-catalog-listed medicines before and after the UHC period.

Material and Methods

Research design

This research employed a quantitative descriptive approach. Retrospective drug price data from the 2013 Drug Price Ceiling List (DPHO), obtained from Askes Ltd, were compared with 2015 and 2018 e-catalog price data sourced from LKPP records. The selected drug samples consisted of those that each of the studied pharmaceutical companies had won through e-catalog tenders. Only medicines identical in name, indication, strength, and dosage form across 2013, 2015, and 2018 were analyzed. The 2015 and 2018 e-catalog datasets included five regional price variations, following the Ministry of Health's policy to classify Indonesia's drug pricing by region. The study involved three pharmaceutical industries: two state-owned companies (A Ltd and C Ltd) and one private firm (B Ltd).

Data analysis

Data were processed using Microsoft Excel, comparing 2013 prices with regional prices from 2015 and 2018 through mathematical calculations. The analysis employed a price index formula:

$$\text{e PricIndex} = (\text{Price after UHC} - \text{Price before UHC}) / \text{Price before UHC} \quad (1)$$

This calculation was adapted from the Median Price Ratio (MPR) concept developed by Management Sciences for Health (MSH) and endorsed by the World Health Organization (WHO). The MPR serves as an average price index used to compare local drug prices with international reference prices, particularly in developing countries. According to MPR standards, a value below 1 indicates efficient pricing [9]. Accordingly, in this study, a positive price index below 1 signifies a price increase that remains within efficient limits, while a negative value below 1 represents a decline in drug prices that is still considered efficient relative to the baseline year.

Ethical clearance

Ethical approval for this study was granted by the Ethics Committee of the Faculty of Medicine, Public Health, and Nursing (FK-KMK), Universitas Gadjah Mada. The approval numbers were KE/FK/0216/EC/2020 for A Ltd, KE/FK/0299/EC/2020 for B Ltd, and KE/FK/0455/EC/2020 for C Ltd. Prior to assessment, all participating experts were required to complete an informed consent form outlining the study objectives, procedures, and the significance of their involvement. Each expert provided signed consent as proof of voluntary participation and agreement to take part in the study.

Results and Discussion

Drug price trend

The comparative analysis of drug price data obtained from the 2013 Drug Price Ceiling List (DPHO) by Askes Ltd and the 2015 and 2018 e-catalog lists from LKPP identified 28 pharmaceutical products across three companies that served as study samples for price comparison. These 28 items represented various drug types. Specifically, A Ltd contributed 15 drug items, B Ltd 8, and C Ltd 5. Within A Ltd, there were 3 generic International Nonproprietary Name (INN) drugs and 12 branded generics; all 8 items from B Ltd were branded generics, while C Ltd's 5 items were all generic drugs.

Prior to performing numerical calculations using the price index, an initial assessment of price trends was conducted to observe market behavior following the introduction of the e-catalog system [8]. This analysis compared prices from the pre-e-catalog period (2013) with those from the UHC implementation years (2015 and 2018) to identify general shifts in drug pricing.

Figure 1 shows that for A Ltd, 8 drug items experienced price increases, while 7 showed decreases between 2015 and 2018. In B Ltd, 4 drug items decreased and 4 increased in 2015, while in 2018, 5 items showed price increases and 3 showed decreases **(Figure 2)**. For C Ltd, 2 drug items rose in price, whereas 3 items experienced a decline from 2013 to 2018 **(Figure 3).** Overall, these findings indicate that e-catalog drug prices exhibited notable fluctuations, with a general trend toward increasing prices over time.

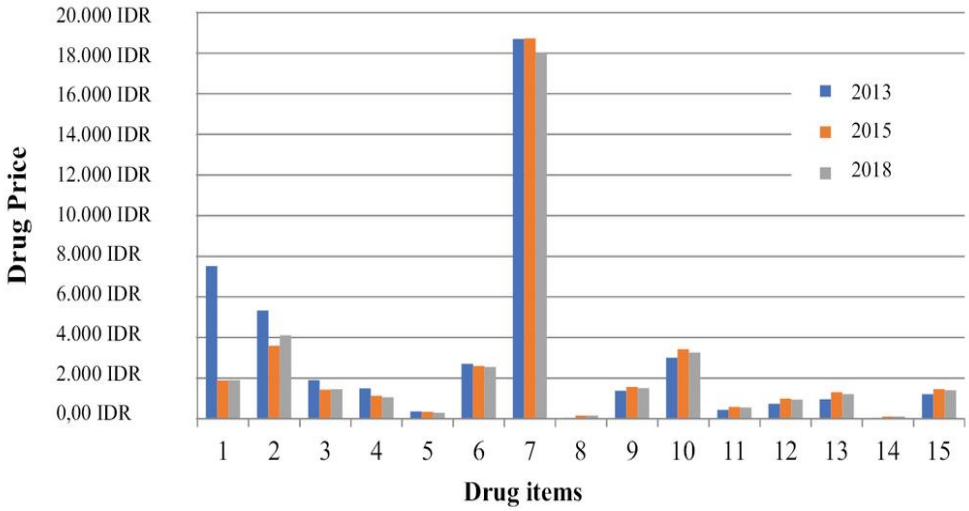

Figure 1. Drug Price Trend for e-Catalog A Ltd. Note: 1) Azithromycin; 2) Metronidazole; 3) Betamethasone valerate; 4) Theophylline; 5) Verapamil; 6) Ketoconazole; 7) Fluconazole; 8) Hydrochlorothiazide; 9) Glyceryl trinitrate; 10) Miconazole nitrate; 11) Codeine tablets 10 mg; 12) Codeine tablets 15 mg; 13) Codeine tablets 20 mg; 14) Ascorbic acid; 15) Morphine (HCl).

Differences in drug prices before and after the UHC Era at A Ltd

Tables 1 and 2 present the comparison of drug price indices between 2013 and the years 2015 and 2018. The number of drug items that showed changes in the price index across the five regions varied between 2015 and 2018. In both 2015 and 2018, the number of drug items that experienced price decreases was lowest in Regions III and V, and highest in other regions.

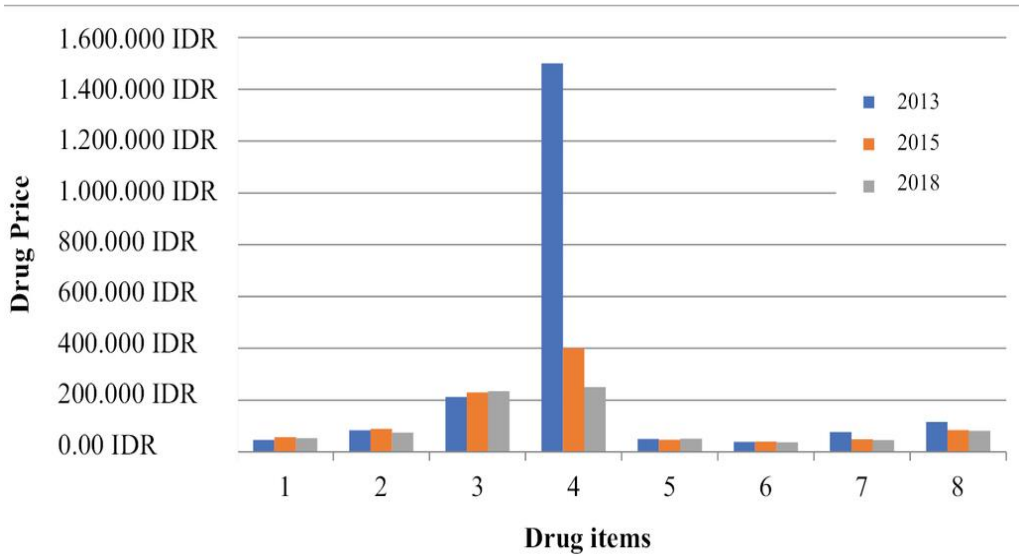

Figure 2. Drug Price Trend for e-Catalog B Ltd. Note: 1) Aminofuscin L600; 2) Liver Aminofuscin; 3) Clinimix Combination; 4) Rexta Oxaliplatin; 5) Triofuscin 500; 6) Tutofuscin OPS; 7) Vincristine Kalbe Vial 1 mL; 8) Vincristine Kalbe Vial 2 mL.

Variations were observed in the range of price indices between 2015 and 2018. As shown in **Tables 1 and 2**, each region exhibited different ranges for both increases and decreases in e-catalog drug prices. The range corresponding to price reductions was narrower compared to that of price increases, indicating that a greater number of drug items experienced price rises than those that showed declines.

Table 1. Drug price index A Ltd 2015.

No.	Drug Names	Drug Price Index 2015				
		***Region* I**	***Region* II**	***Region* III**	***Region* IV**	***Region* V**
1.	Azithromycin tablet 500 mg	-0,75	-0,75	-0,75	-0,75	-0,75
2.	Metronidazole (vagizol) ovule 500 mg	-0,23	-0,19	-0,11	-0,08	-0,04
3.	Betamethasone valerate cream 0,1%	-0,24	-0,24	-0,24	-0,24	-0,24
4.	Theophyllin tablet SR 300 mg	-0,29	-0,25	-0,22	-0,18	-0,22
5.	Verapamil HCl tablet/caps 80 mg	-0,18	-0,18	-0,12	-0,16	-0,05
6.	Ketoconazole cream 2% tube @ 10 g	-0,06	-0,06	0,01	-0,04	0,09
7.	Fluconazole tablet/caps 150 mg (G)	-0,04	0,01	0,11	0,16	0,20
8.	Hydrochlorothiazide tablet 25 mg	4,73	5,00	5,58	5,88	6,15
9.	Glyceryl trinitrate 2,5 mg	0,09	0,15	0,26	0,31	0,37
10	Miconazole nitrate cream 2% tube @10 g	0,08	0,14	0,25	0,30	0,35
11.	Codeine tablet/caps 10 mg	0,29	0,35	0,47	0,54	0,61
12.	Codeine tablet/caps 15 mg	0,28	0,35	0,48	0,54	0,60
13.	Codeine tablet/caps 20 mg	0,27	0,34	0,46	0,52	0,59
14.	Ascorbic acid (vitamin C) tablet 50 mg	3,00	3,19	3,62	3,81	4,00
15.	Morphine (HCl) tablet 10 mg (G)	0,16	0,22	0,34	0,39	0,45
	Price increase index range	0,08–4,73	0,01–5,00	0,01–3,62	0,16–5,88	0,09–6,15
	Price decrease index range	0,04–0,75	0,06–0,75	0,11–0,75	0,04–0,75	0,04–0,75

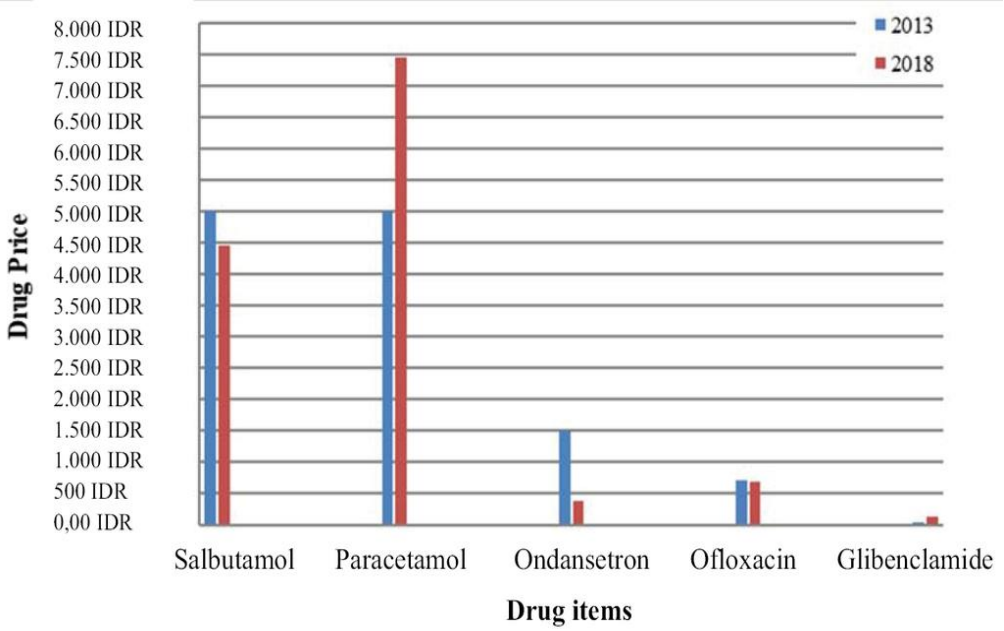

Figure 3. Drug price trend for e-catalog C Ltd.

The majority of drugs showing price increases in the sample data exhibited efficient growth, as their index values remained below 1. In 2015, seven drug items experienced efficient price increases, and by 2018, this number had risen to eight. One notable example is glyceryl trinitrate 2.5 mg, which showed a moderate price rise — in Region I, the price in 2015 was 0.09 higher than in 2013, and this increment continued across regions, reaching 0.37 higher in Region V.

Table 2. Drug price index A Ltd 2018.

No.	Drug Names	Drug Price Index 2018				
		***Region* I**	***Region* II**	***Region* III**	***Region* IV**	***Region* V**
1.	Azithromycin tablet 500 mg	-0,75	-0,75	-0,75	-0,75	-0,75
2.	Metronidazole (vagizol) ovule 500 mg	-0,33	-0,33	-0,33	-0,33	-0,33
3.	Betamethasone valerate cream 0,1%	-0,25	-0,25	-0,20	-0,23	-0,15
4.	Theophyllin tablet SR 300 mg	-0,24	-0,20	-0,12	-0,09	-0,05
5.	Verapamil HCl tablet/caps 80 mg	-0,05	0,00	0,09	0,14	0,19
6.	Ketoconazole cream 2% tube @ 10 g	-0,04	-0,04	0,03	0,03	0,11
7.	Fluconazole tablet/caps 150 mg (G)	0,00	0,05	0,15	0,20	0,25
8.	Hydrochlorothiazide tablet 25 mg	4,96	5,27	5,85	6,15	6,46
9.	Glyceryl trinitrate 2,5 mg	0,14	0,20	0,31	0,37	0,42
10	Miconazole nitrate cream 2% tube @10 g	0,14	0,20	0,31	0,37	0,42
11.	Codeine tablet/caps 10 mg	0,34	0,31	0,54	0,60	0,60
12.	Codeine tablet/caps 15 mg	0,36	0,42	0,56	0.63	0.70
13.	Codeine tablet/caps 20 mg	0,37	0,43	0,57	0,64	0.71
14.	Ascorbic acid (vitamin C) tablet 50 mg	3,04	3,23	3,62	3,85	4,04
15.	Morphine (HCl) tablet 10 mg (G)	0,21	0,27	0,39	0,45	0,51
	Price increase index range	0,14–4,96	0,05–5,27	0,03–5,85	0,20–6,15	0,11–6,46
	Price decrease index range	0,04–0,75	0,04–0,75	0,12–0,75	0,03–0,75	0,05–0,75

Differences in drug prices before and after the UHC Era at B Ltd

Tables 3 and 4 illustrate the fluctuations in B Ltd's e-catalog drug price index for 2015 and 2018. Variations in price movements were observed between these years. In 2015, an equal distribution was found across all five

regions, where four drug items recorded price reductions and another four experienced increases. By 2018, the pattern shifted—Regions I and II showed five drugs with declining prices and three with higher prices, while in Regions III, IV, and V, three items saw decreases and five displayed upward price adjustments.

Table 3. Drug price index B ltd 2015.

No.	Drug Names	Drug Price Index 2015				
		***Region* I**	***Region* II**	***Region* III**	***Region* IV**	***Region* V**
1.	Aminofuscin L 600	0,22	0,22	0,22	0,22	0,22
2.	Aminofuscin Liver	0,05	0,05	0,05	0,05	0,05
3.	Clinimix Combination	0,09	0,09	0,09	0,09	0,09
4.	Rexta Oxaliplatin	-0,73	-0,73	-0,73	-0,73	-0,73
5.	Triofuscin 500	-0,05	-0,05	-0,05	-0,05	-0,05
6.	Tutofuscin OPS	0,01	0,01	0,01	0,01	0,01
7.	Vincristine Kalbe vial 1 mL	-0,37	-0,37	-0,37	-0,37	-0,37
8.	Vincristine Kalbe vial 2 mL	-0,23	-0,23	-0,23	-0,23	-0,23
	Price increase index range	0,01–0,22	0,01–0,22	0,01–0,22	0,01–0,22	0,01–0,22
	Price decrease index range	0,05–0,73	0,05–0,73	0,05–0,73	0,05–0,73	0,05–0,73

The range of the price index for drugs that increased at B Ltd in 2015 and 2018 was wider than that for drugs showing price declines. In 2015, the increase ranged from 0.05 to 0.73, and in 2018 from 0.06 to 0.83. These results indicate that although drug prices at B Ltd rose during both periods, the increases remained within an efficient range.

Table 4. Drug Price Index B Ltd 2018.

No.	Drug Names	Drug Price Index 2018				
		***Region* I**	***Region* II**	***Region* III**	***Region* IV**	***Region* V**
1.	Aminofuscin L 600	0,12	0,20	0,38	0,37	0,43
2.	Aminofuscin Liver	-0,11	-0,07	0,06	0,06	0,11
3.	Clinimix Combination	0,11	0,16	0,25	0,25	0,25
4.	Rexta Oxaliplatin	-0,83	-0,83	-0,83	-0,83	-0,83
5.	Triofuscin 500	0,04	0,09	0,23	0,23	0,30
6.	Tutofuscin OPS	-0,06	-0,01	0,06	0,06	0,06
7.	Vincristine Kalbe vial 1 mL	-0,40	-0,40	-0,40	-0,40	-0,40
8.	Vincristine Kalbe vial 2 mL	-0,30	-0,30	-0,30	-0,30	-0,30
	Price increase index range	0,04–012	0,09–0,20	0,06–0,38	0,06–0,37	0,06–0,43
	Price decrease index range	0,06–0,83	0,01–0,83	0,30–0,83	0,30–0,83	0,30–0,83

Differences in drug prices before and after the UHC Era at C Ltd

Table 5 presents the index of price changes for C Ltd's e-catalog drugs. The analysis shows that two drug types experienced price reductions across all regions, while the other two showed price increases in all five regions. A distinct pattern was observed for Ofloxacin 400 mg tablets/film-coated caplets, which recorded price decreases in Regions I and II but showed price increases in Regions III, IV, and V.

Table 5. Drug Price Index C Ltd 2013 and 2018.

No.	Drug Names	Drug Price Index 2018				
		Region I	***Region II***	***Region III***	***Region IV***	***Region V***
1.	Salbutamol sulfate syr 2 mg/5 mL	-0,11	-0,11	-0,11	-0,11	-0,11
2.	Paracetamol drop 100 mg/mL fls @15mL (60mg/0,6mL)	0,40	0,33	0,53	0,53	0,66

3.	Glibenclamide tablet/caps/caplet 5 mg	1,40	1,29	1,63	1,63	1,87
4.	Ondansentron hydrochloride/ Ondansentron HCl dihydrate / Ondansetron tablet/caps/caplet 8 mg	-0,75	-0,77	-0,73	-0,73	-0,71
5.	Ofloxacin tablet/film coated caplet 400 mg	-0,08	-0,12	0,01	0,01	0,10
	Price increase index range	0,40–1,40	0,33–1,29	0,01–1,63	0,01–1,63	0,10–1,87
	Price decrease index range	0,08–0,75	0,11–0,77	0,11–0,73	0,11–0,73	0,11–0,71

The price reduction for this drug ranged from 0.08 to 0.77, indicating a decline in drug prices that remained within an efficient range. Conversely, price increases were observed within an index range of 0.01–1.87, suggesting that certain drug prices became inefficiently high between 2013 and 2018. This inefficiency was notably evident in Glibenclamide 5 mg tablets/caplets/capsules, whose price index exceeded 1.

The responsibility for supplying e-catalog medicines lies with the pharmaceutical companies that win procurement tenders, as they are tasked with producing the drugs required for the national e-catalog. Although production occurs on a national scale, e-catalog drug prices vary by region due to differences in distribution costs, which depend largely on distance and logistical complexity [10]. The Ministry of Health divides Indonesia into five distribution regions, leading to regional variations in the prices of identical drug products.

The variations in e-catalog drug price indexes across regions for 2015 and 2018 are summarized in **Tables 1–5**. The data reveal that the index range for decreasing drug prices is narrower than that for increasing prices, reflecting that more drug items underwent price hikes than reductions. These findings differ from those of Talluri *et al.* (2006) [11], who reported that e-procurement systems like e-catalogs generally lower drug prices. However, an evaluation of drug expenditure in Central Java's District/City Offices found that e-catalog purchases yielded potential cost savings of up to 19.1% [12]. Similarly, Suliantoro *et al*. (2016) [13] concluded that Indonesia's e-catalog system could reduce prices and overall expenses by as much as 10%.

Data comparing drug prices before and after the UHC era **(Table 4)** demonstrate regional price differences for both 2015 and 2018. At A Ltd, variations were noted among regions, except for two items in 2015—azithromycin 500 mg tablets and betamethasone valerate cream 0.1%—and two items in 2018—azithromycin 500 mg tablets and metronidazole (Vagizol) ovule 500 mg—which had identical prices across all regions. In 2015, B Ltd had eight drug items priced uniformly across regions, while in 2018 only three—Rexta Oxaliplatin, Vincristine Kalbe Vial 1 mL, and Vincristine Kalbe Vial 2 mL—retained identical regional pricing. For C Ltd, drug prices remained constant between Regions III and IV, whereas other regions showed variations, likely because these two regions are equidistant from the production facility, resulting in similar distribution costs. In 2018, C Ltd's Salbutamol syrup 2 mg/5 mL was priced consistently across all regions, as the bid price already incorporated production expenses, transportation costs, and the company's profit margin. According to Ernawati (2019) [14], tablet formulations generally incur higher production costs compared to injectable forms, as tablet manufacturing involves more advanced technology and simpler procedures than the stringent requirements of injection preparation.

The drug prices sampled for 2015 and 2018 varied across regions; however, to better observe overall trends, the average price from all regions was calculated. This average serves as a representative measure of regional differences and helps illustrate the general direction of drug price changes. **Figures 1–3** present bar charts depicting the fluctuations—both increases and decreases—of each drug type, allowing for clearer analysis of which drugs experienced price variations and to what extent.

The differences in drug prices between the pre-UHC period (2013) and the post-UHC years (2015 and 2018) were largely influenced by the introduction of a national drug procurement auction mechanism overseen by the Ministry of Health and facilitated by LKPP. As reported by Verghese *et al*. (2019) [15], similar auction systems implemented in several Asian countries have been effective in driving down market drug prices. Belgium also experienced a decline in simvastatin prices following the adoption of an auction system (Dylst and Simoens 2010) [16]. Before each auction, LKPP establishes a reference price known as the Owner's Estimate (HPS), determined by the Ministry of Health [17]. Bids exceeding this benchmark are automatically rejected. Since HPS values are recalculated annually based on the previous year's prices, the benchmark tends to decrease over time, pressuring pharmaceutical companies to offer progressively lower prices in order to secure tenders. This mechanism has successfully reduced drug costs in several cases, similar to the pricing strategies observed in Turkey and Greece, where direct pricing policies favor the lowest-priced drugs used in reimbursement systems [18].

However, as shown in **Tables 1–5**, not all drug prices decreased; some showed notable increases. Price hikes for drugs produced by A, B, and C Ltd can be attributed to multiple factors, such as rising production, distribution, storage, taxation, and negotiation costs incurred during the tendering and auction process. Prior to the introduction of the e-catalog, these additional costs were typically determined by Pharmaceutical Wholesalers (PBF), who acted as intermediaries, especially for distribution expenses [18]. Under the e-catalog system, all such expenses are now consolidated into a single cost structure. Furthermore, state-owned pharmaceutical companies are often more affected by regulatory constraints than private ones, as they are obligated to meet national demand for generic medicines used in public healthcare facilities. As a result, when drug prices are tightly regulated through the e-procurement system, state-owned firms may respond by reducing production volumes to remain sustainable [14].

Another contributing factor to rising drug prices is the fluctuation in foreign exchange rates, which in turn impacts inflation levels. Currency depreciation increases import costs, leading to supply-side inflation, particularly for goods with high import dependency [19]. According to Madura (2006) [20], a country's inflation rate directly affects the value of its currency. When the domestic currency weakens, foreign currencies become more expensive, effectively reducing the purchasing power of the local currency [21]. For Indonesia's pharmaceutical sector, which relies heavily on imported raw materials, a depreciating rupiah raises production expenses and external debt burdens. Consequently, imported materials become costlier, driving up drug prices.

This economic dynamic underscores the importance of regulatory vigilance. Regulatory bodies must not only ensure effective oversight but also maintain efficiency in resource utilization. Regulations should be designed to secure continuous drug availability in the market, particularly to meet public healthcare needs. During the policymaking process, public consultations should actively involve all stakeholders and integrate an understanding of economic behavior to ensure that regulatory frameworks remain practical and sustainable [14].

A significant decline in drug prices should be approached with caution, as it may affect both drug availability and quality. Reduced prices can lower profit margins for pharmaceutical manufacturers, potentially diminishing their motivation to produce certain medicines [22]. Some pharmaceutical products receive limited demand, and insufficient purchasing volume can lead to higher prices for generic drugs listed in the e-catalog. In Europe, medicine shortages have often been linked to price imbalances and challenges in the auction process [23, 24]. Moreover, adjustments in pharmaceutical policies, including procurement regulations, can significantly influence drug prices. The absence of effective pricing policies may result in inflated and unaffordable medicine costs for both individuals and governments [25].

This research offers several practical recommendations:

1. The government should strengthen drug price regulation through effective price control measures, particularly for higher-priced medicines. Such regulatory initiatives require robust political will and public backing to ensure their successful implementation.
2. Collaboration between the government and pharmaceutical companies should be enhanced to foster a more constructive and cooperative approach within the industry.
3. Policy consistency must be maintained, as frequent reversals may undermine stakeholder confidence. Ongoing monitoring of drug price trends and consumption patterns is essential to guarantee that medicines remain affordable, accessible, and used rationally by patients.

The study's limitations include its relatively short observation period—covering only 2013, 2015, and 2018—and a limited sample size, focusing on just three pharmaceutical companies.

Conclusion

Overall, drug prices from the pre-UHC period (2013–2015) to the post-UHC period (2018) showed a general downward trend. Variations in e-catalog prices reflected both increases and decreases between 2013, 2015, and 2018.

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