

Cost Variation Analysis of Branded Generics Used for Initial Treatment of Type 2 Diabetes, Hypertension and Dyslipidemia in India: A Pharmacoeconomic Perspective

Author(s)

Ijasul Haque M¹

1. Assistant Professor, Department of Pharmacology, PK Das Institute of Medical Sciences, Vaniyamkulam, Ottapalam, Palakkad, Kerala, 679522, India. ORCID ID: 0000-0001-9378-6257

Email: ijasulhaqmm@gmail.com

Abstract

Background: Branded generics are off-patent medications with proprietary names which are bioequivalent to the innovator medications. Cardiovascular diseases, driven by diabetes, hypertension, and dyslipidemia, are major health concerns, where patient compliance is crucial for long-term management. This analysis investigates cost variations of first-line branded generics for these conditions in Indian primary care settings.

Methods: First-line medications preferred for type 2 diabetes, hypertension, and dyslipidemia were identified through an online survey of prescribers. Data from 1mg.com, an Indian online pharmacy, was used to compile a list of available brands for each medication. The study compared the prices of the five most prescribed brands, the three lowest-cost and one highest-cost brand per medication, and calculated the percentage cost difference.

Results: First-line medications preferred for type 2 diabetes, hypertension, and dyslipidemia in India include Metformin 500mg, Enalapril 5mg, Telmisartan 40mg, Amlodipine 5 mg, and Atorvastatin 20mg. The analysis reveals significant cost disparities among commonly prescribed brands, with Metformin, Enalapril, Telmisartan, and Atorvastatin being notably more expensive (up to 1177%) than lower-cost alternatives, potentially placing a financial burden on patients. Amlodipine, however, exhibits modest cost variation (26-113%), with commonly prescribed brands leaning toward lower-cost options.

Conclusion: Cost disparities among commonly prescribed brands could harm patient compliance and outcomes, emphasizing the need for cost-effective medication selection. This study offers crucial insights into cost variations in India's treatment of Type 2 Diabetes, Hypertension, and Dyslipidemia, underscoring the importance of cost awareness for improved patient compliance and healthcare system sustainability.

Keywords: Pharmacoeconomics; branded generics; cost analysis; patient compliance



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Introduction

Branded generics are essentially off-patent medications manufactured and/or marketed by pharmaceutical companies other than the original innovator, carrying a proprietary or brand name. They are ideally bioequivalent to innovator medication with similar bioavailability, containing the same active ingredients, dosage form, strength, route of administration, and intended use. Branded generics are frequently less expensive than innovator or brand-name medications, but costlier than ordinary or unbranded generics [1]. The prescribing physician may prefer branded generics over unbranded generics due to brand familiarity, trust, and perceptions on their effectiveness or better quality. Marketing and the reputation of pharmaceutical companies that make branded generics are also important influencing factors [2]. Even though it is mandatory to write the generic name in a prescription, writing the preferred brand name along with the generic name is not yet prohibited in India [3].

Cardiovascular diseases are the leading cause of mortality and morbidity in India and globally. Diabetes, hypertension, and dyslipidemia are the major risk factors for the development of atherosclerotic cardiovascular diseases [4]. Patient compliance and regular medication play a major role in the optimal control of blood glucose, blood pressure, and lipid levels. The cost of the medication is one of the factors that contributes to the patient's compliance since these medications are to be taken long-term. Patients may discontinue or deviate to alternative treatment if the cost of the initial therapy itself is on the higher side [5].

This analysis was designed to find out the cost variation of various branded generics of first-line medications that will probably be initiated at primary care set up in patients with diabetes mellitus, hypertension, or dyslipidemia in India.

Materials and methods

Selection of Medications and data collection: Generic names and doses of first-line drugs initiated for type 2 diabetes, hypertension, and dyslipidemia; and the most prescribed brands for each medication were identified using an online survey among the prescribers. Google Form survey was conducted among 100 doctors in primary care set ups who are general practitioners with only MBBS qualification having more than 1 year experience of independent practice in India. 1mg.com, a reputable online pharmacy resource available in India, was utilized to compile a list of all available brands for each medication. For each medication, the list of available brands was sorted from the lowest to the highest price per unit based on the maximum retail price (MRP).

Discounts on MRP were not considered (accessed on October 20, 2023). Branded generics that are discontinued or unavailable for purchase were also not considered.

Data analysis

The price per tablet of the three lowest-cost brands and one highest-cost brand for each medication was selected for analysis. The unit cost of the five most prescribed brands of each medication was also calculated for the analysis. The cost difference of various brands in percentage was also calculated. The lower range of cost variation in percentage was calculated by comparing the higher-cost brand among the lowest-cost three brands and the lower-cost brand among the five commonly prescribed brands. The upper range was calculated by comparing the cost of the lowest-cost brand among the lower-cost three brands and the higher-cost brand among the five commonly prescribed brands.

Results

Metformin 500mg rapid release tablets, Enalapril 5mg, Telmisartan 40mg, Amlodipine 5 mg, and Atorvastatin 20mg are the first-line drugs initiated in patients with type 2 diabetes, hypertension, and dyslipidemia.

The commonly prescribed brands of metformin 500mg rapid release tablets are approximately 20-197% costlier than the lower cost brands. The average cost of commonly prescribed brands is notably higher than the lower cost options, indicating that a significant proportion of patients may be incurring higher costs for this essential medication. (Fig. 1)

In the case of Enalapril 5mg tablets, the price difference is even more pronounced. The commonly prescribed brands are approximately 58-485% costlier than the lower cost brands. Again, the average cost of the most commonly prescribed brands leans towards the costlier end of the spectrum, indicating a potential financial challenge for patients seeking treatment for hypertension. (Fig. 2)

For Telmisartan 40mg tablets, a similar price disparity is observed, with the commonly prescribed brands being approximately 57-530% costlier than the lower cost options. The average cost of the commonly prescribed brands is noticeably higher, suggesting a potential financial burden on patients. (Fig. 3)

Amlodipine 5mg tablets also demonstrates a significant price difference, with the commonly prescribed brands being approximately 26-113% costlier than the lower cost brands. However, the average cost of commonly prescribed brands tends towards the lower cost

options, which is a positive finding indicating better affordability for this medication. (Fig. 4) In the case of Atorvastatin 20mg tablets, the price difference is substantial, with the commonly prescribed brands being approximately 55-1177% costlier than the lower cost alternatives. The average cost of commonly prescribed brands is significantly higher, indicating a potential financial burden on patients requiring dyslipidemia management. (Fig. 5)

Discussion

The choice of medication and its cost are critical factors in ensuring patient compliance and optimal management of conditions that may require chronic treatment [6]. The findings of this study may provide valuable insights into the cost variation of branded generics used for the initial treatment of Type 2 Diabetes, Hypertension, and Dyslipidemia in India.

The study highlights that Metformin, Enalapril, Telmisartan, Amlodipine, and Atorvastatin are the first-line medications commonly initiated for Type 2 Diabetes, Hypertension, and Dyslipidemia. The preference of medicines are in concordance with the recent standard guidelines [7-9].

Wide cost variation among commonly prescribed brands for each medication were found in this analysis. In the case of Metformin, Enalapril, Telmisartan and Atorvastatin, the cost differences are particularly pronounced, with commonly prescribed brands being significantly more expensive compared to lower-cost alternatives. This raises concerns about the financial burden on patients, potentially hindering their ability to continue treatment. Similar or even higher cost variation was found in a previous analysis done in 2022 [10].

Amlodipine, on the other hand, exhibits a more positive trend. While there is still some cost variation, the commonly prescribed brands tend to be more affordable, suggesting that patients may have better access to this medication without incurring significantly higher costs. A higher cost variation was found among various brands of amlodipine in a previous study [11].

Atorvastatin stands out as a medication with substantial cost differences. The commonly prescribed brands are significantly costlier than lower-cost alternatives, which could pose a considerable financial burden on patients seeking dyslipidemia management.

The observed cost disparities have the potential to impact patient compliance and treatment outcomes. When the commonly prescribed brands are considerably more expensive, patients may face challenges in continuing their medication as prescribed. This, in turn, can lead to inadequate disease management and potentially adverse health outcomes [5].

These findings also have implications for healthcare providers. Doctors and prescribers play a crucial role in selecting medications for their patients. The information presented in this analysis can guide healthcare providers in making informed choices that not only ensure effective treatment but also consider the financial well-being of their patients.

Study Limitations: The study included brands available at the time of analysis in only one online pharmacy data base. Additionally, the data of commonly prescribed brands is based on an online survey among some general practitioners, which may not capture the full range of prescribing patterns in India. Also, the analysis has not considered the cost of unbranded generic medicines available.

Conclusion

This study provides valuable insights into the cost variations in branded generics used for the initial treatment of Type 2 Diabetes, Hypertension, and Dyslipidemia in India. The wide cost differences observed among commonly prescribed brands highlight the need for increased awareness and consideration of cost-effectiveness in medication selection. Addressing these disparities is crucial for ensuring optimal patient compliance and improving the management of these chronic conditions, ultimately contributing to better health outcomes and healthcare system sustainability.

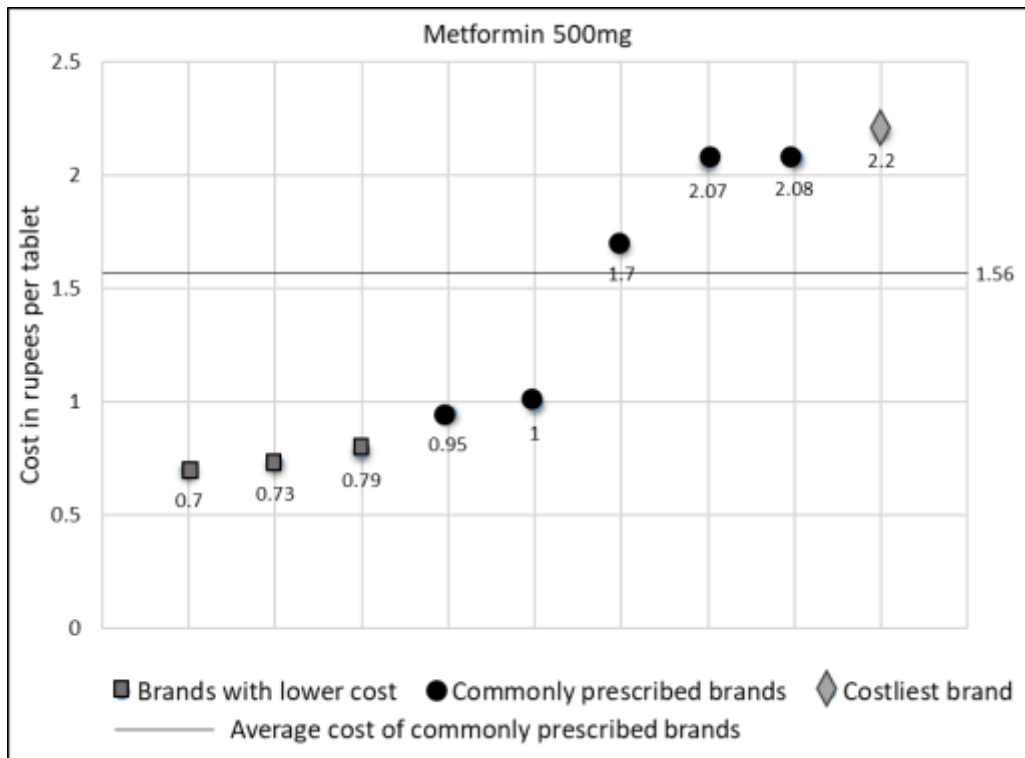


Fig. 1: Cost per unit of Metformin 500mg rapid release tablets

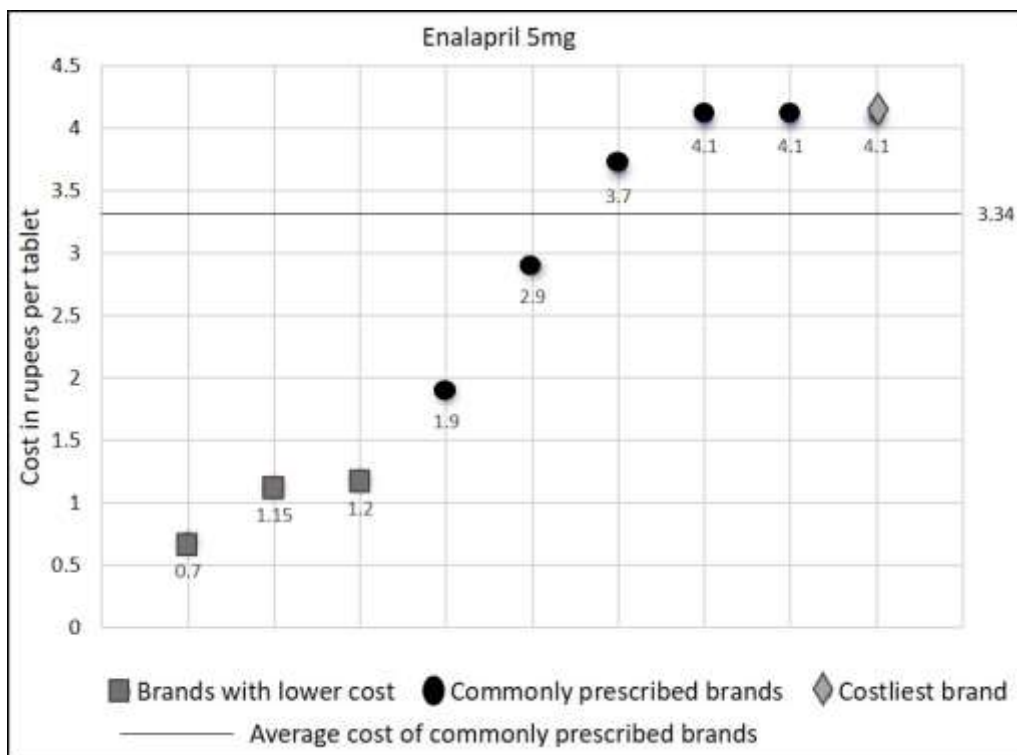


Fig. 2: Cost per unit of Enalapril 5mg tablets

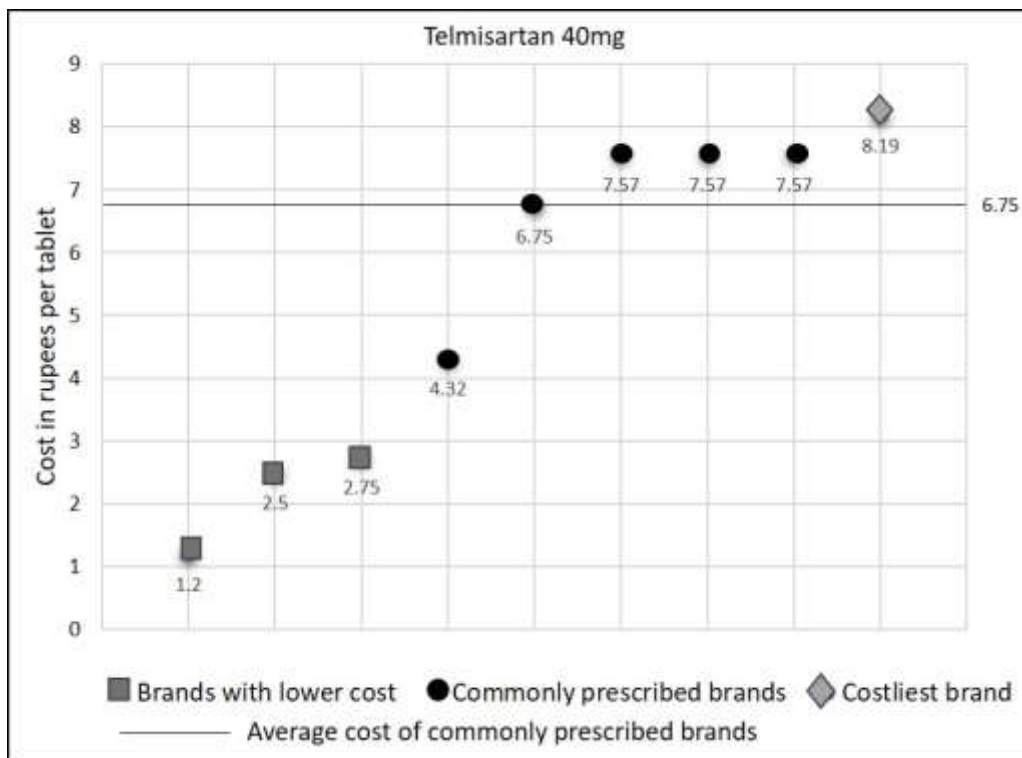


Fig. 3: Cost per unit of Telmisartan 40mg tablets

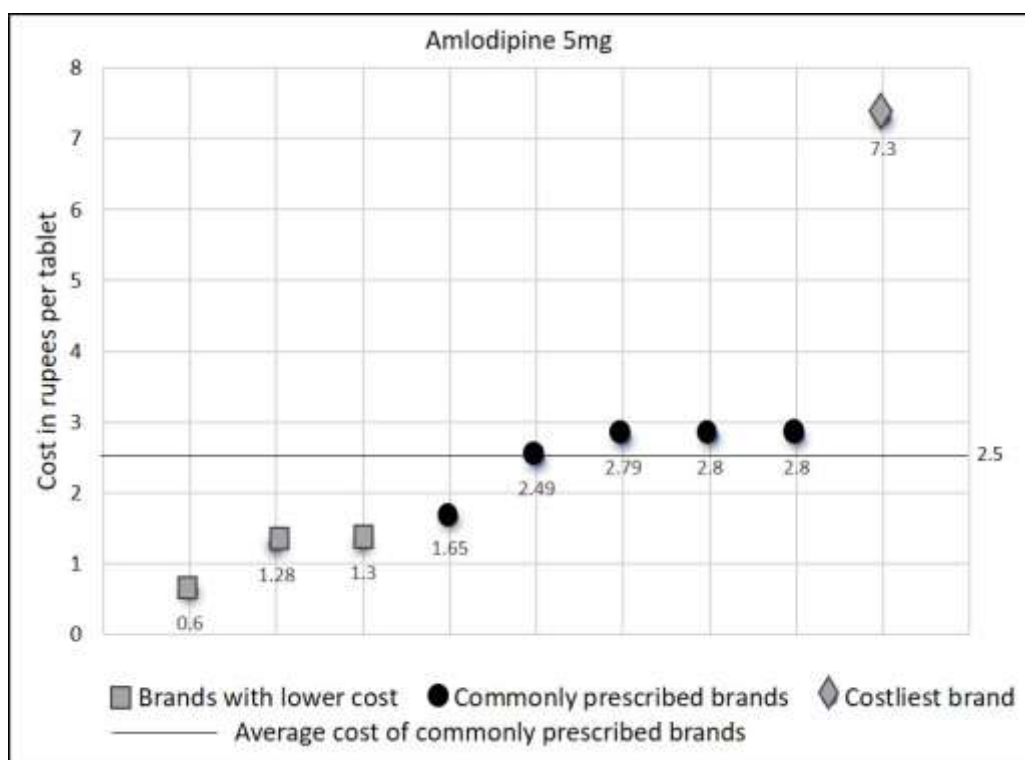


Fig. 4: Cost per unit of Amlodipine 5mg tablets

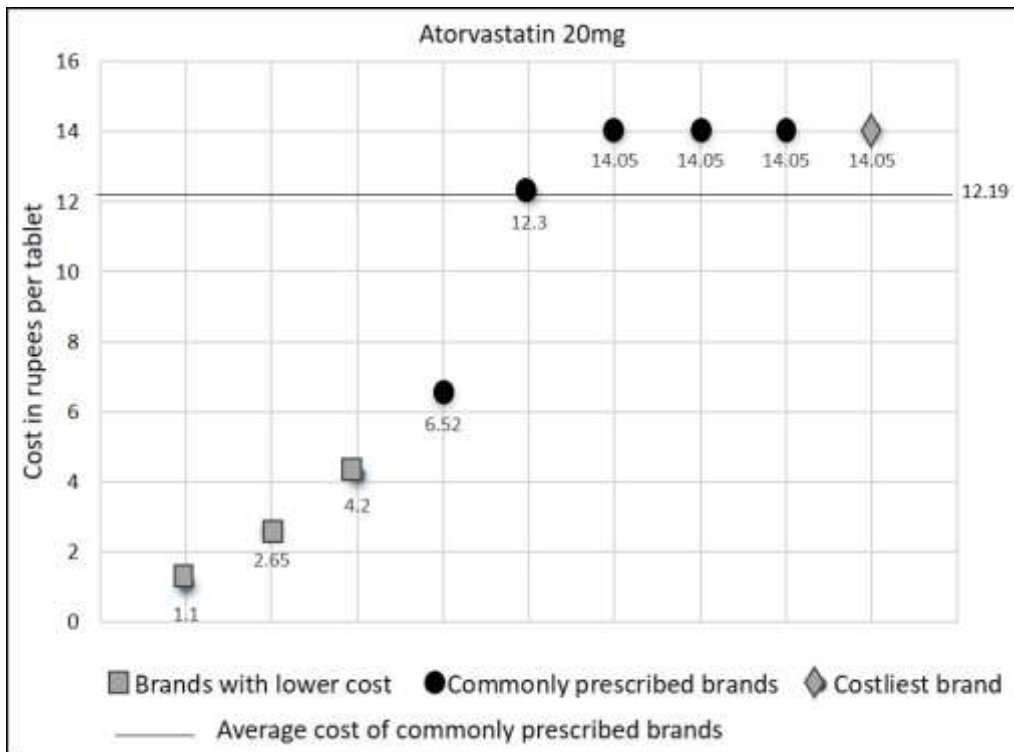


Fig. 5: Cost per unit of Atorvastatin 20mg tablets

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Conflict of interest

No conflict of interest

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