International Journal of Basic & Clinical Pharmacology
Reddy PPK et al. Int J Basic Clin Pharmacol. 2026 Jan;15(1):44-48
http://www.ijbcp.com
pISSN 2319-2003 | eISSN 2279-0780

DOI: https://dx.doi.org/10.18203/2319-2003.ijbcp20254152

Original Research Article

Cost-variation analysis between different brands of cardiovascular drugs available in the Indian market

P. Pavan Kumar Reddy*, C. Devaraju, Chandana Sathyanarayana, Megha M. Lakshmana*

Department of Pharmacology, Sri Siddhartha Medical College, A Constituent unit of Sri Siddhartha Academy of Higher Education, Tumkur, Karnataka, India

Received: 25 September 2025
Revised: 18 October 2025
Accepted: 31 October 2025

***Correspondence:**
Megha M. Lakshmana,
Email: megha.ml@ssmctumkur.org

ABSTRACT

Background: Cardiovascular diseases (CVDs) emerging as a leading cause of mortality in India, access to affordable medications is crucial for managing these conditions. Our study examined the significant cost variations among different brands of cardiovascular drugs available in the Indian market. The study was conducted to find out the cost variation in the cardiovascular drugs available in India and to evaluate the difference in cost of various brands of the same by calculating percentage of variation in cost.
Methods: The analytical study was carried out by taking the cost of a particular drug in the same dosage forms and strength being manufactured by different companies was obtained from July-October 2024 edition of the current index of medical specialities (CIMS) and July-October 2024 edition of monthly index of medical specialties (MIMS) and percentage cost variation was calculated.
Results: Our analysis revealed a wide price variation among various drug brands of cardiovascular drugs. Furosemide 40 mg tablet has shown the highest price variation (1572.86%), while least price variation is seen in hydrochlorothiazide 25 mg tablet (3.98%).
Conclusions: Prices of various drugs used in the treatment of cardiovascular drugs show a wide variation in the Indian market. Medication adherence, community health, and the financial burden of healthcare costs on the country would all be improved by lowering price variation and making drugs more affordable. The findings highlight the urgency of implementing measures to reduce price variations and improve affordability, thereby enhancing healthcare access and mitigating the financial burden on individuals and society. However, it's important to note the study's limitations, including the selection of only a subset of drug brands available in CIMS and MIMS for analysis.

Keywords: Affordability, Analytical study, Cardiovascular diseases, Cost variation, Financial burden, Medication adherence

INTRODUCTION

In India, cardiovascular diseases (CVDs) are now the main cause of mortality.[1] In India, cardiovascular diseases account for 28.1% of all deaths.[2] Additionally, some epidemiological data suggests that behavioral risk factors such as alcohol and tobacco use, low levels of physical exercise, and inadequate diet of fruits and vegetables are linked to CVD. It has been discovered that hypertension in older adults is an additional risk factor for acute myocardial infarction and stroke.[3] These days, ischemic heart disease and stroke account for almost 80% of all CVD-related deaths in India, accounting for one in four of all deaths. These illnesses typically strike people during the peak of productivity and have severe social and economic consequences.[4] Cardiovascular disorders account for almost 50% of deaths worldwide. According to predictions, India would see a sharp rise in these

illnesses over the next 15 years, accounting for over half of all heart disease cases worldwide.[5] Pharmacoeconomics significantly influences medicine practice in developing countries, with drug costs influencing patient compliance. In India, brand-name drugs are commonly prescribed, potentially affecting patient finances, particularly in cardiovascular diseases with prolonged treatment duration.[6] When deciding which medications to include in formularies and the National List of Essential Medicines (NLEM), drug prices are taken into account in addition to safety and efficacy. Rational prescribing entails recommending the appropriate medication at the appropriate dosage, formulation, timeframe, and cost that the patient can afford.[7] The national market is flooded with branded generics made by numerous companies due to the rapidly expanding Indian pharmaceutical industry, and prices between brands of the same formulation vary widely. Unfortunately, physicians haven't given the price differences between various drug brands. This has had a significant negative impact on patients' financial situations, especially those with chronic conditions like CVDs, which have led to an increase in overall healthcare spending. In India, out-of-pocket (OOP) spending as a percentage of total health spending has remained consistently high: 69.4% in 2004, 64.2% in 2014, and 62.6% in 2015.[8]

In India, where the prevalence of CVDs is on the rise, access to effective and affordable medications is critical for managing these conditions and improving patient outcomes. Drug prices are a major factor in healthcare in developing countries like India.[9] There are only a limited number of studies available in India that compare the cost of different brands of drugs. Hence, a study was conducted to find out the cost variation of the cardiovascular drugs available in India and to evaluate the difference in cost of various brands of the same by calculating the percentage of variation in cost.

METHODS

An analytical cross-sectional study was conducted in the Sri Siddhartha Medical College and Hospital, from July to October 2024. A total of 29 drugs were selected as per the cardiovascular drugs included in the National Formulary of India (NFI). Drugs included in the study were those available in the same strength and dosage form, manufactured by different pharmaceutical companies, and listed in both the current index of medical specialities (CIMS) and monthly index of medical specialities (MIMS), India, July-October 2024 editions. Fixed-dose combinations and drugs with incomplete price information were excluded. The cost of each selected drug in Indian Rupees (INR) was obtained for all available brands from the above sources. For each formulation, the maximum and minimum prices among different manufacturers were identified. The percentage cost variation for each drug was calculated using the formula:

$$\text{Percentage cost variation} = \frac{\text{maximum price} - \text{minimum price}}{\text{minimum price}} \times 100$$

The collected data were compiled and analyzed to assess the extent of price variation among various brands of the same cardiovascular drug available in the Indian market. The results were tabulated and represented graphically using a bar chart to illustrate the percentage cost variation among different drugs for clear visual comparison.

This study based on secondary data obtained from publicly available sources such as drug price databases, formularies, and market listings. The study did not involve any human participants, animals, or the use of personal or identifiable information. Therefore, as per standard ethical guidelines for non-human subject research, formal ethical approval was not required

Descriptive statistical methods were applied for analysis, and results were expressed in terms of percentages and graphically presented using Microsoft Excel.

RESULTS

We displayed the comparative price differences of some of the most widely used cardiovascular medications. Among these, furosemide 40 mg tablet showed the highest price variation (1572.86%), followed by labetalol 5 mg/ml injection (1116.03%), verapamil 5 mg/ml injection (828.27%), isosorbide dinitrate 5 mg tablet (726.77%), atropine 1 ml injection (567.77%), propranolol 40 mg tablet (557.86%), adrenaline 1 mg/ml injection (500.00%), hydralazine 25 mg tablet (451.29%), dopamine 40 mg/ml injection (367.60%), and sodium bicarbonate 8.4% w/v injection (318.78%). Moderate price variations were observed for nifedipine 20 mg SR tablet (262.48%), atenolol 12.5 mg tablet (382.88%), aspirin 75 mg tablet (129.72%), isoprenaline 2 mg injection (120.37%), and noradrenaline 2 mg injection (113.60%). Comparatively lower variations were noted for adenosine 6 mg injection (78.41%), streptokinase 1.5 MIU injection (73.33%), amlodipine 5 mg tablet (66.33%), atorvastatin 10 mg tablet (51.02%), digoxin 0.5 mg injection (47.49%), mephentermine sulphate 30 mg injection (38.58%), metoprolol 1 mg injection (32.47%), morphine 10 mg injection (29.51%), glyceryl trinitrate 0.4 mg spray (28.57%), lignocaine 50 ml injection (25.58%), amiodarone 50 mg/ml injection (20.92%), magnesium sulphate 25% w/v injection (14.28%), dobutamine 20 ml injection (8.21%), and hydrochlorothiazide 25 mg tablet (3.98%). The detailed representation of drugs with the highest and least price variations is provided in Table 1 and Figure 1.

Table 1: Represents price variation among various brands in cardiovascular drugs.

Drugs	Dosage	Minimum price	Maximum price	Percentage of variation
Adenosine	6 mg (Inj)	173.5	309.55	78.41
Adrenaline	1 mg/ml (Inj)	14	84	500.00
Amiodarone	50 mg/ml (Inj)	61.8	74.73	20.92
Amlodipine	5 mg (Tab)	50.5	84	66.33
Aspirin	75 mg (Tab)	3.7	8.5	129.72
Atenolol	12.5 mg (Tab)	6.25	30.18	382.88
Atorvastatin	10 mg (Tab)	49.05	74.08	51.02
Atropine	1 ml (Inj)	5.99	40	567.77
Digoxin	0.5 mg (Inj)	6.78	10	47.49
Dobutamine	20 ml (Inj)	352.01	380.94	8.21
Dopamine	40 mg/1ml	32.1	150.1	367.60
Furosemide	40 mg (Tab)	2.69	45	1572.86
Glyceryl trinitrate	0.4 mg (Spray)	199	299	28.57
Hydralazine	25 mg (Tab)	95.23	525	451.29
Hydrochlorothiazide	25 mg (Tab)	16.80	17.47	3.98
Isoprenaline	2 mg (Inj)	24	52.89	120.37
Isosorbidedinitrate	5 mg (Tab)	5.08	42	726.77
Labetalol	5 mg/ml (Inj)	103.04	1253	1116.03
Lignocaine	50 ml	43	54	25.58
Magnesium sulphate	25% w/v (Inj)	14	16	14.28
Mephentermine Sulphate	30 mg (Inj)	31.75	44	38.58
Metoprolol	1 mg (Inj)	63	83.46	32.47
Morphine	10 mg (Inj)	24.9	32.25	29.51
Nifedipine	20 mg (SR-Tab)	13.3	48.21	262.48
Nor-adrenaline	2 mg (Inj)	125	267	113.6
Propranolol	40 mg (Tab)	9.35	61.51	557.86
Sodium bicarbonate	8.4% w/v (Inj)	34.5	144.48	318.78
Streptokinase	1.5 MIU (Inj)	1961.5	3400	73.33
Verapamil	5 mg/ml (Inj)	2.37	22	828.27

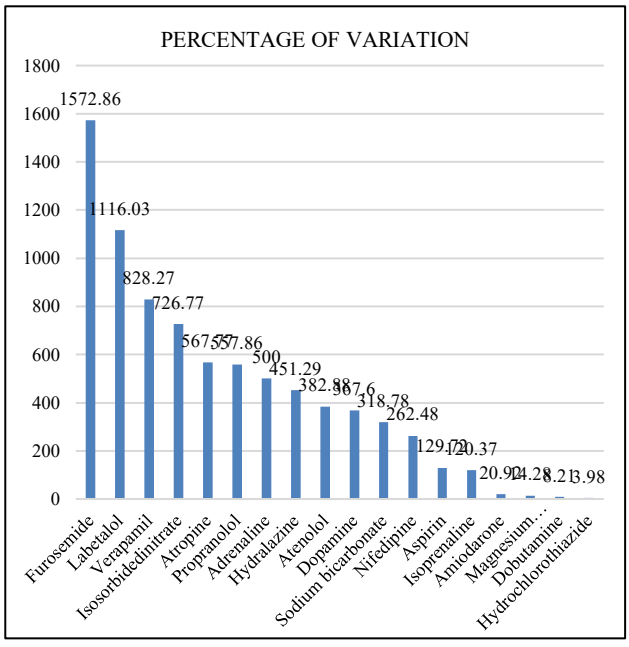

Figure 1: Price variation in cardiovascular drugs.

DISCUSSION

The observed wide variation in the prices of cardiovascular drugs across different brands in the Indian market underscores significant challenges in ensuring access to affordable healthcare. Such variations can have profound implications for patients, especially those with chronic conditions like cardiovascular diseases (CVDs), who require long-term medication adherence for effective management.[10]

Our study highlighted the pressing need for interventions to address these. One key implication of our findings is the potential impact on medication adherence and patient outcomes. Cost disparities among drug brands may lead to patients opting for cheaper alternatives or even discontinuing treatment altogether due to financial constraints. This, in turn, can exacerbate disease progression, increase healthcare utilization for preventable complications, and impose substantial economic burdens on individuals and healthcare systems.[11]

Moreover, the observed price variations underscore the importance of enhancing prescriber awareness and promoting rational prescribing practices. Clinicians need to consider not only the efficacy and safety profiles of medications but also their affordability for patients. By incorporating cost considerations into prescribing decisions, healthcare providers can help mitigate the financial burden on patients and improve medication adherence.[12]

In our study cardiovascular drugs, furosemide 40 mg tablet as shown a highest price variation (1572.86%), while least price variation is seen in glucagon 1 mg injection (2.52%). Therefore, there are significant price differences between various therapeutic classes of drugs.[13]

Addressing price variations in cardiovascular drugs requires a multifaceted approach, including policy interventions to regulate drug pricing, enhance generic drug availability, and promote transparent pricing practices. Efforts to strengthen regulatory mechanisms, such as those implemented by the National Pharmaceutical Pricing Authority (NPPA), can play a crucial role in ensuring fair pricing and safeguarding consumer interests.[14] The study underscores the urgent need for policy reforms and interventions to address price disparities in cardiovascular drugs in India. By promoting affordability and accessibility, such measures can contribute to better health outcomes, reduce healthcare disparities, and alleviate the financial burden on individuals and society as a whole.[15]

The study included only cardiovascular drugs listed in the National Formulary of India (NFI) and did not assess other therapeutic categories or the impact of price variation on patient adherence.

CONCLUSION

This study highlighted the substantial price variation among different brands of cardiovascular drugs in the Indian market, underscoring the financial burden on patients, particularly those requiring long-term therapy. The findings highlight the urgency of implementing measures to reduce price variations and improve affordability, thereby enhancing healthcare access and mitigating the financial burden on individuals and society. Overall, these insights contribute to a better understanding of drug cost dynamics in India and provide evidence to support strategies aimed at improving medication adherence and reducing out-of-pocket healthcare expenses.

ACKNOWLEDGEMENTS

Authors would like to thank all the faculty members of the department of pharmacology for their invaluable support and constant guidance throughout the study. Also grateful for the institution Sri Siddhartha Medical college Tumkur and Sri Siddhartha Academy of Higher Education for their continuous support and guidance for the success of the work.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Prabhakaran D, Jeemon P, Roy A. Cardiovascular diseases in India: Current epidemiology and future directions. Circulation. 2016;133(16):1605-20.
2. Sreeniwas Kumar A, Sinha N. Cardiovascular disease in India: A 360 degree overview. Med J Armed Forces India. 2020;76(1):1-3.
3. Kundu J, Kundu S. Cardiovascular disease (CVD) and its associated risk factors among older adults in India: Evidence from LASI Wave 1. Clin Epidemiol Glob Health. 2022;13(100937):100937.
4. Abdul-Aziz AA, Desikan P, Prabhakaran D, Schroeder LF. Tackling the burden of cardiovascular diseases in India: The essential diagnostics list. Circ Cardiovasc Qual Outcomes. 2019;12(4).
5. Gupta R, Joshi P, Mohan V, Reddy KS, Yusuf S. Epidemiology and causation of coronary heart disease and stroke in India. Heart. 2008;94(1):16-26.
6. Ahmad A, Chang J, Chung H, Mohanta G, Parimilakrishnan S, Patel I. The role of pharmacoeconomics in current Indian healthcare system. J Res Pharm Pract. 2013;2(1):3.
7. Ray A, Najmi A, Khandelwal G, Sadasivam B. A cost variation analysis of drugs available in the Indian market for the management of thromboembolic disorders. Cureus. 2020;12(5).
8. National Health Accounts 2004-05. People's Archive of Rural India. 2018. Available from: https://ruralindiaonline.org/en/library/resource/national-health-accounts-2004-05/. Accessed on 13 June 2025.
9. Chow CK, Nguyen TN, Marschner S, Diaz R, Rahman O, Avezum A, et al. Availability and affordability of medicines and cardiovascular outcomes in 21 high-income, middle-income and low-income countries. BMJ Glob Health. 2020;5(11):e002640.
10. van Mourik MSM, Cameron A, Ewen M, Laing RO. Availability, price and affordability of cardiovascular medicines: A comparison across 36 countries using WHO/HAI data. BMC Cardiovasc Disord. 2010;10(1).
11. Jadhav NB, Bhosale MS, Adhav CV. Cost analysis study of oral antidiabetic drugs available in Indian market. Int j Med Res Health Sci. 2013;2(1):63-9.
12. Chawan V, Badwane S, Gawand K, Chhaya M. Analysis of price variation amongst different formulations of anxiolytic drugs available in Indian market. Int J Res Med Sci. 2016;4(6):2398-401.
13. Kumar R, Manu C, Singh D, Lakhani P, Tutu S, Dixit R. The extent of price variation amongst branded antihypertensive drugs and its association with

number of pharmaceutical companies. Int J Res Med Sci. 2015;3(10):2800-6.
14. Ashiwaju BI, Orikpete OF, Alade EY, Raji A, Adesanya AO, Nwankwo TC. Impact of drug price regulation on patient access to medicines: a systematic review. Matrix Sci Pharma. 2023;7(4):112-8.
15. Pandey KR, Meltzer DO. Financial burden and impoverishment due to cardiovascular medications in low and middle income countries: an illustration from India. PLoS One. 2016;11(5):e0155293.

Cite this article as: Reddy PPK, Devaraju C, Sathyanarayana C, Lakshmana MM. Cost-variation analysis between different brands of cardiovascular drugs available in the Indian market. Int J Basic Clin Pharmacol 2026;15:44-8.