

A Critical Analysis of Variation In The Prices of HMG CoA Reductase Inhibitors Available In Indian Market

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Date of Submission: 04-03-2019

Date of acceptance: 20-03-2019

I. Introduction

- Indian Pharmaceutical industry is one of the largest in the world¹.
- It has many drug companies, manufacturing different brands of the same drug in the same dosage forms.
- So there is difference in the selling price from brand to brand of the same drug.
- In this scenario, there will be excessive financial burden on the patients if they are prescribed costly brands of the medications.
- This is especially for diseases requiring life-long medication to prevent morbid complications and to increase the survival rate of the patients.
- Non-communicable diseases are showing increasing trend now due to lifestyle changes².
- Among the non-communicable diseases, coronary artery disease is one of the leading cause of morbidity & mortality³.
- Dyslipidaemia is a major contributory risk factor for coronary artery disease and its complications⁴.
- So, treatment of dyslipidaemia forms the cornerstone in the management of coronary artery disease.
- Among the various therapeutic options available for the treatment of dyslipidaemia, HMG CoA reductase inhibitors are considered as the first line hypolipidaemic drugs⁵.
- HMG Co A reductase inhibitors are the group of drugs which inhibit β hydroxy β methyl glutaryl coenzyme A reductase enzyme.
- This enzyme catalyses the conversion of HMG CoA to mevalonate, the rate limiting step for cholesterol biosynthesis.

The drugs in this group are:

1. Atorvastatin,
2. Rosuvastatin,
3. Simvastatin,
4. Lovastatin,
5. Pravastatin

Pharmacoeconomics can be defined as "the description and analysis of the costs of drug therapy to health care systems and society"⁷

Cost analysis is a type of pharmaco-economic analysis used for the evaluation of variation in the prices of drugs from one brand to other of the same drug.

The present study is planned at analysis of the variation in prices of the HMG CoA reductase inhibitors available in Indian market.

II. Materials & Methods

- Drugs included in the study are Atorvastatin, Rosuvastatin, Lovastatin, Simvastatin and Pravastatin, as these are currently available in Indian market.
- The cost in Indian National Rupees(INR) among the different brands of the same active pharmaceutical ingredient is analyzed.
- Data is evaluated by using the latest issue of "Current index of medical specialities"(CIMS October2016-January 2017 edition).
- The study is done by calculating the cost of drug per 10 tablets.
- The cost range is expressed as minimum cost per ten tablets to maximum cost per ten tablets.
- The cost ratio is calculated as the maximum cost divided by minimum cost.

- The average cost of a drug is calculated as the total drug cost of different brand names divided by the total number of brands available for the same active pharmaceutical ingredient(API).

III. Results

FIG- 1: PIE CHART SHOWING NUMBER OF BRANDS FOR DIFFERENT STATINS.

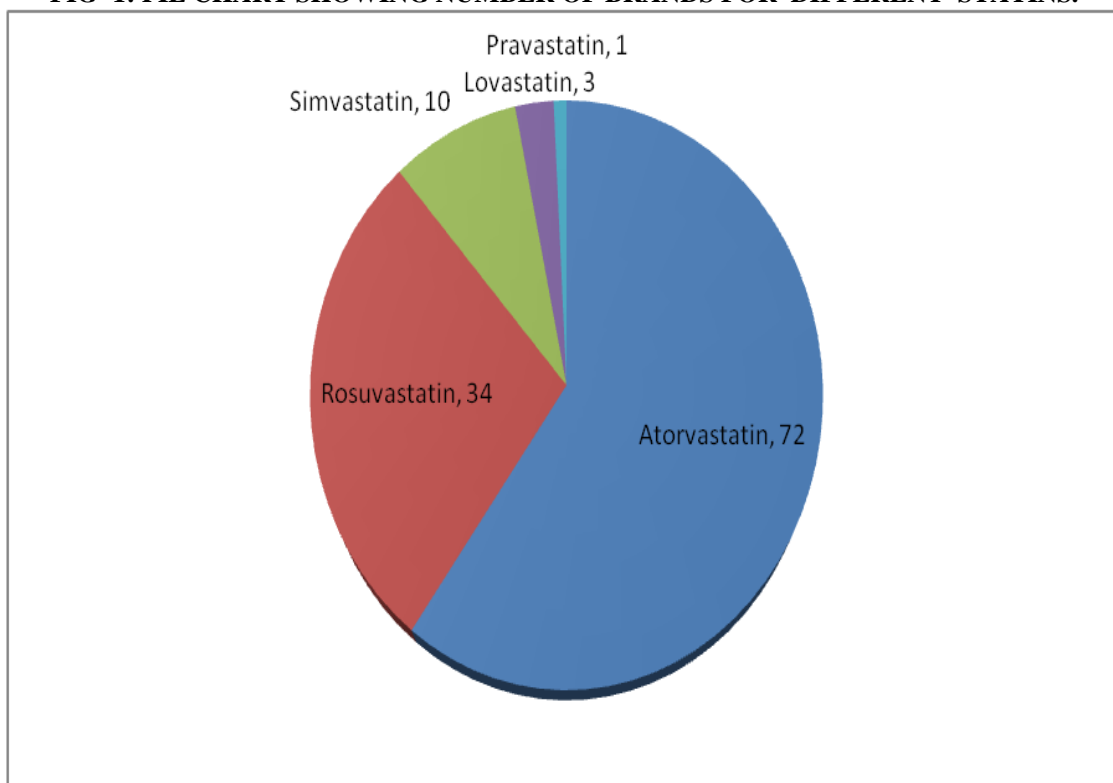
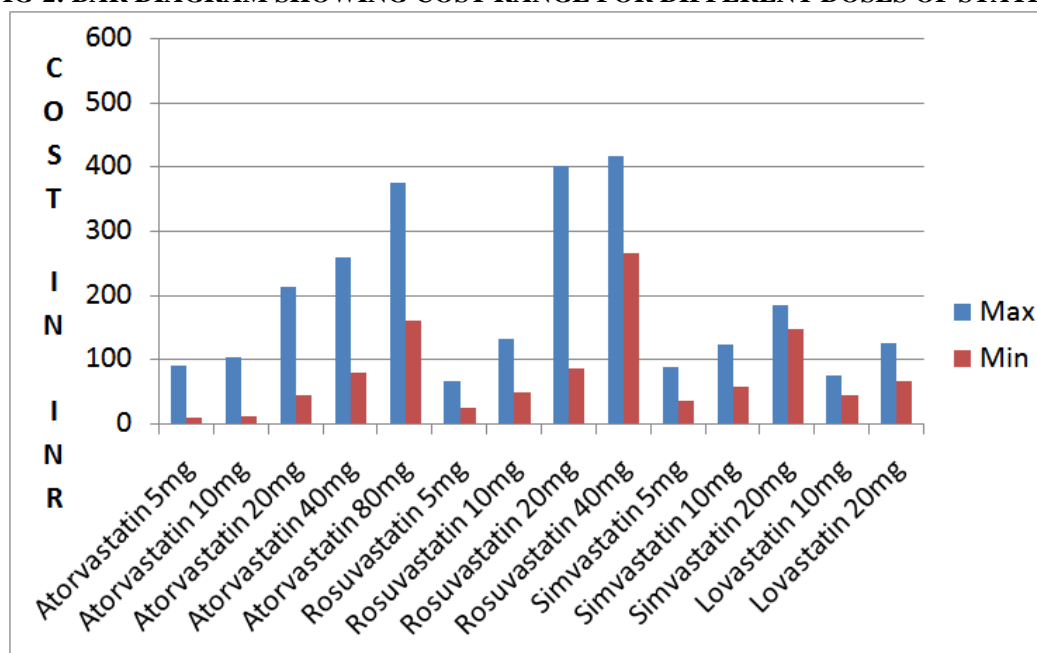


TABLE-1: COST ANALYSIS OF STATINS

S.No.	Drug	Dose (in mg)	Min.cost (in INR)	Max.cost (in INR)	Cost diff. (in INR)	Cost ratio	Avg.cost (in INR)	Total no. of brands
1.	Atorvastatin	5	9	90	81	10	38.5	20
		10	12	104.49	92.49	8.7	57.3	61
		20	45	212.38	167.38	4.7	106.39	49
		40	79	258.47	179.47	3.27	174.4	23
		80	160	374.5	214.5	2.34	261.29	10
2.	Rosuvastatin	5	25	67	42	2.68	51.93	24
		10	49	132	83	2.69	92.21	28
		20	85	400	315	4.705	174.96	22
		40	266	417	151	1.56	306.8	5
3.	Simvastatin	5	35	89	54	2.54	62.03	3
		10	58	123	65	2.12	92.80	3
		20	147.50	185.00	37.5	1.254	165.4	3
		40	-----	-----	-----	-----	336	1
4.	Lovastatin	10	45.10	75.00	29.9	166	57.33	3
		20	66.55	125.00	58.45	1.878	90.18	3
5.	Pravastatin	10	-----	-----	-----	-----	99.00	1
		20					165.00	1

FIG-2: BAR DIAGRAM SHOWING COST RANGE FOR DIFFERENT DOSES OF STATINS



IV. Discussion

- In India, more than one company sells a particular drug under different brand names. This situation has led to greater price variation among the drugs marketed.
- As a result, patient's expenditure on medication increases unnecessarily if costly brands are prescribed.
- The costly brand of a drug is scientifically proved to be in no way superior to its economically cheaper counterpart⁸.
- The present study findings showed a high fluctuation in the minimum & maximum price of HMG CoA reductase inhibitors which are being manufactured by several companies with different brands.
- The cost ratio was also observed to be very high (>2) for more commonly used statins like Atorvastatin & Rosuvastatin.
- A similar study done by Vihang S.Chawan et al.(2014)⁹ also showed significantly higher price variations among different brands of the same hypolipidaemic drug.
- Other similar studies on antiplatelet agents, antianginals used for coronary artery disease were also found to have similar results^{10,11}.
- The price of medicines in India is regulated by Drug price control order(DPCO) issued by Government of India through the official gazette¹².
- This in turn is implemented by National Pharmaceutical Pricing Authority(NPPA)¹³.
- Once a medicine is brought under DPCO, it can't be dispensed at a price higher than that fixed by the government(DPCO).
- Among statins, even though atorvastatin is included in DPCO¹⁴, still wide variation in prices exist from brand to brand of the same drug.
- So, the regulatory authorities like NPPA should exert stringent price control over the essential life-long medications like statins for the coronary artery disease.

LIMITATIONS

The limitations of this study are mainly,

- Only statin group of hypolipidaemic drugs are taken into account for this study.
- FDC of Antiplatelets with statins haven't been considered in the present study.

V. Conclusion

- The results of present study conclude that there is a wide variation in cost among the HMGC_oA reductase inhibitors manufactured by different pharmaceutical companies.
- The Government of India, through NPPA should take effective measures in bringing uniformity in the cost of medication incurred by the patients.
- It will help to reduce the economic burden on the patients by decreasing the cost of health care and ultimately increases the patient compliance.

- Results of the present study make the prescriber informed about various brands of statins available and their price variations.
- So, the prescriber can choose the cheaper brands of statins for patients to achieve rational prescribing.

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Kurli Sankar- Professor. "A Critical Analysis of Variation In The Prices of HMG CoA Reductase Inhibitors Available In Indian Market." *OSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 3, 2019, pp 44-47.