Pharmaco-economics Study: A cost variation analysis of various statin preparations available in Nepali market

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ABSTRACT

BACKGROUND

Hyperlipidemia is one of the greatest risk factors contributing to prevalence and severity of cardiovascular diseases. Treatment of hyperlipidemia with statins have proven efficacy in reduction of cardiovascular events. In the present study, we aim to find out the variation in cost of commercially available statin products in Nepal.

METHODS

The price of different statin products with same formulation and strength was obtained from various medicine importers and distributors inside Kathmandu valley, Pokhara and Chitwan. Percentage of cost variation and cost ratio was calculated.

RESULTS

High percentage of cost variation was observed among Indian product with Atorvastatin 10 mg (898.8% Cost ratio: 9.98) followed by Atorvastatin 20mg (894.52% Cost ratio: 9.94). Least percentage of cost variation was observed with Nepal manufactured Atorvastatin 5mg (49.62 Cost ratio: 1.49).

CONCLUSION

There is a wide percentage of cost variation with available statins in the Nepali market. Regulation of drug price by concerned agencies and by government should be a national priority. Rational drug prescription with low cost is important for treatment adherence and disease outcome

KEYWORDS

cost ratio, hyperlipidemia, percentage cost variation, statins

INTRODUCTION

Cardiovascular diseases (CVD) are a group of disorders of the heart and blood vessels which includes acute events like heart attack and strokes accounting for over 43% of all global deaths from Non-Communicable Diseases (NVDs). Increased blood pressure, raised blood glucose, raised blood lipid levels, and obesity owing to unhealthy diet and physical inactivity predisposes CVD. In Nepal, the actual burden and trend of CVD is unknown because of lack of enough screening and studies, however, various studies indicate that the problem is common and the incidence is on the rise.[1, 2]

WHO has included blood sugar and lipid levels as independent predictors of CVD.[3] Dyslipidemia characterized by elevated blood level of plasma lipids which includes triglycerides (TG), cholesterol, phospholipids, and or plasma lipoproteins namely very-low-density-lipoproteins (VLDL), low-density-lipoproteins (LDL) along with decreased level of high-density lipoproteins (HDL) has been found to be the most prevalent cardiovascular risk factor.[1, 4] Lipid lowering drugs in recent years have significantly contributed to improvement of CVD therapy. A variety of lipid lowering agents are available in the market and their prescription usually depends on the patient's lipid profile, cardiovascular risks and other comorbid conditions dictated by guidelines.[5] Statins also known as HMG CoA reductase inhibitors have been the cornerstone of treatment for hyperlipidemia and has been associated with a reduction of heart attack, stroke and peripheral arterial disease.[6] Atorvastatin has been included in the WHO list of essential medicines but its availability in Nepal has been labelled poor by WHO.[7] In the present study we plan to find out the variation in cost of commercially available Nepali and international -statin products in Nepal and to evaluate the difference in cost of various brands of same statins by calculating the percentage variation in cost in Nepali Rupees (NRS).

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METHODS

Ethical approval for the study was obtained from Chitwan Medical College, Institutional review Committee (CMC-IRC). A list of commercially available domestic and internationally produced statins approved by department of drug administration (DDA) for sale in Nepal was obtained from the DDA office in Bijulibazar, Kathmandu, Nepal. The price of different statin preparations was obtained from various medicine importers and distributors inside Kathmandu valley, Pokhara and Chitwan. The price of the drug was calculated per 10 tablets or capsules in Nepali Rupees. A unique drug formulation or dosage manufactured by only one company and combination drugs were excluded from the analysis. We noted the maximum and minimum price of a particular statin manufactured by various pharmaceutical companies in the same strength. The cost was also checked at retail drug store. The cost ratio of a statin was calculated using the following formula: Cost Ratio = Expensive drug/Cheapest drug. It indicates the number of times an expensive drug is costlier than its cheapest counterpart. Also, percentage cost variation was calculated using the following formula:

% Cost variation = (maximum cost - minimum cost)/minimum cost X 100

RESULTS

Among the 78 pharmaceutical companies registered with DDA, 18 produce statins. Only atorvastatin and rosuvastatin were being produced in Nepal. Percentage variation in cost was found to be atorvastatin (20mg): 185.58%, rosuvastatin (10mg): 211.76% among Nepali products and atorvastatin (10mg): 898.80%, rosuvastatin (10mg): 211.76% among Indian products (Table 1 and 2).

DISCUSSION

Medicines account for 20-60% of health spending in low- and middle- income countries with up to 90% of the population purchasing medicine out-of-pocket payments making medicine the largest family expenditure item after food. An estimated more than 5 days wage for a month of statin prescription has been reported in Nepal. Medicines with higher costs may be unaffordable for a majority of population living in the low- and middle- economic countries and is also a major burden on government budgets. 7, 8 The general concept of Nepalese population regarding expensive items being better and medicine being an essential commodity could add to the financial burden of the family. A wide-variation in the prices of different brands of same formulations has massive ecnomic influence in the genreal population. Also, prescribing any brand is entirely physician-dependent who may not consider the socioeconomic status of the patients rather aiming towards personal interest.9 Thus, prescribing physisicians could play an important role in reducing the economic burden to the family if such type of drug picing studies were available. Nonetheless, practicing physician should not avoid treating a patient with a particular drug because it is expensive, rather balance therapeutic decisions.10

There was a low percentage cost variation among Nepali products compared to Indian products. It could be because the cost of production, marketing and promotion strategies of Nepali company being same. Nepali products were cheaper compared to Indian product except atorvastatin 5 and 10 mg tablets.

The pricing of any drug manufactured in Nepal is regulated

Table 1. Variation in cost of statins manufactured in Nepal

Drug	Dose	Minimum Cost (NPR)	Maximum Cost (NPR)	Cost Ratio	% Cost variation
Atorvastatin	5mg	6.75	10.1	1.49	49.62
	10mg	10.7	16.12	1.50	50.65
	20mg	10.75	30.7	2.85	185.58
	40mg	15	37	2.46	146.66
Rosuvastatin	5mg	11	16.5	1.5	50
	10mg	17	53	3.11	211.76
	20mg	27	72.84	2.69	169.77

Table 2. Variation in cost of statins manufactured in India

Drug	Dose	Minimum Cost (NPR)	Maximum Cost (NPR)	Cost Ratio	% Cost variation
Atorvastatin	5mg	6.75	20.25	3	200
	10mg	3.34	33.36	9.98	898.80
	20mg	6.21	61.76	9.94	894.52
	40mg	22.5	79.04	3.51	251.28
Rosuvastatin	5mg	12.1	50.65	4.18	318.59
	10mg	15.18	88.5	5.83	483.00
	20mg	35	59	1.68	68.57

by DDA. The price of a drug produced by a pharmaceutical company depends on the cost of active pharmaceutical ingredient (API), its transport, manufacturing of the drug, operational costs, marketing and promotion strategies.9 This could be the reason behind the discrepency in price. However, in Nepal the price variation is entirely due to marketing, promotion and operational costs.

Among statins, only atorvastatin and rosuvastatin were being produced by privately owned pharmaceutical companies in Nepal. Statins are second to none11 and manufacturing all of it could prove injudicious to profit generating tendency of private pharmaceuticals companies. We can also infer that atorvastatin and rosuvastatin are the most commonly prescribed drugs in Nepal, however further study needs to be conducted to draw such a conclusion.

Atorvastatin is the only statin listed in the national list of essential medicines12 and is distributed for free at government health facilities but its availability is poor.7 Rosuvastatin has been recently added to the National Drug Formulary.13 Its availability is yet to be studied.

CONCLUSION

In this present study we highlighted the wide variation in cost of different statins available in Nepal. The government of Nepal should take active measures to maintain uniformity in price of essential drugs including statins ensuring easy availability and affordibility. Prescribing physisicans should be aware regarding formulations with cost variations available in the market. Rational precription of low cost drugs could help improve drug adherence and disease outcome.

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