



## Cost Variation Study of Antidiabetics: Indian Scenario

### KEYWORDS

Cost variation, Indian pharmaceutical companies, Antidiabetics

### H. N. Lalan

Assoc. Prof. Dept. of Pharmacology, MGM Medical College, Kamothe, Navi Mumbai, India

### Manjusha K. Borde

Tutor Cum Ph.D Scholar, Dept. of Pharmacology, MGM Medical College, Kamothe, Navi Mumbai, India

### Ipseeta Mohanty Ray

Prof. Dept. of Pharmacology, MGM Medical College, Kamothe, Navi Mumbai, India

### Y. A. Deshmukh

HOD & Prof. Dept. of Pharmacology, MGM Medical College, Kamothe, Navi Mumbai, India.

### ABSTRACT

*The Indian pharmaceutical industry has become a cornucopia of medicines with wide variation in prices for the same medicine marketed under different brand names. Methods: CIMS (current index of medical stores) Apr-June 2013 & IDR (Indian drug review) issue3 2013 & MIMS (Monthly Index of Medical Specialities) Feb. 2013 were reviewed for the prices of drugs used in the management of diabetes mellitus and the percentage variation in price were calculated. Results: In Single drug therapy of oral antidiabetics maximum % price variation is 830. In combination therapies maximum % price variation is 475. In Insulin preparations maximum % price variation is 1881.24. Conclusion: The average percentage price variation of different brands of the same drug is very wide and hence the physician must keep this in mind while prescribing, considering the financial background of the patient. This is necessary since the drug treatment may extend for a long time; usually lifelong.*

### Introduction:

Pharmaco-economics plays an important role in practice of medicine. High cost of medicines has economic implications for the patients and patient compliance may be significantly dependent on the cost of medicines prescribed; in addition to the confusing brand names of various medicines in the Indian market.<sup>(1)</sup> The prices of drugs have a high level of economic implication also for the nation. India follows a competitive market system where both domestic and foreign manufacturers compete. Competition can lead to increased efficiency and lower prices if there are large number of providers who compete with each other and information on prices, quality and likely benefit of the products are widely available to consumers. Different nations have different regulatory systems for the control of prices of drugs. In India, in 1979, 80-85% of the drugs in the market were under price control. The number has slowly decreased and by 2002 only 15-20% drugs were under price control.<sup>(2)</sup> The price of medicine is considered one of the most important obstacles to avail the medication. In developing countries, studies and data on medicine prices are scanty. Measuring and understanding the reasons for the price of medicines is the first stage in developing drug pricing policies that would ensure the affordability of medicines.

In US this work up and its utilization is carried out by Pharmacy Benefit Management. PBMs play a critical role in the purchase decision of patients. PBMs are most often third party administrators of prescription drug programmes, on behalf of Insurance Companies appointed under Medicare and Medicaid programmes. They negotiate with Pharmaceutical companies and pharmacies to get the best possible prices for the drugs. The main focus of the PBMs is to minimize cost, including those related to prescription drugs and in many cases using formularies they often provide financial incentives to patients to select lower-cost drugs.<sup>(3)</sup>

PBMs, thus, exercise a significant amount of discretion and in many cases even switch between an expensive, branded drug and a generic drug independent of the prescribing physician. If the patient wishes to buy a particular brand, he has to dip into his own funds and often this involves a significant

co-payment. In such a position patients are likely to exercise their discretion when health hazards are significant. Patients may take advantage of drug "Coupons" and co-payment assistant programmes and monthly saving cards offered by Pharmaceutical companies—usually Brand Marketers.<sup>(4)</sup> We wish in India we develop such a mechanism.

Diabetes mellitus is on alarming rise in India. Diabetes mellitus is one of the most common endocrine disorders affecting 6% of the world's population. According to report of the International Diabetes Federation in 2001, the number of diabetic patients will reach 300 million in 2025.<sup>(5)</sup> Indian market has over 100,000 formulations and there is no system of registration of medicines.<sup>(6)</sup> The drugs are mainly sold under brand names.<sup>(7)</sup> Current trend in epidemiology of diabetes is very disturbing and may make India, A Diabetic Capital of the World by year 2025. Government of India, is likely to consider issuing compulsory licenses for some patented diabetes management drugs sold in the country in an effort to make them affordable.

The Indian pharmaceutical industry has become a cornucopia of medicines with wide variation in prices for the same molecule marketed under different brand names. This creates lot of problems for physician in deciding the drug of choice for individual patient. A study in the United States found drug prices to be high and that price discrimination occurred across the industry. But very few studies are available in our scenarios which compare the cost of drugs of different brands. Therefore we decided to carry out the study which compares the cost of various anti-diabetics of different brands (mostly branded- generics) compared with the same molecule by calculating percentage variation of cost.

### Methods:

CIMS (current index of medical stores) Apr-June & IDR (Indian drug review) issue3 & MIMS (Monthly Index of Medical Specialities) Feb. 2013 were reviewed for the prices of drugs used in the management of diabetes mellitus. Cost of a particular drug (molecule or fixed dose combination) being manufactured by different companies, in the same strength, number and dosage form were compared. The difference in the maxi-

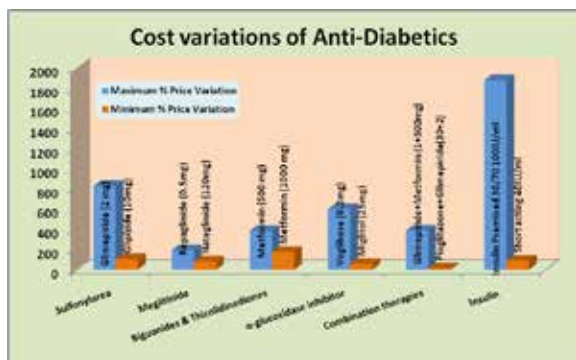
mum and minimum price of the same drug manufactured by different pharmaceutical companies and the percentage variation in price were calculated by using formula. <sup>(6)</sup>

$$= \frac{\text{Price of most expensive brand} - \text{price of least expensive brand}}{\text{Price of least expensive brand}} \times 100$$

### Results:

The prices of total of 25 drugs (11 single, 9 combination preparations and 5 insulin preparations), available in 70 different formulations were analyzed. These 70 formulations are manufactured by different pharmaceutical companies. In Single drug therapy of oral antidiabetics maximum price variation is 830%. In combination therapies maximum price variation is 475% (oral anti diabetics). In Insulin preparations maximum price variation is 1881.24%.

In Single drug therapy, among sulfonylurea group of drugs, Glimepiride (2 mg) shows maximum price variation of 829.72%, while Glipizide (10mg) shows minimum variation. In Meglitinides groups of drugs Repaglinide (0.5mg) shows maximum price variation 194.73% and Nateglinide (120mg) shows Minimum price variation. In Biguanides & Thiazolidinediones groups of drugs, Metformin (500 mg) & Pioglitazone (15 mg) show maximum price variation of 384.18% & 600 % respectively. In  $\alpha$ -glucosidase inhibitor group of drugs, Voglibose (0.2mg) shows maximum price variation of 387.17%, while Miglitol (25mg) shows minimum price variation. In combination therapies, Glimepiride+Metformin (1+500mg) combination shows the maximum variation up to 475 %. In case of Insulin Premixed 30/70 100IU/ml shows maximum price variation of 1881.24%, while minimum variation is found with short acting 40IU/ml.



Graph: Cost variations of Antidiabetics.

### Discussion:

Our findings reveal that the prices of various antidiabetic formulations show great variation. Diabetes is a chronic morbid condition which requires lifelong treatment. So the cost of antidiabetic drugs is the major deciding factor for the patients' compliance. In the absence of information on comparative drug prices and quality, it is difficult for doctors to prescribe the most economical treatment. There is a need for concerted action from regulatory authorities, doctors, phar-

macists and general public at large to address this issue of antidiabetic drugs price variation. The average percentage price variation of different brands of the same drug manufactured in India is very wide and hence the treating physician must keep this factor in mind while prescribing appropriate brand/generic drugs considering the financial background of the patient since the drug treatment may extend for long time; most often even lifelong. In case of many medicines there is a wide difference in the prices between different brands, which could be twofold to more than 100-fold. <sup>(8)</sup> Many doctors are not very conscious about price variation. Doctors do worry about quality of medication which to great extent may depend on bioequivalence of the product especially in Indian scenario. This can sometimes be a reason for penning down costly brand.

Unlike developed countries, people in developing countries pay the cost of medicines out-of-pocket. In India, more than 80% health financing is borne by patients. <sup>(9)</sup> India is known to export medicines to various countries at low cost, but faces the challenge of access to affordable and quality medicines for its own population. <sup>(10)</sup> Indian generics have of late come under US FDA scanner for quality related issues of their drug formulations involving big pharmaceutical companies. The important quality issues found are sanitation at manufacturing site and resultant microbial count in the medication and failing bioequivalence. Same is true for many brands/generics sold in India. The entire gamut of GMP testing including microbial count and Bioequivalence and its regulatory operations needs to be tightly controlled and made full proof like US FDA. Needless to say government must ensure this in the vital interest of Indian people, mankind at large and to avoid caustic remarks from authorities like US FDA Commissioner. <sup>(11)</sup>

Government should have a policy whereby the prices of branded-generic drugs can be made realistic and affordable to common man. We need to have legislation to that effect. The excess profit margins presently being shared by pharmaceutical traders must be passed on to consumers which is a feasible and economically viable (for traders) proposition.

### Conclusion:

Currently, very few medicines are under drug prices control order. Hence it is desired that the Government should bring all lifesaving and essential medicines under price control. <sup>(12)</sup> A company with an innovator brand may be allowed to have a reasonably higher margin. Unfortunately, by and large, innovation is miserably lacking in India and hence it becomes difficult to justify out of proportion higher product pricing by successful marketers. At the same time Medical Practitioners must keep in mind the link between quality and price. Doctor being Friend, Philosopher and Guide must keep financial feasibility of the successful treatment in mind.

### REFERENCE

- Rataboli PV, Garg A. (2005). Confusing brand names: Nightmare of medical profession. *J Postgrad Med*, 51, 13-6.
- Jana S, Mondal P.(2005) Pharmacoconomics: The need to sensitize undergraduate medical students. *Indian Pharmacol*, 37, 277-8.
- William H. Shrank, Michael E. Porter, Sachin H. Jain, and Niteesh K. Choudhry.(2009). A Blueprint for Pharmacy Benefit Managers to Increase Value. *Am J Manag Care*. 15(2), 87-93.
- Joseph S. Ross, and Aaron S. Kesselheim. (2013). Prescription-Drug Coupons - No Such Thing as a Free Lunch. *n engl j med*, 369,13,188-1189
- Adeghate E, Schattner P and Dunn E. (2006). An Update on the etiology and epidemiology of diabetes mellitus. *Ann. N.Y. Acad. Sci.* 1084, 1-29.
- Ravi Shankar P, Subish P, Bhandari RB, Mishra P, Saha AC.(2006). Ambiguous pricing of topical dermatological products: A survey of brands from two South Asian countries. *Journal of Pakistan Assocn. Of Dermatologists*, 16, 134-40.
- Monaghan MJ, Monaghan MS. (1996). Do market components account for higher US prescription prices? *Ann Pharmacother*, 30, 1489-94.
- Lofolm PW, Katzung BG. (2004). Rational prescribing and prescription writing. In: Katzung BG, editor. *Basic and clinical pharmacology*. 9th ed. Mc Graw Hill: New York. Pp. 1091-100.
- Creese A, Kotwani A, Kutzin J, Pillay A.(2004). Evaluating pharmaceuticals for health policy in low and middle income country settings. In: Freemantle N, Hill S, editors. *Evaluating pharmaceuticals for health policy and reimbursement*. Massachusetts, USA: Blackwell Publication; (in collaboration with WHO Geneva). p. 227-43.
- Kotwani A, Ewen M, Dey D, Iyer S, Lakshmi PK, Patel A, et al. (2007). Medicine prices and availability of common medicines at six sites in India: Using a standard methodology. *Indian J Med Res*, 125,645-54.
- Gardiner Harris, New York Times | Feb 15, 2014 | 12) Misra B, Jain SK, Mehta Y.(2002). A study on availability and prices of medicines in India. National Pharmaceutical Pricing Authority. Available from: <http://nppaindia.nic.in/index1.html>. |]