

---

**Research Article****Economic Evaluation of PPI Prescriptions in Patients: A Cost Minimization Analysis****Rajani Patil<sup>1</sup>, Tanuja V Hooli<sup>2</sup>, Sathisha Aithal<sup>3</sup>**<sup>1</sup>Assistant Professor, <sup>3</sup>Professor, Department of Pharmacology, S.S. Institute of Medical sciences and Research Centre, Davangere, Karnataka, India<sup>2</sup>Associate Professor, Department of Pharmacology, ESIC Medical College, Gulbarga, Karnataka, India**\*Corresponding author**

Rajani Patil

Email: [drrajani\\_patil@yahoo.co.in](mailto:drrajani_patil@yahoo.co.in)

---

**Abstract:** PPI are the most commonly used drugs in clinical practice. Different PPIs do not have any important differences clinically. Reports have estimated that over 60% of all PPI prescriptions are generated from inpatient prescriptions. Cost minimization can only be used to compare two products that have been shown to be equivalent in dose and therapeutic effect. A retrospective cross-sectional study was conducted at the S.S Institute of Medical Science and Research, Davangere. A total of 216 prescriptions containing PPIs of inpatients, were analysed. Data about type of PPI used, brand of PPI, fixed dose combinations, dose and route of administration and their price was noted. Cost minimization study was done. Brands of Pantoprazole like Pantodac, Pantocid, Pantolex, Pantakind and fixed dose combinations like Pan D were prescribed. When compared to the generic versions cost of Pantodac was highest 8.71 times that of generic. Brands of Rabiprazole like Razo Rabicip Rabestar and fixed dose combinations like Rabestar D Rabephex D were prescribed. When compared to the generic versions cost of Razo was highest 6.74 times that of generic followed by Rabicip and Rabestar which was 2.56 times the generic. In conclusion Awareness about prescribing generic drugs and most economic drugs to be created.**Keywords:** Cost minimization analysis, Generic, Inpatients, Proton Pump Inhibitors, Pantoprazole.

---

**INTRODUCTION**

Pharmacoeconomics can be defined as the branch of economics that uses cost-benefit, cost-effectiveness, cost-minimization, cost-of-illness and cost-utility analyses to compare pharmaceutical products and treatment strategies, it is the area of health care research that evaluates and compares the costs and outcomes associated with drug therapy [1]. Cost minimization method of cost evaluation is the one used most often in evaluating the cost of a specific drug. Cost minimization can only be used to compare two products that have been shown to be equivalent in dose and therapeutic effect. Therefore, this method is most useful for comparing generic and therapeutic equivalents drugs [2].

The use of gastrointestinal drugs accounted for approximately 8% of outpatient drug expenditures, among these Proton pump inhibitors PPIs accounted (89%) [3]. PPI are the most commonly used drugs in clinical practice [4]. So the Controlling the drug expenditures should start with controlling the expenditures relating to the use of the PPIs. Moreover different PPIs do not have any important differences clinically [5]. Reports have estimated that over 60% of

all PPI prescriptions are generated from inpatient prescriptions. Medical council of India in a notification at New Delhi, dated 11th March, 2002 [6] clearly state that every physician should, as far as possible, prescribe drugs with generic names and he / she shall ensure that there is a rational prescription and use of drugs. This study is designed to analyse the trends in prescription of PPIs and perform cost minimization analysis.

**MATERIALS & METHODS**

A retrospective observational study conducted in the department pharmacology in a tertiary care hospital. A total of 216prescriptions containing PPIs of inpatients, were analysed. Data about type of PPI used, brand of PPI, fixed dose combinations, dose and route of administration was noted. Two of the most commonly used drugs were selected. The brands prescribed were noted down and their market price (maximum retail price) was obtained. The prices of the generic versions of these PPIs were obtained from the official price list of generic medicines by the department of pharmaceuticals, government of India, on the website [www.janaushadhi.gov.in](http://www.janaushadhi.gov.in). [7].

**RESULTS**

Costs of branded and generic versions of the most commonly prescribed PPI i.e., Pantoprazole and Rabiprazole in this study are shown in table1-3 below. Brands of Pantoprazole like Pantodac, Pantocid, Pantolex, Pantakind and fixed dose combinations like Pan D were prescribed. When compared to the generic versions cost of Pantodac was highest 8.71 times that of generic followed by Pantocid, Pantolex and Pantakind which was 2 times the generic. Brands of rabiprazole

like Razo Rabicip Rabestar and fixed dose combinations like Rabestar D Rabephex D were prescribed. When compared to the generic versions cost of Razo was highest 6.74 times that of generic followed by Rabicip and Rabestar which was 2.56 times the generic. Brands of fixed dose combination of Rabeprazole 20 MG+Domperidone30 were Rabephex D and Rabestar D was 3.56 and 3.11 costlier than generic respectively.

**Table-1: Price of Pantoprazole brands compared with generic**

Brand name	Price/10 tab	Generic price	Cost diff(in multiples of generic drug cost)
PANTODAC	95.90	11	8.71times
PANTOCID	75.00	11	6.81
PANTOLEX	66.00	11	6
PANTAKIND	22.50	11	2.04

**Table-2: Price of Rabiprazole brands compared with generic**

Brand name	Price/10 tab	Generic price	Cost diff(in multiples of generic drug cost)
RAZO	84	12.47	6.74
RABICIP	62	12.47	4.9
RABESTAR	32	12.47	2.56

**Table-3: price of fixed dose combination Rabeprazole 20 mg +Domperidone 30mg compared with generic**

Brand name	Price/10 tab	Generic price	Cost diff(in multiples of generic drug cost)
RABEPHEX D	79	22.18	3.56
RABESTAR D	69.00	22.18	3.11

**DISCUSSION**

PPI are commonly used drugs. These are prescribed often not only by doctors but there is an increase in self-medication also. In our study retail price of branded pantoprazole was much higher than its generic version, costing 2 to 8.71 times the generic version. Moreover the price difference among the branded ones prescribed was also wide. Similarly with respect Rabiprazole, branded drugs are much costlier compared generic ranging from 2.5 to 6.74 times the generic. Range of price variation for Rabiprazole is less compared to pantoprazole. The prices of fixed dose combination of Rabeprazole 20 MG and Domperidone30 were also high compared to generic. They found to be 3.56 to 3.11 costlier than generic. From the results of the study it is clear that the prescription of branded drug is a costly affair to the patient increasing his economic burden. As already notified By MCI, doctors are enquired to prescribe generic drugs as far as possible (whenever available) and also use various pharmaco-economic trends in prescribing drugs.

**CONCLUSIONS**

The study has shown branded drugs are much more costly than and generic drugs. The cost of branded drugs prescribed was 2 to 8.71 more than the generic versions. Hence patient spend lot of unnecessary money, cost of health care increases disproportionately. Measures such as prescribing generic drugs and most economic drugs to be undertaken. Creating awareness in this regard is most necessary. Pharmacogenomics studies should be encouraged at higher medical centres.

**REFERENCES**

1. Waning B, Montagn M; Pharmacoepidemiology: Principles and Practice <http://accesspharmacy.mhmedical.com/book.aspx?bookid=438>.
2. Introduction to Drug Utilization Research [Internet] 2003 [last updated July 30, 2015]. Available from: <http://apps.who.int/medicinedocs/en/d/Js4876e/5.2.html>
3. Summary and General conclusions Proton pump inhibitors. [https://www.rug.nl/research/portal/files/2839979/03\\_summary.pdf](https://www.rug.nl/research/portal/files/2839979/03_summary.pdf)

4. Forgacs I, Loganayagam A: Overprescribing proton pump inhibitors. *BMJ*. 2008 Jan 5; 336(7634):2-3.
5. Klok RM, Postma MJ, van Hout BA, Brouwers JRB; Comparing Efficacy of Proton Pump Inhibitors in Short-term use; a meta-analysis of available clinical trials. *Alimentary Pharmacology & Therapeutics* 2003;17(10):1237-45
6. Medical Council of India notification. New Delhi, dated 11th March, 2002 <http://www.mciindia.org/RulesandRegulations/Cod eofMedicalEthicsRegulations2002.aspx>
7. Jan aushadhi [Internet] cited 2015 June 13. Available from: [http://janaushadhi.gov.in/list\\_of\\_medicines.html](http://janaushadhi.gov.in/list_of_medicines.html)