

Drug Utilisation Study Of Proton Pumps Inhibitors In Inpatients Of A Tertiary Care Hospital: A Cross-Sectional Study

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Abstract: Background & Objective: Drug utilization research studies are effective tools that help in evaluating the drug prescribing trends, efficiency of hospital formularies. Proton pump inhibitors (PPI) are one of the most frequently prescribed classes of drugs. However because of their High efficacy & easy availability irrational use and unnecessary exposure is high. This study is designed to identify such problems and to promote rational and judicious use of PPIs. Methodology: A retrospective cross-sectional study was conducted at the S.S Institute of Medical Science and Research, Davangere. Patient medical records with of PPIs prescription were analysed for drugs used including name of the drug, dosage schedule, duration of treatment and concomitant medication. Rationality of prescriptions was evaluated by referring to the indications of PPI use By National Formulary of India; 2011. Results: 216(54%) cases on PPI medications were selected to for our study. Pantoprazole was prescribed in majority of 68% followed by Rabiprazole 16%, Esmoprazole in 13% and then by Lansoprazole in 3% of patients. In our study indications for PPI prescriptions were acute gastritis (4%), GERD (5%), as preoperative medication (11%) and along with NSAIDS (24%) but majority 56 % of PPI prescriptions had no clear indication. Among concomitant drugs used, Antimicrobials were the most commonly (68%) used followed by nonsteroidal anti-inflammatory drugs (24%) and other drugs like Antihypertensive (9%) and Antiemetic (13%). Conclusion: PPIs are one of the most commonly prescribed drugs. But most of the prescriptions had no proper indications hence irrational. Creating awareness about judicious use of PPI is a necessity. [Patil R NJIRM 2015; 6(5):62-65]

Key Words: Drug utilization, Cross-Sectional Studies, Inpatients, Proton Pump Inhibitors, Pantoprazole, Tertiary Healthcare. , MDA.

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Introduction: The World Health Organization (WHO) defines drug utilization research as “the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social, and economic consequences”¹. Drug utilization research studies conducted in the inpatient settings are effective tools that help in evaluating the drug prescribing trends, efficiency of hospital formularies.

Proton pump inhibitors (PPI) indicated in the treatment of acid related dyspepsia and peptic ulcers are one of the most frequently prescribed classes of drugs in the world². However because of their High efficacy & easy availability irrational use and unnecessary exposure is high. When prescribed in such a large volume the adverse effects like hypomanganesemia and Clostridium difficile-Associated Diarrhoea increases proportionally^{3,4}. Long-term use of a proton pump inhibitor may lead to Gastric carcinoids⁵ and increases the risk of hip fractures⁶. Moreover Parenteral PPIs are costly thereby increasing the

economic burden on the patients. This study is designed to identify such problems and to promote rational and judicious use of PPIs.

Material and Methods: A retrospective cross-sectional study at the S.S Institute of Medical Science and Research, Davangere was conducted. The data was collected from patient medical records and were screened for use of PPIs and such records were selected for the study. General information such as age, gender, average stay in the hospital, diagnosis of the patient, comorbid conditions and Detailed information on drugs used including name of the drug, dosage schedule (form, route, and frequency), duration of treatment and concomitant medication used was collected. Rationality of prescriptions was evaluated by referring to the indications of PPI use By National Formulary of India, 2011. The term antimicrobial was inclusive of antitubercular, antiprotozoal, and antihelminthic agents in addition to antibacterial, antiviral, and antifungal agents. Permission was

obtained for the study from the Institutional review board.

Statistical analysis—continuous data are expressed as mean ± S.D. Nominal data were expressed as percentages.

Results: Total 400 case records were screened for the use PPIs. And 216(54%) cases on PPI medications were selected to evaluate and analyse the prescribing pattern in current clinical practice. Among the patients selected for study 61% were male and 39% females. Out of 216 patients on proton pump inhibitors majority of them 41% were middle aged between 41-60 years age group, 32% were 20-40 years and 27% were belong to 61year and above age group. (Table 1)

Table 1: Age wise distribution of patients on proton pump inhibitors

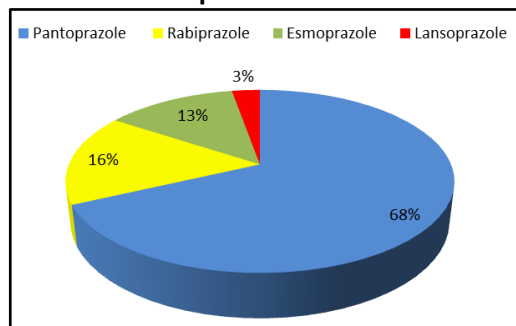
Age	% of patients
20-40	32
41-60	41
61 and above	27

Among the PPIs Pantoprazole 147(68%) was most frequently prescribed that is 147 patients followed by Rabiprazole which was prescribed in 35(16%) patients, Esmoprazole in 28(13%) patients and then by Lansoprazole in 6(2.8%) patients which is shown in table2 and graph 1.

Table2: Various Proton pump inhibitors prescribed

Type of PPI	No. of patients on PPIs	% patients on PPIs
Pantoprazole	147	68.05
Rabiprazole	35	16.20
Esmoprazole	28	13
Lansoprazole	06	2.8

Graph-1: Type of proton pump inhibitors prescribed

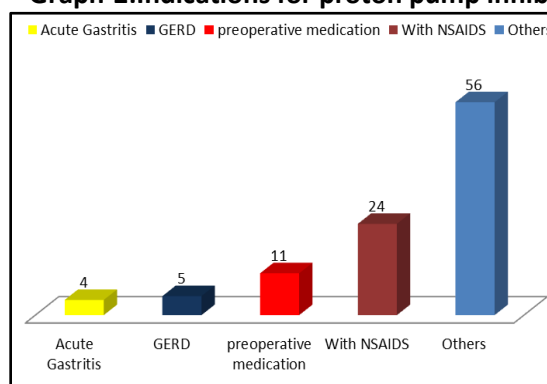


In our study only 44% of prescriptions were used for the various above indications such as acute gastritis (4%), GERD(Gastro Esophageal Reflux Disease) (5%), as preoperative medication(11%) and along with NSAIDS(24%) but majority 56 % of PPI use did not come under these indications and their use was unreasonable. As shown in Table 3 and graph 2.

Table 3: Indications for prescribing PPIs

Indication	No of patients	% of patients on PPI
Acute Gastritis	09	04
GERD	11	05
preoperative medication	24	11
With NSAIDS	52	24
Others	121	56

Graph-2:Indications for proton pump inhibitors



As the use of PPI is frequent even the polypharmacy was high. Antimicrobials were the most common drugs used in (68%) patients followed by nonsteroidal anti-inflammatory drugs an in 24% patients and other drugs like Antihypertensives (9%), Antidiabetics (7%), Antiemetics (13%), Antiplatelets (3%) and Antacids and H2 blockers (2%) shown in Table 4.

Table 4: Concomitant drugs used along with Proton pump inhibitors

Drugs used	%of patients
Antimicrobials	68
Antiemetics	13
Antihypertensives	09
Antimalarial	04
Antiplatelets	03
Diuretics	03
Hypolipidemics	03
Antacids and H2 blockers	03

Discussion: The PPIs have become one of the most commonly prescribed drugs in India. The present study shows that total of 68% of hospitalized patients were on proton pump inhibitors during the study period. This result complies with the previous study by Ramirez E et al⁷. A study conducted by Kaur S et al reported among the injectable preparations proton pump inhibitors (41.8%) were the most commonly prescribed agents⁸. The use of PPIs was more in males in comparison to females. This is in accordance with the previous study by Mayet AY⁹. According to CDSCO publication National Formulary of India- 2011, indications for the use of PPIs are Benign gastric and duodenal ulcers, Zollinger Ellison syndrome, gastric acid reduction during gastric surgery, GERD, NSAID-induced ulcer, prophylaxis during NSAIDs treatment in patients with high risk for peptic ulceration, as preoperative medication, eradication of *H. pylori*, systemic mastocytosis and in patients not responsive to H2 blockers¹⁰. In our study only 44% of prescriptions were used for the various above indications such as acute gastritis (4%), GERD (5%), as preoperative medication (11%) and along with NSAIDs(24%) and majority 56 % of PPI use did not come under these indications and their use was unreasonable. The similar result was seen in the study conducted by Nousheen et al¹¹ (58%), this is also similar to the study titled Improper use of antisecretory drugs in a tertiary care teaching hospital: An observational study, done by Mayet AY⁹.

A Study by Heidelbaugh JJ and Inadomi JM on use of stress ulcer prophylaxis in non-ICU hospitalized reported higher (77.5%) prescriptions which were irrational¹². NauntonM et al had reported use of PPI with no approved indications in 39.6% patients¹³. Among the PPIs Pantoprazole (68%) was most frequently prescribed followed by Rabiprazole (16%) and Esmoprazole (14%) and then by Lansoprazole (2%).Which was in accordance with study conducted by Nousheen (77%) et al¹¹. The frequency of administration of PPIs was once daily in 97% of cases, the doses of PPIs are recommended as once daily but can be given twice daily also for rapid action as steady state is achieved rapidly. As most commonly prescribed medications are PPIs and these are also the drugs most commonly used with other concomitant drugs. In this study use with Antimicrobials was the

most common (68%); moreover it is not recommended indication of CDSCO. This leads increase in the medical expenses and also adverse drug reactions. 24% of patients had co prescription of PPIs with NSAIDs. The use of PPIs along with NSAIDs reduces the risk of gastritis, peptic ulcer and gastrointestinal bleeding. In 13% of patients antiemetics were used with PPIs which may be due to gastritis. The other concomitant drugs used were antihypertensives (9%) and antidiabetics (8%) were frequent due to comorbid conditions. PPIs were also used with antacids and H2 blockers. Use with antacids and H2 blocker is not an approved indication. But a study done by Mainie I et al concluded that addition of a H2 receptor antagonist to PPI improves acid control and decreases nocturnal acid breakthrough¹⁴, hence can be use can be justifiable. Other concomitant drugs used were Antimalarial, Antiplatelets, Diuretics and Hypolipidemics.

Conclusion: Proton pump inhibitors were used in 54% of inpatients in this study. However majority of prescriptions had no clear indications. And PPIs were most commonly prescribed with antimicrobial agents (68%). Awareness about PPI indications, adverse effects and economic burden should be created so that appropriate prescription will improve the patient care at low cost.

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