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TO STUDY PRESCRIBING PATTERN AND UTILIZATION OF PROTON PUMP INHIBITORS IN GENERAL PRACTICE

Amish Uprety*[1], Alisha Sharma Sedai[2], Dr. Shub Narayan Byar[3], Dr. Bibek Lamichanne[1] and Dr. Nabin Dhakal[4]

[1*]Clinical Pharmacist (Department of Hospital Pharmacy DHRC)
[1](Department of Medicine, Damak Hospital and Research Centre, Damak)
[2]Registered Nurse (Nobel Medical College Biratnagar)
[3]Department of Medicine, (Kathmandu Medical College)
[4]Department of Anesthesia, (AMDA Hospital, Damak).

***Corresponding Author: Amish Uprety**

Clinical Pharmacist (Department of Hospital Pharmacy DHRC)

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ABSTRACT

Backround: The aim of our study was to assess the prescription pattern in patients prescribed with Proton Pump Inhibitors. Our objectives were to analyze the overall use of Proton Pump Inhibitors with regard to Indication, Dose, dosage and Duration of therapy and also to get a clear understanding of the pattern of PPI prescriptions, assessment of the duration of administration focusing on the various predisposing conditions resulting in their prolonged use. **Methodology:** A Prospective observational study was conducted in Outpatient Department in Primary hospital. Pertinent information was collected from patients and prescribing pattern of PPIs was analyzed. **Results:** A total of 182(106 females) patients were enrolled in the study. PPI were prescribed for drug related conditions in 40.65% of patients, 13.18% were prescribed for GI disorders. About 46.17% of the study populations were prescribed with PPI without any indication. The most commonly prescribed PPI was pantoprazole (41.75%) followed by rabeprazole (28.57%) and esomeprazole (8.97%). PPI was co-prescribed for diabetes in 37(20.32%), hypertension 24(13.18%), hyperthyroidism 12 (6.59%) in this study. **Conclusion:** The results showed that the majority of the PPI prescriptions were made with a high number of doses, without reporting appropriate indications, with some having potential DDIs. The knowledge of prescribing pattern can lead us towards the rational use of drugs and can help us in improving patients' quality of life as well as economic burden.

KEYWORDS: ppi, prescription pattern, GI disorders, drug utilization.

INTRODUCTION

Proton pump inhibitors (PPIs) are among the most frequently prescribed drugs globally. Although they are cost effective when used appropriately, studies show that they are prescribed without a clear indication in up to 70% of cases. Even though the absolute risk of harm to individuals from PPIs is low, their wide spread, long-term use can cause adverse effects that contribute to significant negative impacts at a population level. Action is required to limit inappropriate prescribing of PPIs and support deprescribing in patients on long-term therapy for whom the original indications no longer apply.[1]

The proton pump inhibitors available in the United States are omeprazole (Prilosec), lansoprazole (Prevacid), pantoprazole (Protonix), rabeprazole (Aciphex), and esomeprazole (Nexium). These are substituted benzimidazole prodrugs, which accumulate on the luminal side of parietal cells' secretory canaliculi. They become activated by acid transport and then bind covalently to the actual H+/K+ ATPase enzymes (proton pumps) irreversibly blocking them. These drugs markedly inhibit gastric acid secretion. New proton pumps are continuously formed, and thus no tolerance develops. Peptic ulcers and erosive esophagitis that are resistant to other therapies will frequently heal when these agents are used. The proton pump inhibitors are also used to treat patients with Zollinger-Ellison syndrome, which is the result of a gastrin-hypersecreting neuroendocrine tumor.[2]

Available evidences suggest that PPI use is associated with an increased risk of both acute and chronic kidney disease, hypomagnesemia, C difficile infection, and osteoporotic fractures. Caution in prescribing Proton Pump Inhibitors should be used in patients at high risk for any of these conditions. Given the association with kidney disease and low magnesium levels, serum creatinine and magnesium levels should probably be

monitored in patients using PPIs, especially those using high doses.[3]

All proton pump inhibitors are metabolized by hepatic P450 cytochromes, including CYP2C19 and CYP3A4. Because of short half-lives of proton pump inhibitors, clinically significant drug interactions are rare. The FDA has issued a warning about a potentially important adverse interaction between clopidogrel and proton pump inhibitors.[4]

Drug utilization studies are continuous programs which help us to review, to analyze and to interpret the trends of drug used against pre-determined standards at various levels of the healthcare system.[5]

MATERIALS AND METHODS

Study Design: The study is a Prospective Observational study.

Study Site: The study was conducted in a 50 bedded hospital having (Nepal government insurance) located at Jhapa, Nepal.

Study Period and Ethical Clearance

The study was approved by Institutional Ethics Committee of Hospital. The study was carried out for the period of 3 months from April 2024 to June 2024.

Study Population Size

182 inpatients prescribed with Proton Pump Inhibitors were included in the study based on the inclusion and exclusion criteria after getting the patient consent and the required data was collected in specially designed data entry form.

Inclusion criteria

- Patients of either sex and aged >18 years
- All Patients prescribed with Proton Pump Inhibitors in outpatient department.
- Patients who are willing to give consent.

Exclusion criteria

- Patient of emergency department.
- Patients of either sex and aged < 18 years.
- Patients who are not willing to give consent.
- Pregnant and lactating mother.

Statistical analysis

Statistical analysis was done by data entry in to MS excel 2019 and analyzed. Descriptive statistics were expressed in terms of actual number and percentage.

RESULTS AND DISCUSSIONS

182 patients based on the sample size were included in the study based on the inclusion and exclusion criteria. The demographic details, clinical data and prescription details were collected from the patients for the study.

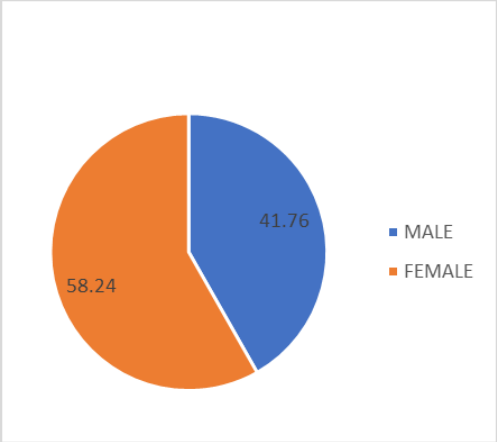

Fig. 1: Gender Wise Distribution.

Our study indicates that the majority of patients within the study population were females (58.24%) compared to males (41.76%).

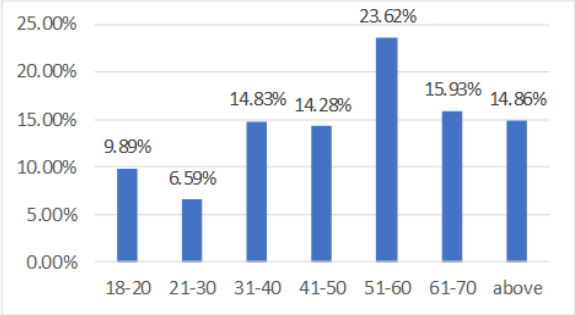

Fig. 2: Age Wise Distribution.

In our study the incidence of PPI use was found more in the age group of 51 – 60 years (23.62%) followed by 61 – 70 years (15.93%). In a similar study conducted by Jemi Elza et al., 5 most of the patients were observed from the age group between 40 – 60 years, 60 – 80 years and 20 – 40 years.

The most common co-morbidity among the study population was found to be type 2 diabetes mellitues 20.32% which included 13.18% hypertensive patients. 6.59% were having hypothyroidism disorders.

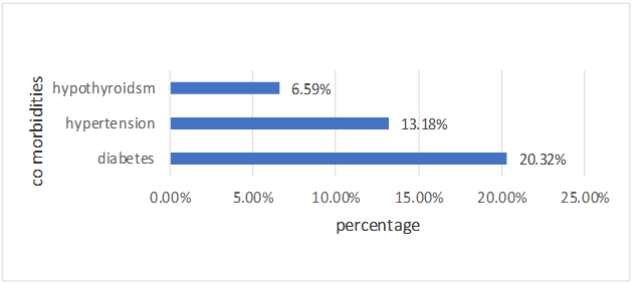

Fig. 3: Comorbidities.

Our study shows that among the 182 patients, only 46.17% of PPIs prescribed for our patients had no relevant indications. For 13.18% patients PPIs were

prescribed for GI disorders and in 40.65% PPIs were prescribed for drug related indications. This was consistent with the study conducted by Meutia Anindita et al.,(7) in which the prevalence of PPI usage with appropriate indication was found in 77.78%

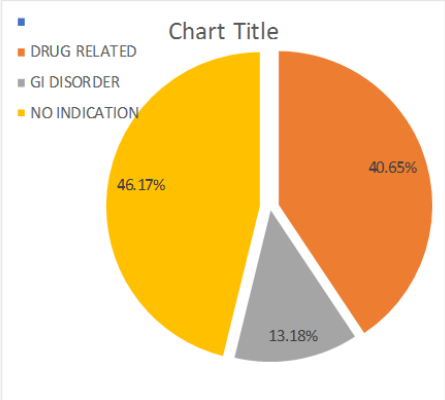

Fig. 4: Indication.

In our study, Pantoprazole was the most commonly prescribed PPI among the study population i.e. 41.75% followed by Rabeprazole 28.57% and 8.97% esomeprazole. A similar study by Verma et al., (2019) (9) in a tertiary care hospital in North India also identified pantoprazole as the most commonly prescribed PPI. Also, none of the patients was prescribed omeprazole, a cheapest PPI available in Nepalese markets.

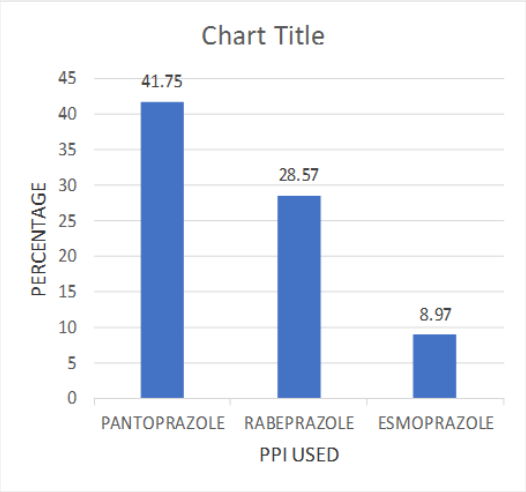

Fig. 5: ppi used.

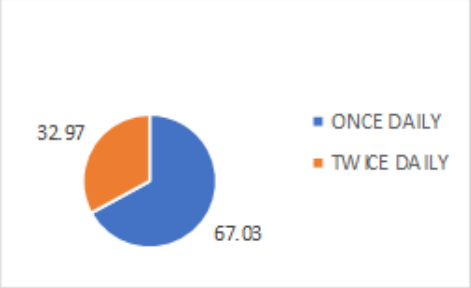

Fig 6: Frequency.

Within the study population, 32.97% patients received PPI twice daily, followed by 67.03% received PPI once daily.

Limitations

This study also had limitations. The study design did not permit systematic recruitment of patients arriving in the emergency department. Patients who arrived for consultation during the evening, at nighttime, and on weekends may have left without being screened for this study, which increased selection bias. Young patients may visit the emergency department outside of regular working hours, which might explain the high mean age of study participants. Despite the use of patient interviews and a medical chart review, it is possible that some medical data were missing because of memory bias or data missing from the charts. The indication for PPI use was determined in part from the patient interview, but patients may report gastric disease not based on a medical diagnosis, which may also lead to overestimation of appropriate PPI prescriptions.

CONCLUSION

This prospective observational study confirms that the majority of PPI prescription within the hospital comprise/consists of Pantoprazole. In our study about 84 patients (46.17%) were prescribed with PPIs without any valid indication which increased the patient therapeutic burden and their treatment cost. Monitoring and evaluating the long-term PPI use in the hospital setting especially in insurance hospital in Nepal should be performed for attaining a proper outcome and bringing down interaction and other possible issues related to PPI use. The knowledge of prescribing pattern can lead us towards the rational use of drugs and can help us in improving patients' quality of life.

Even duration of the treatment of ppi was for longer period of time which is burden for the patients. Even As awareness of the potential harms increases, it is now more important than ever for healthcare professionals to be vigilant when prescribing PPIs and to ensure that they are only prescribed when there is an appropriate indication for them.

Lack of proper counselling from the health workers to the patients may lead a ppi complications in the patient in coming future. According to some of the health workers patients themselves ask to prescribe ppi compulsorily to them.

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