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DRUG UTILIZATION AND EVALUATION OF PROTON PUMP INHIBITORS IN INPATIENTS WITH GASTRIC DISORDERS-A CASE STUDY

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ABSTRACT

This prospective observational study assessed the prescribing pattern and rational use of proton pump inhibitors (PPIs) in 60 hospitalized patients with acid-related gastric disorders. Pantoprazole was the most frequently used PPI, mainly administered orally. The study identified inappropriate use of injectable PPIs and deviations from recommended treatment guidelines. These findings highlight the importance of promoting rational prescribing practices and conducting regular drug utilization reviews to improve PPI therapy.

KEYWORDS: Proton pump inhibitors; Prescribing pattern; Drug utilization; Gastric disorders; inpatient.

INTRODUCTION

Proton pump inhibitors are one of the most commonly prescribed drugs in both outpatient and inpatient. Prescriptions for proton pump inhibitors (PPIs) have increased exponentially in hospital and ambulatory care over the last few years.[1]

Proton pump inhibitors (PPIs) are a class of medications that reduce stomach acid production significantly and for a long period of time. They are now the most effective stomach acid-suppressing medicines in clinical use. PPIs decrease both basal and induced stomach output by irreversibly inhibiting the gastric H+-K+ ATPase pump, also known as the proton pump.

Currently, the PPIs available in India are omeprazole, esomeprazole, pantoprazole, rabeprazole and lansoprazole. PPIs are being used to treat active ulcers, Zollinger-Ellison syndrome, Gastroesophageal Reflux Disease (GERD), GI bleeding, NSAID-induced dyspepsia and Helicobacter pylori antibiotics. PPIs are also used prophylactically with NSAIDs or steroids in individuals with a history of peptic ulcers, previous GI bleeding or the elderly. PPIs are metabolized by cytochrome P450, leading to medication interactions and severe systemic consequences.[2]

Among the modest and self-limiting side effects of PPIs are constipation, headache, flatulence, diarrhea, and abdominal pain.[3]

List of Common drugs in proton pump inhibitors are,

1. Omeprazole
2. Esomeprazole
3. Lansoprazole
4. Pantoprazole
5. Rabeprazole

1. Omeprazole.[4]

Omeprazole decreases stomach acid and is used to treat GERD, ulcers and erosive esophagitis. It relieves symptoms such as heartburn and indigestion, and its most common adverse effects are headache, nausea, diarrhoea, vomiting and stomach discomfort.

2. Esomeprazole

Esomeprazole is an enhanced version of omeprazole used to treat GERD, prevent ulcers caused by NSAIDs and eliminate Helicobacter pylori infection. It effectively relieves symptoms, but it might cause gastrointestinal pain, severe diarrhea, convulsions, or kidney problems with some people.

3. Lanzoprazole

Lansoprazole is used to treat peptic ulcers, reflux esophagitis and Zollinger-Ellison syndrome. It is typically taken with antibiotics to remove H. pylori. It is generally well accepted with common side effects including headaches, nausea, diarrhea, constipation, stomach pain and skin rashes.

4. Pantaprazole[5]

Pantoprazole is used to treat GERD, erosive esophagitis and diseases with high acid secretion. It promotes esophageal repair and is often administered for a limited time with common side effects including headache, dizziness, abdominal pain, diarrhea and joint pain.

5. Rabeprazole

Rabeprazole suppresses stomach acid production and is used for treating GERD, peptic ulcer disease and H. pylori. It is effective and generally safe with some adverse effects including headache, nausea, diarrhoea, abdominal pain, gas, and constipation.

GASTRIC DISORDER

Gastric disorders are common conditions that affect the normal function of the stomach and range from mild irritation to serious complications such as ulcers and bleeding. They occur due to imbalance in gastric acid secretion, weakened mucosal protection or impaired motility. Major causes include Helicobacter pylori infection and prolonged use of NSAIDs. Common symptoms include epigastric pain, heartburn, nausea, bloating and loss of appetite. Early diagnosis and appropriate treatment are essential to prevent complications and improve patient outcomes. Common gastric disorders like Gastritis, Peptic Ulcer, Gastroesophageal Reflux Disease (GERD).

1. Gastritis.[6]

Gastritis is an inflammation of the gastric mucosa that may be acute or chronic. It commonly occurs due to Helicobacter pylori infection, unhealthy diet, stress, lifestyle factors, and long-term NSAID use with rising incidence linked to modern lifestyle changes, especially among young people.

2. Peptic Ulcer Disease[7]

Peptic ulcer disease is a condition characterized by a break in the inner lining of the gastrointestinal tract due to acid and pepsin action. It commonly affects the stomach and proximal duodenum, extending into the muscular layer of the mucosa.

3. Gastroesophageal reflex disease[8]

Gastroesophageal Reflux Disease (GERD) is a chronic condition in which stomach acid often refluxes into the esophagus causing discomfort and symptoms such as heartburn.

METHODOLOGY

1. Study Design

This was a prospective observational study using a Drug Utilization and Evaluation (DUE) approach.

2. Study Site

The study was conducted in the inpatient departments of tertiary care teaching hospitals, including a Tertiary Care Teaching Hospital, Vaniyambadi; Government General Hospital, Nattrampalli, and Government General Hospital, Krishnagiri.

3. Study Duration

The study was carried out over a period of 2–3 months.

4. Study Population

A total of 60 inpatients diagnosed with gastric disorders and prescribed proton pump inhibitors during hospitalization were included.

5. Inclusion Criteria

Inpatients above 18 years of age diagnosed with peptic ulcer, gastritis, or GERD and prescribed any PPI, who were willing to participate.

6. Exclusion Criteria

Patients with incomplete medical records, outpatients, and patients admitted for less than one day were excluded.

7. Study Procedure

Patient demographic and clinical data, along with details of PPI therapy were collected prospectively from medical records. Prescriptions were evaluated for appropriateness of indication, dose and duration based on standard guidelines, concomitant drugs and adverse effects were assessed and data were analyzed using descriptive statistics and presented in tables.

RESULT AND DISCUSSION

The study focused on evaluation of the drug utilization pattern,usage determination and outcomes in the usage of proton pump inhibitors in gastric disorder population in the in patient Departments and various teritary hosptials.

1. Distribution of study population according to Gender:

The 60 cases collected from the prescription of medical ward on drug used for gastric disorders were classified according to their gender. Out of 60 patients, 39 patients were male and 21 patient were female, as shown in tabel No.1.

Tabel No. 1: Distribution of patient data based on gender of study population.

S. No.	GENDER	FREQUENCY (n=60)	PERCENTAGE
1	Male	39	65%
2	Female	21	35%

2. Distribution of study population according to age group

The age wise distribution was made for the patients with different age groups most of the patients were in the age group of 21-20 followed by 31-40 and 41-50 years. The number of patients present in each age group was 21%, 31% and 33% respectively**,** as shown in tabel No.2.

Table No. 2: Distribution of study population according to age wise.

Age group	Male	Female	Frequency (n=60)	Percentage
<20	2	-	2	3.33%
21-30	7	6	13	21.67%
31-40	13	6	19	31.67%
41-50	10	10	20	33.33%
<50	6	-	6	10%

3. Distribution of study population according to Type of Disorders

In our study we assessed the overview of gastric disorders, out of 60 patients 28 members were affected gastritis,11 members were affected with GERD,16 members were affected with peptic ulcer and 5 members were affected with other disorders, as they will be shown in table No.3.

Table No. 3: Distribution of study population according to type of disorders.

Type of gastric disorders	Male	Female	Frequency (n=60)	Percentage
Gastritis	21	7	28	46.67%
GERD	9	2	11	18.33%
Peptic Ulcer	4	12	16	26.67%
Others	4	1	5	8.33%

4. Distribution of study population according to patient who are smoked:

Out of 60 patients,18 males and 1female patients were smoking and they were showing in table No.4

Table No.4: Distribution of study population according to smoking patient.

Smoking	Male	Female
Yes	18	1
No	21	**20**

5. Distribution of study population according to patient who were Alcoholic

Out of 60 patients, 22 males and 1female were alcoholic and they were showing in table No.5.

Table No. 5: Distribution of study population according to alcoholic patient.

Alcoholic	Male	Female
Yes	22	1
No	17	20

6. Distribution of study population according to drugs taken for gastric disorders.

Out of 60 patients, 20 patients were taken pantoprazole, 12 patients were taken omeprazole, 11 patients were taken lansoprazole,10 patients were taken rabeprazole and 7 patients were taken esomeprazole and they were shown in table No.6.

Table No. 6: Distribution of drugs according to gastric disorders.

Drugs	Male	Female	Frequency (n=60)	Percentage
Pantoprazole	13	7	20	33.33%
Omeprazole	7	5	12	20%
Lansoprazole	7	4	11	18.33%
Rabeprazole	7	3	10	16.67%
Esomeprazole	4	3	7	11.67%

7. Distribution of study population according to route of administration

Out of 60 patients,18 patients were taking in IV route and 25 patients taking in oral route and their details were shown in table No.7.

Table No. 7: Distribution of drugs according to route of administration.

Route of administration	Male	Female	Frequency (n=60)	Percentage
IV	14	4	18	30%
Oral	25	17	42	70%

8. Distribution of study population according to of co-morbid condition

Study observation shows that the diabetes mellitus and hypertension were the most co morbid condition among the study population with the prevalence of 18%and 9%, respectively and other all cases like asthma, kidney disease, liver disease and hypothyroidism they were affected. Distribution of the patient data in study based on their co morbid condition as shown

in the table No.8.

Table No. 8: Distribution of patient data based on the of co-morbid condition among the study population.

Co-morbid	Frequency	Percentage
Diabetes mellitus	11	18.33%
Hypertension	5	8.33%
Asthma	3	5%
Kidney disease	3	5%
Liver disease	1	1.67%
Hypothyroidism	1	1.67%

CONCLUSION

This study revealed that proton pump inhibitors are extensively used in the management of gastric disorders among hospitalized patients, with gastritis being the most common diagnosis. Pantoprazole was the most frequently prescribed PPI, followed by other agents such as omeprazole and lansoprazole. Most prescriptions were given for appropriate indications; however, the use of intravenous PPIs without strong justification was observed in some cases. The presence of multiple co-morbidities among patients emphasizes the need for careful drug selection and monitoring. Overall, rational prescribing, adherence to treatment guidelines, and periodic drug utilization evaluation are essential to ensure the safe, effective and economical use of PPIs.

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