

Assessment of Prescribing Pattern And Suitability of use & Medication adherence of Proton Pump Inhibitors in Darbhanga District Of Bihar

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Abstract

Aims and Objectives:

Proton pump inhibitors are the class of drugs that is used recklessly, In spite of it happening during the past decades the increased reports of adverse events. This study aimed to get a clear understanding of the current Prescribing Pattern and Suitability of use, Cost of Proton Pump Inhibitors among the citizen of Darbhanga District Bihar.

Methodology:-

This study / Survey was Held during the period of 20th August To 20th September 2020 By the sharing of Google form link using an online platform circulated To Medical Store, Physicans, and Patient. Google form Link comprising with questionnaire To find out an aggregate patient basis in the management of acid peptic disorders. A data report google form was answered by above persons.

Results: -

A total of 362 Response received in Google Drive in which 330 patients received PPIs during the audit period, 107 female and 255 Male participated in this survey. In which Pantoprazole was the most frequently prescribed (33.93%). Majority of the patients (63%) were started on PPI without further investigations for confirming the indication. Among the prescribed drugs Antihypertensive drug were the most commonly co-prescribed medications with PPIs (41.50%).

Conclusion:

The present study found a relatively high tendency to self medication of PPI among the adults residing in Darbhanga District Of Bihar. Proton pump inhibitors are frequently inappropriately prescribed to Medicine inpatients and out patient who do not have a valid indication and this practice is associated with an increase in adverse events that's why Careful monitoring is needed to avoid serious drug interactions, Averse event involving PPIs.

Keywords: Gastroesophageal reflux disease, proton pump inhibitors, Rabeprazole, Self Medication, Darbhanga Bihar, prescribing pattern.

Introduction:-

Proton pump inhibitors (PPIs) are the most commonly prescribed class of medication for the treatment of gastrointestinal (GI) disorders like upper Gastro intestinal disorders, including Gastro-Esophageal Reflux Disease, Indigestion, Peptic Ulcer Disease, Barrett's esophagus, Non-Steroidal Anti Inflammatory Drugs-induced ulcer, eradication of *Helicobacter pylori*, and hyper secretory disorders such as Zollinger-Ellison Syndrome [1] PPIs are lipophilic weak bases that cross the parietal cell membrane and enter the acidic parietal cell canaliculus. In this acidic environment, They produce their effect by inhibiting the H⁺/K⁺- ATPase or proton pump, which is located in the highly acidic lumen of parietal cells (2) Omeprazole was the first Proton

pump inhibitors (PPIs) were Originally approved by the food and drug administration and introduced to the market at the end of the 1989. (3) All PPIs are prodrugs and require activation at an acid pH. (4) In general medical practice the health of millions of people across the world is suffering from acid-related diseases, gastrointestinal (GI) disorders. (5) There are a number of PPIs available in the United States Omeprazole, Lansoprazole, Rabeprazole, Pantoprazole, Esomeprazole, are approved by the Food and Drug Administration (FDA) and more are in development figure 1. The medications are similar structurally, chemically and Pharmacological mechanism of action but differ in the duration of action and bioavailability as Following esomeprazole (90%), lansoprazole (80%) and the least bioavailability is observed in omeprazole (30-40%). Protein binding is almost same in all PPIs. (6) Pharmacokinetic Parameters of Various PPIs are summarised in Table:-1 PPIs are generally well tolerated And Less chance of adverse effect a search of the WHO International ADR database manifest that the reported adverse effect of PPIs Include the safety issues under the review of National Pharmaceutical Regulatory Agency, such as subcutaneous lupus erythematosus, hypomagnesaemia, osteoporotic fractures, and risk of pneumonia, and dementia, microscopic colitis (7) The long-term use of PPIs may be associated with a higher risk of flatulence, headache, vitamin B12. (8) All the PPIs available for the over-the-counter purchase which results in enhanced public access, although, over-the-counter PPIs are approved only for short-term management of frequent GI Disorder and heartburns. (9) PPIs get metabolized through cytochrome P450 That's why another drug they also metabolized through cytochrome p450 having significant chance of Drug interaction like phenytoin, theophylline ampicillin, iron, digoxin, diazepam, ketoconazole, atazanavir and warfarin by increasing their half-life and thus causing harmful systemic effects. (10) Hence, The objective of this survey was to determine Prescribing Pattern And Suitability of use, Cost of Proton Pump Inhibitors in Darbhanga District Of Bihar.

Table 1: Pharmacokinetic Parameters of Various PPIs

Parameter	Pantoprazole	Rabeprazole	Lansoprazole	Esomeprazole	Omeprazole
Bioavailablitiy	77%	52%	80%	90%	30-40%
Acid liable	Yes	Yes	Yes	Yes	Yes
Time to peak	2.5 Hour	2.5 Hour	1.7 hours	1.5 Hour	0.5-3.5 hours
Half-life	1.9 Hour	1-2 Hour	< 2 hours	1.2-1.5 Hour	0.5-1 hour
Excreted unchanged in the urine	0%	0%	< 1%	< 1%	0%
Cytochrome P450 pathway*	CYP2C19, CYP3A4	CYP3A, CYP2C19	CYP3A, CYP2C19	CYP2C19, CYP3A4	CYP2C9, CYP2C8, CYP2C18, CYP2C19, CYPA3/4, CYP3A1A2
Protein binding	98%	96.3%	97%	97%	95%

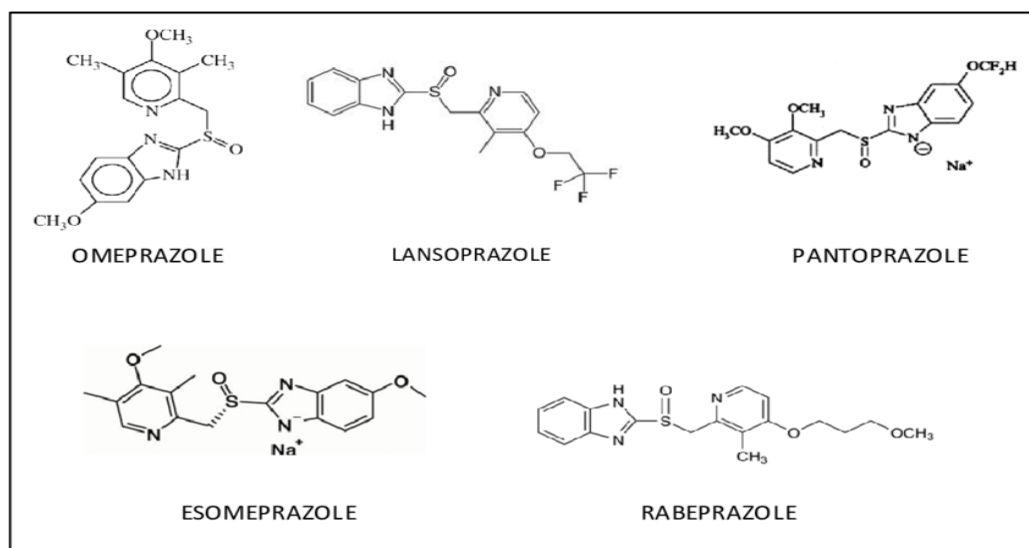


Figure 1:- Structure of various PPIs

Materials And Methodology

Study design:-

This survey study is Information was collected on the prescribing Pattern Of PPIs from the Physician, Medical Store , Patient By the sharing of Google form link using an online platform. Google form Link comprising with structured questionnaire To find out an aggregate patient basis in the management of acid peptic disorders. A data report google form was answered by above persons.

Study period:-

This study / Survey was Held during the period of 20th August To 20th September 2020.

Study population:-

Total 370 Response Recorded in Google Drive.

Study location:-

The study was carried in Darbhanga District of State of Bihar.

Study criteria:-

This Survey Selection included of patients based on the inclusion and exclusion criteria.

Inclusion Criteria:-

Male and female patients All patients who treated with any diseases People Came To Medical Store With Prescription Or Without Prescription.

Exclusion Criteria:-

- ✓ All Pedestrians And Pediatric Patient.
- ✓ Person who did not understand the data collection form.

Patient Data Collection Form

The patient data collection form was create as per the need of our study The first step in the study was to Create a Google form. This form was used to Gather all the details like Patient name, Age, Sex, Profession, Past Medication history & Which Drug use For the Relieving Acidity Related Problem, duration Self Medication or prescribed Medication, Approx Cost of PPIs.

Study procedure :-The basic information of patient and all medical related information will be recorded in a data collection form. Recorded data care collected confidentially and will be subjected to further Study.

Statistical analysis Of Study:

We analyzed our Recorded data Using Percentage analysis.

Results

Patient demographics

Gender Distribution

The Data shown in Figure 2 and Table 2, there was 362 patients fill the google form for data analysis. Male Patient is More as compare to Female patient, in percentage 70.40% Male and 29.60 % Female. During the Audit / study period, out of 362 Patient ,a total of 330 patient Take various type of Proton Pump inhibitor.

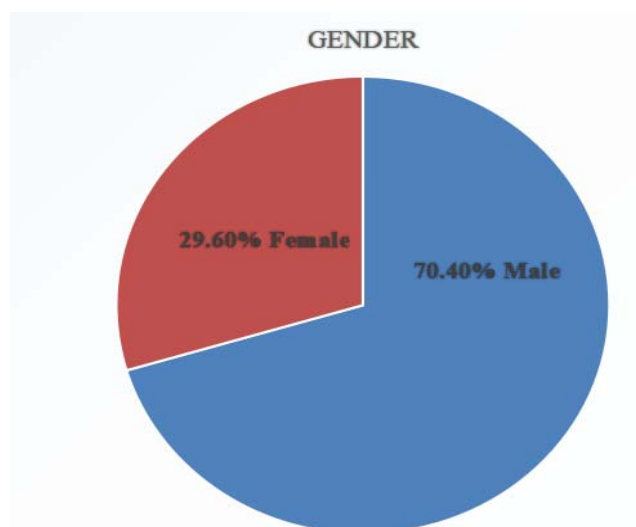


Figure 2:- Gender Categorizaion

Table 2:- Gender Categorizaion

Gender	Number of Patient (N=362)	Percentage %
Male	255	70.40%
Female	107	29.60%

Age Distribution

The age distribution of this study shown In Table 3 that the maximum number of patients being in 21-40 years, in percentage 59.40% of the tota.

Table 3:- Age wise Distribution of Patient

Age Group in year	No. Of Patient (N= 362)	Percentage %
10-20	39	10.8%
21-40	215	59.4 %
41-60	98	27%
61-80	10	2.8%

Profession Categorization

The Profession distribution of this study shown In Table 4 that the maximum number of patients are belongs to Job/Service I.e 56.9 %

Table 4:- Profession Categorization

Profession	No. Of Patient (N= 362)	Percentage %
Job / Service	206	56.9%
Business	23	6.4%
Housewife	52	14.4%
Student	73	20.2%
Other	8	2.1%

Prescribing Pattern of PPI

The Data shown in Figure 3 and Chart 1, there was 362 out of these 330 take various Type of ppi Among 112 patients Takes Pantoprazole (33.93%), 98 Patient Takes Rabeprazole (29.69%), 59 Patient Takes Omeprazole (17.87%), 43 Patient Takes Esomeprazole (13.05%), 18 Patient Takes Lansoprazole (5.46%).

PROTN PUMP INHIBITOR USED IN THE STUDY POPULATION

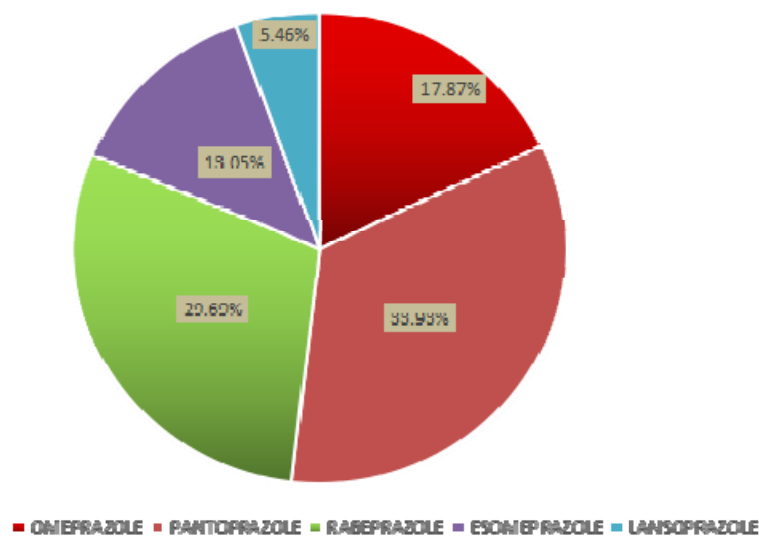


Figure 3:-PPIs Used In Study Population

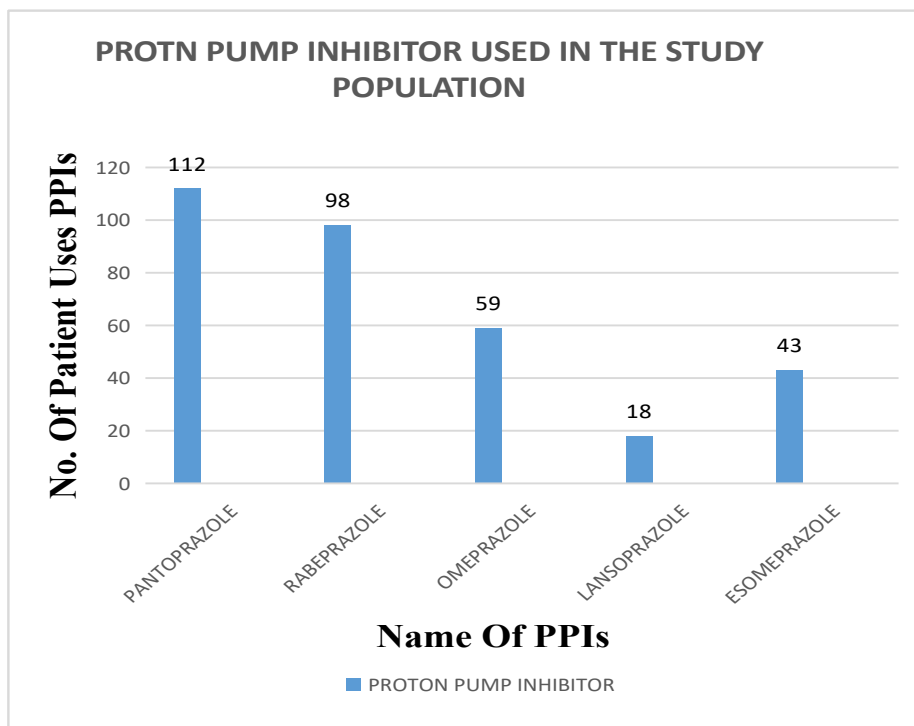


Chart 1:-PPIs Used In Study Population

Types Of Medication

The Data Of Type of Medication Shown in Figure 4 The PPIs more consumed by Self according to our Study I.e 210 (63.63%) Patient Take PPIs By Self and 130 (39.39%) patient Takes PPIs on The prescription of Physicians.

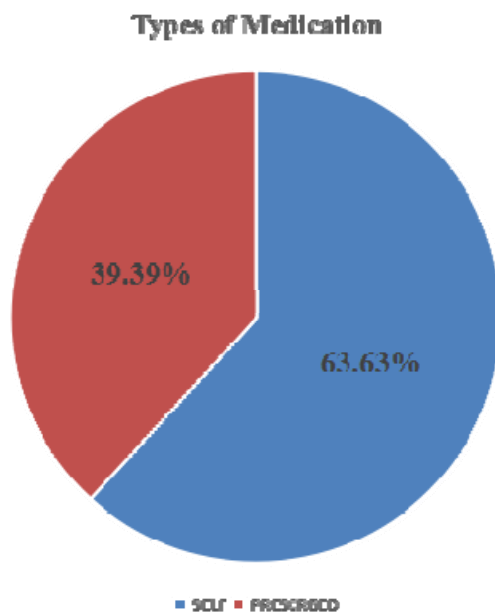


Figure 4:- Types Of Medication

Duration Of Medication

The Duration Of Medication Shown in Figure 5 The PPIs is 36 (10.84%) Patients Takes PPIs from less Then One months, 166 (50%) Patients Takes PPIs From More Then One Months and 130 (39.15%)Patient Takes PPIs when Ever Necessary.

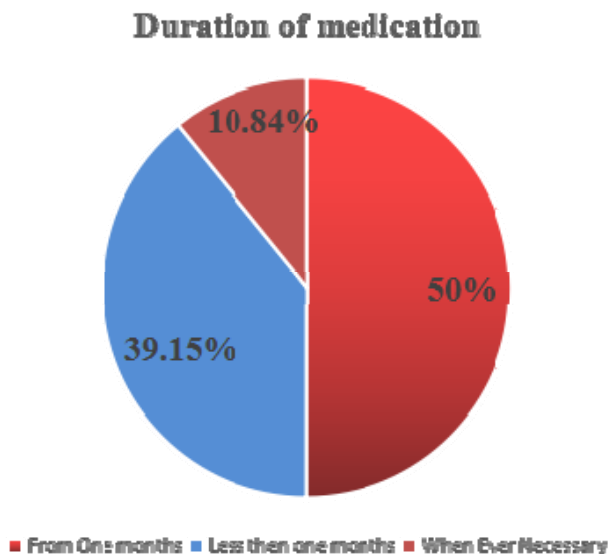


Figure 5:-Duration Of Medication

Concomitant Drug used alongs with Proton Pump Inhibitors

A Total 53 out of 330 patient suffering from chronic disease and take PPIs alongs with various type of medicine as shown in Table 5.

Table 5:- Drug used alongs with Proton Pump Inhibitors

Sr. No	Concomitant Drug	Number Of Patient (N=53)	Percentage %
1	Anti Hypertensive	22	41.50%
2	Hypoglysemic	15	28.30%
3	Hyperlipedimic	7	13.21%
4	NSAIDs	3	5.66%
5	Other	6	11.32%

Discussion

PPIs are considered Safe drug less chance of ADR, They are not completely Deprived of problems. Some noted adverse effects of long term consumption of PPIs are greater incidence of community acquired pneumonias, vitamin B12 deficiency and enhanced risk of hip fractures especially older patient . There are less chance of drug interactions with a number of drug groups by increasing their half-life, notable amongst them are ketoconazole, ampicillin, iron, digoxin, theophylline, warfarin, diazepam, atazanavir and phenytoin due to metabolism of PPIs by hepatic cytochrome P450 enzymes. (11)(12) Subacute cutaneous lupus erythematosus is characterised by polycyclic erythematous scaly plaques or lesions, which may be Including arthralgia. MHRA advised that several cases of SCLE associated with PPIs have been reported both in the literature and on Yellow Cards In September 2015. (13) Dementia is characterised by chronic or progressive nature in which there is deterioration in cognitive function beyond what might be expected from normal ageing. It affects memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgement. Consciousness is not affected. It is age related syndrome. Risk of developing dementia after using long term of PPIs. (14)

Conclusion

According to the Collected data of surveyPrescribing Pattern of PPI in the Darbhanga Region Of Bihar. It was Shown that 63.63 % of patient were consuming PPI as a non-prescription drug. The reason behind of self medication may be the lack of knowledge Related to the Adverse effects of PPI in between general population and availability of this drug as an Over the Counter Drug. The recent literature review suggest that undeserving use of PPIs has more risk for adverse drug reactions Adverse effect like vitamin and mineral deficiencies PPIs affect level of vitamin B12, vitamin C, calcium, iron and magnesium metabolism. According to this study and their results it may be concluded that PPI use for more than One Month is significantly common among the adults. The main Hindrance of this survey / Study was the patient was not more and also study was limited to only in the area, not in Hospital specific or No Any Patient of IPD in this study.

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Ethics approval and consent to participate:- Ethical approval not applicable.

Conflicts of interest The author has no conflicts of interest to declare.

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