ASSESSMENT OF RATIONAL USAGE OF PROTON PUMP INHIBITORS
IN A TERTIARY CARE REFERRAL HOSPITAL: A PROSPECTIVE
OBSERVATIONAL STUDY

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Abstract
This paper projects the proton pump inhibitors are most widely accepted classes of drugs prescribed. Proton
pump inhibitors signify a progressive advancement in gastroenterology. These prescriptions irreversibly repress
the gastric H+/k+ ATPase siphon and decrease both basal and animated gastric corrosive creation. This
investigation intended to survey the normal use of proton siphon inhibitors and to assess the judiciousness of
PPI use. The examination was a forthcoming observational investigation which means to survey the sound
utilization of PPI in Gastroenterology division. The study was conducted over a period of 6 months. The
sample size is 204 patients. Most of the subjects belong to the age group more than 60 years (38.24%) followed by 20-30 (22.55%) 31-40, 51-60 (11.76) and 41 – 50 (10.78%). Age group above 60 years was
predominant due to increased number of medications in geriatrics due to multiple disorders. The current
examination proposes that the danger of PPI may stretch out past recently concentrated high danger people.
Although the proton pumps inhibitors are safe and effective drugs in reducing the acid secretion. However,
they should use with a documented evidence of GI disorders that fails to respond for H2 receptor antagonists.
The study finally concludes that there should be the combined efforts of pharmacist and the medical profession
to work together for rational use of PPI through interventions or institutional rules for use might be created and
executed to help decline the utilization of PPIs in the restless population

Key Words: Proton pumps inhibitors, gastrointestinal, rational usage

How to cite this article: Somasekhar, Bhargav, Rao DN (2020): Assessment of rational usage of proton pump inhibitors in a tertiary
care referral hospital: A prospective observational study, Ann Trop Med & Public Health; 23(S21): SP231935. DOI:
http://doi.org/10.36295/ASRO.2020.231935

1. Introduction
Normal use of drugs has been defined by the WHO in 1985 as: "Rational use of medicine requires that patients get
medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate
period of time, and at the lowest cost to them and their community.”1-2 This implies that, irrational use of drugs includes all of the greater part of the practices that make the specified procedures of appropriate medication prescribing not satisfied.3,4 Using many drugs associatively is known as polypharmacy, which is characterized as using 2-5 medicines all the while. However, patients with co-morbidities have a convincing need to use numerous drugs to treat their multiple diseases. There are many reasons which may lead to irrational usage of drugs in developing country. They are: Lack of data, Faulty and education of medical graduates and inadequate training, Poor communication between medical practitioners & patient, Lack of diagnostic facilities and Uncertainty of diagnosis, Patient request, Defective medication supply system & inadequate drug regulation, Promotional practices of pharmaceutical industries. Medical practitioners routinely prescribe drugs. They are relied upon experience to apply their knowledge of therapeutics to choose proper medications for their patients’ condition and then recommend these in right dosages and for the correct duration so as to optimize the benefit to the patient. This is the manner by which it should occur in a perfect world, with ideal doctors who have got ideal training. The opening statements by the WHO on its ‘Rational Medicine Use’ website page underscore the current circumstance: “The irrational use of drugs is a noteworthy issue around the world. WHO evaluates that the 50% of all drugs are prescribed, dispensed or sold improperly, while 50% of patients fail to take them effectively. Moreover, around 33% of the total world’s population needs access to essential drugs, especially in the developing countries.5,6 The abuse, misuse or underuse of drugs results in wastage of rare resources and widespread health hazards.7 Proton pump inhibitors (PPIs) are among the most broadly perceived classes of medications recommended. Proton siphon inhibitors (PPIs) mean reformist headway in gastroenterology [8-10]. These drugs irreversibly hinder the gastric H+, K+ ATPase siphon and decrease both basal and invigorated gastric corrosive creation. PPIs are valuable and financially savvy for the treatment of extraordinary gastro esophageal reflux problem (GERD) and other corrosive related infections [11][12]. Treatment using PPIs have expanded extremely over the most recent decade. Proton pump inhibitors (PPI) have emerged as the main medication for GERD and peptic ulcer disease due to their highly effective and less toxicity in treating these condition13. Proton pump inhibitors (PPIs) represent a chief financial burden for the medical sector in some countries. Worries have been raised over the expanding costs related with dispensing of these medicines as they are frequently prescribed for irrelevant symptoms and denied of clear indications15. Researches from the Australia, Europe and USA have affirmed abuse of proton pump inhibitors (PPIs) in primary care and hospitalized patients. Proton pump inhibitors have some of side effects and couple of important drug interactions, and for the most part measured safe for long-term therapy.

**Objective of the study:** Prescribing more than particular case antibiotics might have been ordinarily encountered in this investigation demonstrating the event about polypharmacy. Intercessions with amend through prescription from claiming antibiotics, utilization of mark names, insufficient labeling by pills may be important to enhance normal medication utilize. Standard medicine guidelines, clinic formulary, and instructive mediation get key with change this conduct.
technique to profit the tolerant.

2. Methodology

Study Site
The study was carried out in inpatient department of Gastroenterology, Manipal hospital, Vijayawada, Andhra Pradesh. All the studies were performed according to the ICMRGUIDELINES.

Study Design
This is a Prospective observational study which aims to assess the rational usage of PPI in Gastroenterology Department.

Study Criteria:

Inclusion Criteria:
- All Patients irrespective of gender who are prescribed PPI
- Patient should have age of more than 18 years
- Patients who are willing to participate

Exclusion Criteria:
- Patients who are treating on OP basis
- Pediatric patients and Pregnant women are excluded from this study
- Patients who are not willing to participate

Sample Size:
Sample size: 204 Patients

Data resources
- Patient casesheets
- Medication charts
- Treatment reviews
- Laboratory data
- Patient interview

Statistical Analysis:
Descriptive statistics like mean, frequency, percentage were majorly used in representation of data

3. RESULTS
Age allocation of study population (n=204)

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30</td>
<td>46</td>
<td>22.55%</td>
</tr>
</tbody>
</table>

Table 3.1. Age allocation of study population (n=204)
Table 3.1 shows age distribution of study population, a total of 204 subjects are included in this study, in this most of the subjects (38.24%) are belongs to age group more than 60 years followed by, 20-30 (22.55%), 31-40 (16.67%), 51-60 (11.76%) and 41-50(10.78%)

Gender distribution of study population

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>134</td>
<td>65.68%</td>
</tr>
<tr>
<td>Female</td>
<td>70</td>
<td>34.32%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3.2 shows gender distribution of study population, most of the subjects are males (65.68%) and females are(34.32%).

Educational status of Study Population

<table>
<thead>
<tr>
<th>Educational status</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>143</td>
<td>70.10%</td>
</tr>
<tr>
<td>Higher Secondary school</td>
<td>35</td>
<td>17.15%</td>
</tr>
<tr>
<td>Graduation</td>
<td>26</td>
<td>12.75%</td>
</tr>
<tr>
<td>More than Graduation</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>204</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3.3. Study Population in Education

Table 3.3 shows distribution of education level among study participants. Most of the subjects are Illiterate (70.10%), followed by secondary level of education (17.15%) and graduation(12.75%).

Clinical diagnosis distribution of study population

Figure 1 clinical diagnosis distribution of study population

Figure 1 shows clinical diagnosis distribution of study population, most of the patients are belongs to GERD (20.59%), PUD (16.17%), Esophagitis (13.73%), DM/HTN (9.32%), Viral Hepatitis (6.86%), LRTI (6.86%), and Pain from gas (4.90%).

3.5. Number of medicines per prescription

Table 3.5 Number of medicines per prescription

<table>
<thead>
<tr>
<th>No. of medicines per prescription</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>68</td>
<td>33.33%</td>
</tr>
<tr>
<td>4-5</td>
<td>117</td>
<td>57.36%</td>
</tr>
<tr>
<td>&gt;5</td>
<td>19</td>
<td>9.31%</td>
</tr>
<tr>
<td>Total</td>
<td>204</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3.5 shows distribution of subjects based on number of medicines per prescription. Out of 204 subjects, most of the patients (57.36%) prescribed 4-5 medications, followed by three or less than three (33.33%), and more than five medications (9.31%)
3.6: Prescribing Pattern of Proton Pump Inhibitors

Figure 2: Demographic characteristics of enrolled patient

Figure 2 shows prescribing pattern of Proton Pump Inhibitors in study population. Most of the common prescribing PPIs are Omeprazole (76.47%), Pantoprazole (22.06%) and Rabeprazole (1.47%)

T 3.7: Appropriateness of PPIs

<table>
<thead>
<tr>
<th>Appropriateness of PPIs</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most Appropriate</td>
<td>104</td>
<td>50.98%</td>
</tr>
<tr>
<td>Appropriate</td>
<td>92</td>
<td>45.09%</td>
</tr>
<tr>
<td>Inappropriate</td>
<td>8</td>
<td>3.93%</td>
</tr>
<tr>
<td>Total</td>
<td>204</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3.7 shows appropriateness of PPIs prescribed in population. Most of the PPIs are prescribed in most appropriate manner (50.98%), Appropriate and rarely inappropriate (45.09%).

4. DISCUSSION

Most of the subjects are belongs to age group of more than 60 years (38.24%) followed by, 20-30 (22.55%), 31-40, 51-60 (11.76%) and 41-50 (10.78%). Age group above 60 years was predominant due to increased number of medications in geriatrics due to multiple disorders. PPIs use will be more in prescription containing maximum number of drugs. Most of the study subjects were males (65.68%) followed by females (34.32%). Maximum number of study subjects are illiterates (70.10%), followed by secondary school education (17.15%) and graduation (12.75%), this is majorly due to study was conducted in rural hospital settings where most of the people are less access to formal education. Similar results were found in the study conducted by Nasrin et al. Most of the patients belongs to GERD (20.59%), PUD (16.17%), Esophagitis (13.73%), DM/HTN (9.32%), Viral Hepatitis (6.86%), LRTI (6.86%), and Pain from gas (4.90%). Most commonly used route was IV
(62.74%) followed by Oral (37.26%). The current investigation proposes that the danger of PPIs may stretch out past recently concentrated high danger people. These discoveries affirm and broaden the discoveries of Shih and associates, composing and actualizing rules for the employments of ASDs, fundamentally PPIs, by drug specialists can be another system to lessen abuse. Such a training rule can be as a verbal, composed or electronic correspondence. Our investigation is dependent upon a few impediments. In particular, this observational information might be liable to frustrating in different manners, and it is conceivable that PPI use is just a marker of a more diseased patient populace. For instance, we couldn't control for components, for example, heftiness and insulin opposition, and it might be that in certain people PPIs were recommended for angina that was misidentified as heartburn.

The investigation of endorsing examples of proton siphon inhibitors is a segment of clinical review, which looks for checking, assessment and important adjustments in the recommending practices of prescriber to accomplish the judicious clinical consideration. It is important to characterize recommending design and to recognize unreasonable endorsing propensities to drive a medicinal message to the endorse

Conclusion
Although Proton Pump Inhibitors are very safe and effective drugs to reduce acid secretion but they should use with a documented evidence of GI Disorders that fails to respond for H2 Receptor antagonists. Lacking suggestions for PPIs in release letters are regular. This may prompt a continuation of this treatment in essential consideration, consequently superfluously expanding poly drug store and the danger of antagonistic occasions just as troubling the general wellbeing financial plan. Hospitals should therefore critically review recommendations for PPI medication and the dosage in their discharge letters as well as on inpatients among medicines unit and clearly document the reason for PPI use and the need for continuous prescription in primary care. This study lastly concludes that there should be combined efforts of pharmacists, and the medical profession to work together for rational use of PPI through intervention such as educational programs or institutional procedure for use may be developed and implement to help reduce the use of PPIs in the inpatient population.

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