



(RESEARCH ARTICLE)



How hospital patients use antiulcer drugs: An observational study in a general hospital in Bangladesh

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Abstract

According to reports, anti-ulcer medications proton pump inhibitor (PPI) have been used in unsuitable clinical contexts, which frequently increases the risk of side effects, drug interactions, and expenses. Examining the suitability of PPI medication and its use with frequency for patients in Bangladeshi hospital was the goal of this study. In a tertiary care hospital, a two-month cross-sectional study was conducted to assess the types of PPI prescription, their appropriateness, and their tendency to be used. Following signed informed consent, 166 patients who were prescribed PPI at the time of discharge were enrolled, and information was gathered using a structured questionnaire. A total of 166 PPI-prescribed patients were interviewed. All of them were in the age between 20-65 years. Among the 166 PPI users, 86 were male and 80 were female. Among the 166 PPI users, 68 (41% approx.) properly used PPI according to prescription and direction, 98 (59% approx.) used PPI medication improperly. This study shows that PPIs are being used excessively. It is vital to enhance PPI prescription in order to decrease medication interactions, side effects, and needless financial outlays.

Keywords: Anti-ulcer drugs; Observation; Tendency; Medication; Bangladesh

1. Introduction

Proton pump inhibitors (PPIs) are a tried-and-true medication used to effectively reduce stomach acid and are recommended for a number of upper gastrointestinal conditions [1]. These medications decrease basal and induced gastric acid output and irreversibly inhibit the gastric H⁺, K⁺ ATPase pump [2]. They have been demonstrated to be successful in treating dyspepsia, peptic ulcers, and gastro-esophageal reflux disease (GERD) [3-6]. Proton pump inhibitor recommendations have been published by the National Institute for Health and Clinical Excellence (NICE) in 2000 [7]. It makes rather selective recommendations about the use of certain medications, especially over an extended period of time. Despite restricted prescribing guidelines, the increase in PPI consumption is significantly greater than the shift in morbidity [8]. These are often prescribed with no obvious indication and for longer than is advised. While it is generally believed that primary care is the setting in which overprescribing occurs, secondary care also frequently uses PPIs inappropriately [7]. Proton pump inhibitor-using by hospital inpatients in Australia [9], Ireland [10], and the UK [11] comprised 63%, 33%, and 67% of patients, respectively, who did not fit the country's prescription medicine requirements. Twenty percent of patients in a Michigan, USA, hospital series were using a proton pump inhibitor at the time of admission, and an additional forty percent received a prescription for the medication during their hospital stay (mainly for prophylaxis). At discharge, half the patients were taking a proton pump inhibitor—more than double the number who were taking the drug when admitted [12]. Another study conducted in New Zealand discovered that 40% of hospital inpatients were not taking proton pump inhibitors as prescribed [13]. 25% of patients using proton pump inhibitors were found to be receiving care at a Welsh hospital after a prospective audit of a group of patients admitted as medical emergencies. The drug's indicated use was considered appropriate in just 50% of the patients [14]. PPIs are less harmful and more safe than other medications, but they still have adverse effects that should not be disregarded.

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Long-term PPI use is linked to an increased risk of hip fractures, osteoporosis, and community-acquired pneumonia [15, 16]. The well-known side effects of prolonged use include pseudomembranous colitis and acute interstitial nephritis [15]. According to a recent Bangladeshi study, 71.5% of patients who were discharged from a tertiary hospital had no medical explanation for PPIs, whereas 87.2% of patients had taken PPIs [17].

Due to the widespread prescription of PPIs in general practice, physicians mistakenly believe that PPIs are risk-free when used for extended periods of time. To avoid abuse and the negative effects that come with it, healthcare providers must periodically assess the indication and duration of PPI usage. Furthermore, excessive PPI usage has a substantial cost impact on public health spending and patient care [18]. The purpose of this study was also to determine the kind of PPI that is frequently supplied to these individuals as well as the factors with tendency to use that are strongly linked to incorrect PPI prescriptions.

2. Material and methods

This cross-sectional study was conducted at Enam Medical College & Hospital, Savar, Bangladesh for a period of two months (January 2023 to February 2023). The study included all patients who were discharged to go to home with PPI therapy within this time period and also including ambulatory patients and some admitted patients. We looked over their medical records, past medical history, and past experiences, including prescriptions, discharge summaries, and admission notes. A pro forma was created with the demographic information, PPI agent used, PPI usage trend, etc. Data on prehospitalization and discharge medication (PPI, antiplatelet medications, anticoagulants, corticosteroids, nonsteroidal anti-inflammatory medicines [NSAIDs], and selective cyclooxygenase inhibitors) were gathered by reviewing discharge documents.

2.1. Ethical consideration

Participants actively participated, knowing that any personal information they contributed would be kept private and that the data they provided would be utilized responsibly. Good clinical practices and the Declaration of Helsinki were followed in the conduct of the study. Written informed consent was acquired from each participant in the study.

2.2. Statistical analysis

The statistical analysis criteria for the data analysis was done using Microsoft excel software.

3. Results

During the study period, a total of 166 PPI-prescribed patients were interviewed. All of them were in the age between 20-65 years. Among the 166 PPI users, 86 were male and 80 were female. Different age group with number of individuals were 20-30 years (15.66%), 31-40 years (9.03%), 41-50 years (40.96%), 51-65 years (34.33%) (Table – 1).

Table 1 Demographic characteristics of study population

Variable	Variable	Number	Percent
Age group (years)	20 - 30	26	15.66 %
	31 - 40	15	9.03 %
	41 - 50	68	40.96 %
	51 - 65	57	34.33 %
Gender	Male	86	51.80 %
	Female	80	48.20 %

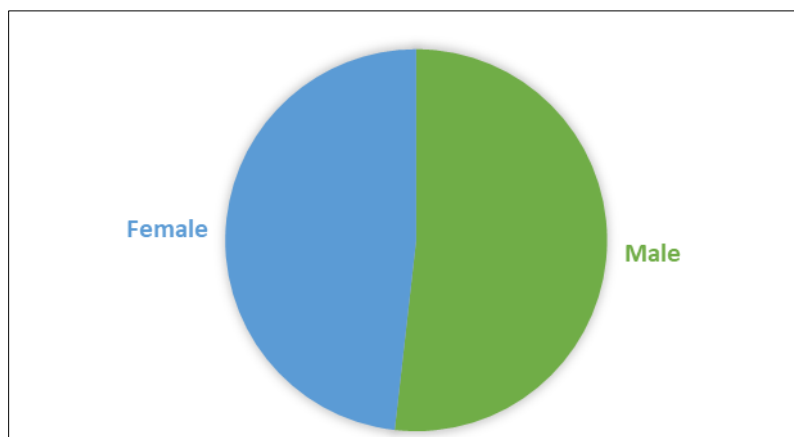


Figure 1 Gender percentage

Among the 166 PPI users, 68 (41% approx.) properly used PPI according to prescription and direction, 98 (59% approx.) used PPI improperly. Most of the users who used PPI appropriately constitutes 24 individuals (35.3%) for double and triple therapy, among the total n=68. Comprising 4.4 % for the prevention of NSAIDs-induced ulcers and 27.94% for the prevention of gastric erosion (Table – 2).

Most of the users who used PPI inappropriately constitutes 29 individuals (29.59%) for the reason of gastric discomfort among the total n=98. Other percentage including (11.22%) for no clear reason, (23.46%) for self-motivation and confidence, (8.16%) for asthma & COPD and (14.28%) for infections (Table – 3).

Table 2 Proper use of PPI

Variable	Number	Percent
Prevention of peptic ulcer	13	19.11%
NSAIDs induced ulcer	3	4.4%
Gastric esophagitis	9	13.23%
Part of double/triple therapy	24	35.3%
Gastric erosion	19	27.94%
Total n=68		100%

Table 3 Improper use of PPI

Variable	Number	Percent
Infections	14	14.28%
No clear reason	11	11.22%
Gastric discomfort	29	29.59%
To increase appetite	13	13.26%
Asthma & COPD	8	8.16%
Self-medication	23	23.46%
Total n=98		100%

Abbreviations; COPD= chronic obstructive pulmonary disease, NSAID= non-steroidal anti-inflammatory drugs.

By consulting all the respondents it was found that majority people (31.32%) have moderate tendency to take PPI drugs. While only (10%) of the total respondents showed no tendency to use PPI, (26.50%) respondents showed strong tendency to consume PPI agents and (24.69%) of the responder felt doubt either it is safe to take PPI or not (Table – 4).

Table 4 Tendency to use PPI among respondents

Variable	Number	Percent
Strong tendency	44	26.50%
Moderate tendency	52	31.32%
Less tendency	19	11.44%
No tendency	10	8.62%
Feeling doubt	41	24.69%

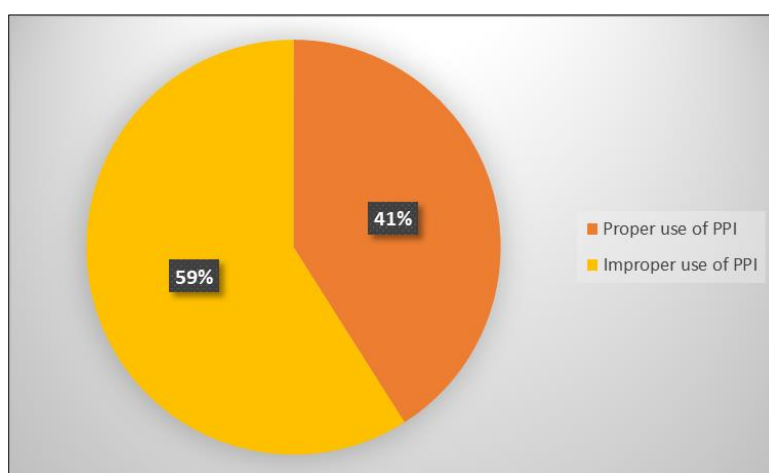


Figure 2 Approximate percentage of PPI indications among respondents (N=166) that are suitable and inappropriate

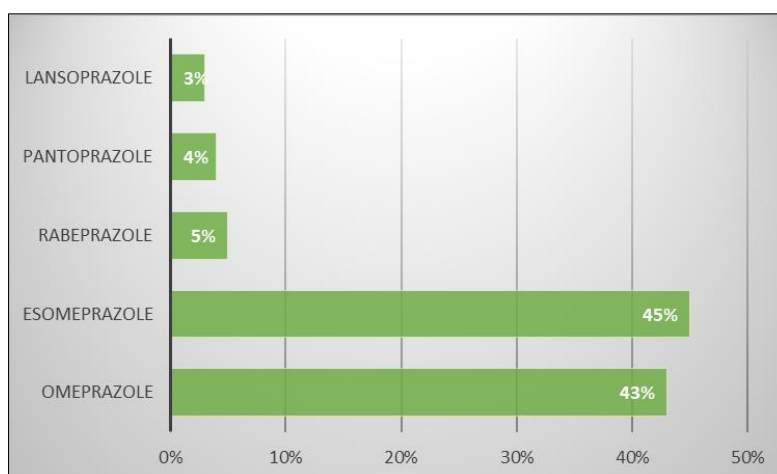


Figure 3 Approximate percentage of proton pump inhibitor used by respondents

Among the various preparations of PPIs prescribed, esomeprazole was prescribed and used in most of the discharged patients (45%); 43% were prescribed omeprazole, 4% were prescribed pantoprazole, and 5% and 3% were prescribed rabeprazole and lansoprazole, respectively (Figure – 3).

4. Discussion

Proton pump inhibitors (PPIs) are useful medications with few side effects; nonetheless, there are very few circumstances in which long-term usage of PPIs is advised. But a startling number of medical professionals are still administering these medications, frequently without adhering to recommended indications [19, 20]. Based on the data we gathered, we found that 59% of the patients were using PPIs without a valid reason. This number was close to the 54.1% found in the study conducted by Osama et al., [21]. The findings of our investigation were consistent with the previously cited studies, which show that PPI overuse and inappropriate prescriptions occur across studies, nations, and healthcare systems.

Anti-ulcerants (proton pump inhibitors) are mostly in charge of the enormous volume sales, which has a noticeable effect on business income. People are getting familiar with those medicine and frequent use of those drugs increasing day to day. According to recent history, anti-ulcerants hold the largest proportion of the therapeutic class in the market, accounting for 15% of total sales. Furthermore, among the top 25 brands, there are 11 anti-ulcerant brands, with the top 4 anti-ulcerant brands based on brand-wise ranking based on sales volume [22]. Modern drug delivery system playing a crucial role to develop newer drug and suitable doses to recover such complex diseases of gastric disorder [23]. The indications for appropriate PPI use considered in this analysis include both a group of well-accepted indications.

The over-prescription of PPIs in hospitals has not been thoroughly investigated or comprehended. Despite not adhering to current PPI guidelines, doctors may prescribe PPIs with the good intention of preventing ulcer development due to incomplete or misleading knowledge about the risk of ulcer development during hospitalization. Without weighing the advantages and disadvantages of long-term therapy, some doctors frequently prescribe PPIs because they believe them to be safe, long-term drugs [19]. Additional recent research has demonstrated that doctors frequently fail to monitor and record PPI prescriptions, which frequently leads to the long-term or indefinite maintenance of these medications [24, 25].

An elevated risk of hip fracture is thought to be linked to long-term PPI medication [26]. A big experiment that was published in the Journal of the American Medical Association in 2016 showed that long-term PPI usage was associated with a high risk of developing chronic kidney disease (CKD). Those using long-term PPIs had a 20–50% increased chance of developing CKD [27]. Elderly people are known to have a higher incidence of chronic illnesses, a higher risk of polypharmacy, and improper prescriptions. These factors enhance the likelihood that older people will experience adverse effects from any medication, including PPIs [28]. The most often prescribed PPIs at hospital discharge were found to be omeprazole and esomeprazole among the several PPI formulations. Conversely, lansoprazole, pantoprazole, and rabeprazole were infrequently used; however, it should be mentioned that pantoprazole and rabeprazole may be better in an elderly population that takes multiple medications because of their reduced reliance on cytochrome CYP2C19 metabolism. This might reduce the possibility of drug interactions. It should be ensure that the prescriptions for these medications are properly documented and that they are adequately justified when patients are released from the hospital and getting prescribed by any physician at clinic, hospital or ambulatory care.

5. Conclusion

In conclusion, it can be demonstrated that over half of the participants in our study were taking PPIs for unwarranted purposes. Promoting ethical prescribing practices requires taking proactive steps to increase PPI consumption while adhering to approved and recognized indications and routinely reevaluating the necessity of their prescription. Consequently, it is critical to implement significant steps targeted at optimizing PPI utilization, which can mitigate possible drug interactions, side effects, and preventable financial expenses.

Compliance with ethical standards

Disclosure of conflict of interest

There is no conflict of interest regarding this paper.

Statement of ethical approval

Participants actively participated, knowing that any personal information they contributed would be kept private and that the data they provided would be utilized responsibly.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Author contribution

All author contributed significantly to design and development of this work.

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