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RESEARCH ARTICLE
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PROTON PUMP INHIBITOR MISUSE IN A TERTIARY CARE SETTING FOR THE PREVENTION OF STRESS ULCERS

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Abstract

Background: Proton Pump Inhibitor is now one of the most potent medicines in the word due to its increasing prescription, due to its remarkable effectiveness and safety profile. But many people use these drugs without the doctor prescription for the prevention of stress ulcer which leads to undesirable effects in the human body.

Objective: The aim of the study was to find out Proton Pump Inhibitor misuse in a Tertiary Care Setting for the Prevention of Stress Ulcers

Methodology: The current prospective study was conducted at the Department of medicine, Bolan medical college/ Bolan medical complex hospital Quetta from January 2023 to July 2023 after taking approval from the ethical committee of the institute. A total of 204 individuals who were admitted in the hospital and got PPI were enrolled. PPI appropriately indicated participants were those who were taking Proton pump inhibitors due to disease selected by American Gastroenterology Association (AGA) while individuals PPI inappropriately were those who were taking PPIs without disease described by AGA. Data was analyzed through SPSS and entered into Microsoft excel and presented in the form of frequency and percentages.

Results: A total of 204 patients took part in the current study, out of the total proton pump inhibitor formulation the most prevalent was esomeprazole 112(54.90%) followed by omeprazole 81(39.7%) and Dexlanprazole 11(5.3%) received by the study population respectively. 152(74.50%) individuals taken the medicines orally and 52(25.4%) in injectable form (IV). The doses of omeprazole and esomeprazole were 40mg in 182 (89.2%) and 30mg Dexlansoprazole 9(4.4%). There were 13(6.3%) patients who continuously received omeprazole infusion of 9 mg per hour. The frequency of PPI was once a day in 182 (89.2%), Twice a day in 16(7.8%) and continuous infusion in 6(2.9%). Out of 204 Participants 142(69.60%) received PPI without any specific indication while 62(30.3%) taken with appropriate indication**.**

Conclusion: Our study concluded that misuse of Proton pump inhibitors is very common among hospitalized patients. Institutional rules, evidence-based medicine education, and frequent treatment plan reviews are necessary to avoid the incorrect use of PPIs.

Key words: Proton Pump Inhibitor; Misuse; Prevention; Stress Ulcers

Introduction

In hospitalized individuals, stress-associated damage of mucosal layer to the upper gastrointestinal tract (UGIB) is most prevalent. This type of damage may cause the mucosa of the gastrointestinal system to swell, which might lead to gastrointestinal bleeding and other complications. Managing stress ulcers is essential for these people in order to prevent bleeding in gastrointestinal tract.[1] In comparison to histamine-2 receptor antagonists, PPI (proton pump inhibitors) are more effective in reducing stomach acidity and they are currently the drug of choice to prevent stress ulcers. It is now one of the most potent medicines in the word due to its increasing prescription, due to its remarkable effectiveness and safety profile. But many people use these drugs without the doctor prescription for the prevention of bleeding from the digestive tract which leads to undesirable effects in the human body and increase the risk of cholera.[2] PPIs was one of the most misused drugs in United States in 2007 wrote over twenty million prescription, with sales totaling approximately 10 billion.[3] These were always regarded safe medicines but study explored that they have adverse effects, specifically when use for a longer period of time.

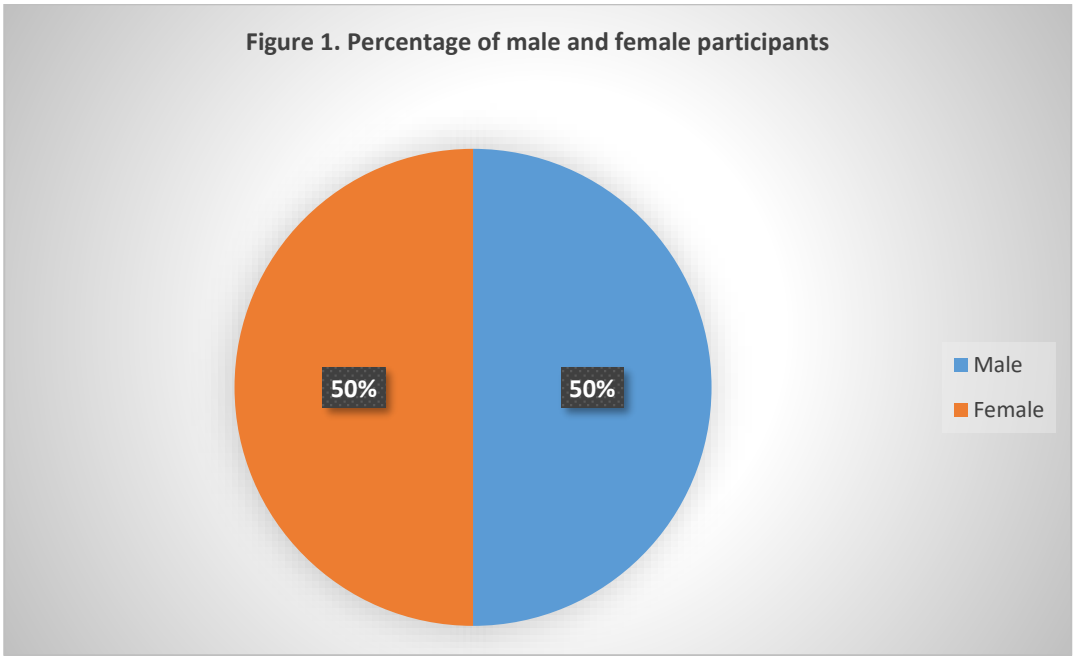
Some of these effects include vitamin B12 and magnesium deficiency, acute interstitial nephritis, stomach polyposis, *Clostridium difficile* infection, or bacterial overgrowth in cirrhosis. Furthermore, these medications have a substantial potential for drug interactions. Furthermore, individuals and public health are financially impacted by PPI usage.[2] In outpatient and inpatient setting the misuse of PPI is most prevalent.[1-4] The issue of PPI misuse in hospitalized patients has been the topic of very few research conducted in this region of the world .In addition to preventing side effects and medication interactions, avoiding the incorrect prescription of PPIs can result in considerable cost savings.[5-6-7]Additionally, inappropriate stress ulcer prevention in non-intensive care unit patients and failure to stop this medication prior to hospital departure, even in the lack of a therapeutic justification, are frequently the causes of PPI overuse in the clinical context. Although PPIs are thought to be safe and cheap, excessive use of them can lead to serious health risks, including indigestion, elevated levels of liver transaminase, hypersensitivity, visual defects osteoporosis, hypomagnesaemia, pneumonia acquired in the community, Clostridium difficile colitis, and gastrointestinal discomfort..[8] The current study was carried out to determine proton pump inhibitor misuse in a tertiary care setting for the prevention of stress ulcers.

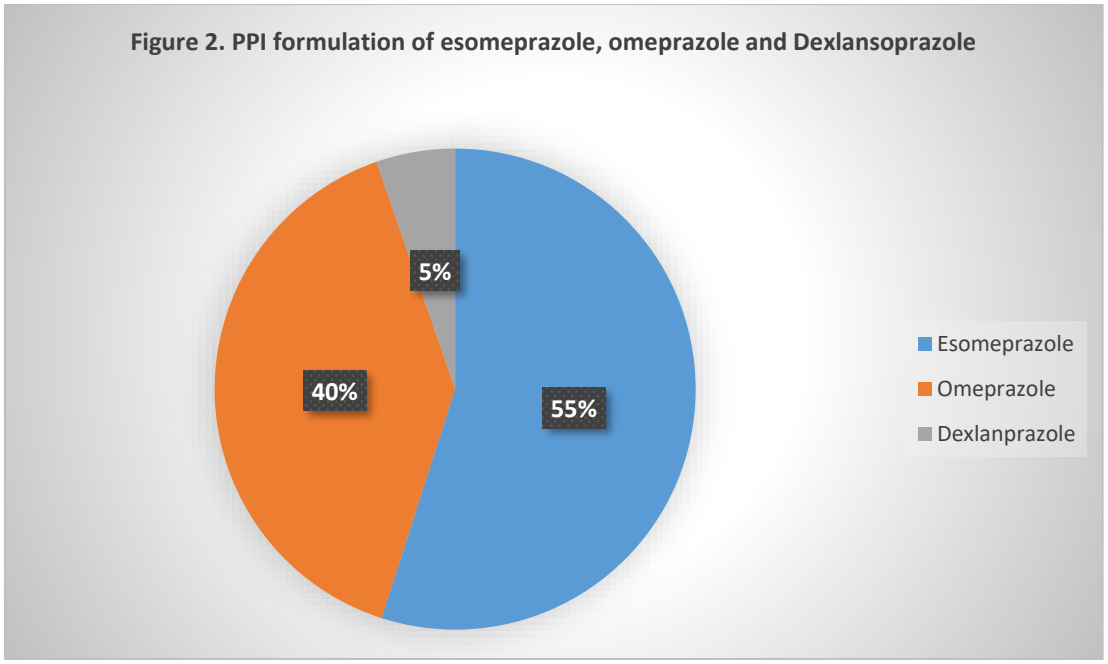
Methodology

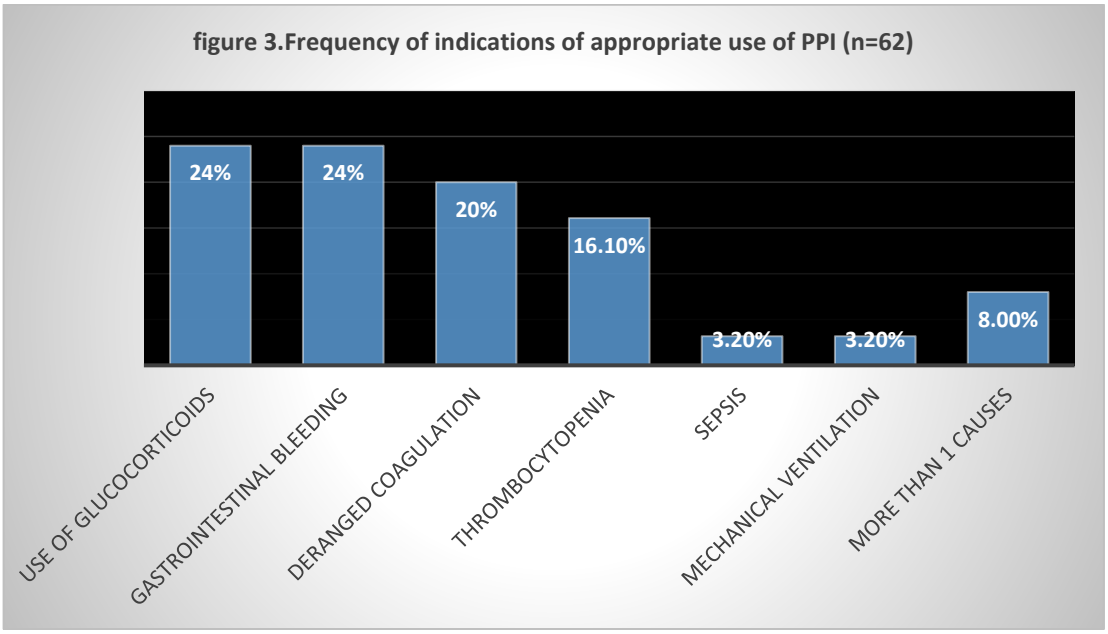
The current prospective study was conducted at the Department of medicine, Bolan medical college/ Bolan medical complex hospital Quetta from January 2023 to July 2023 after taking approval from the ethical committee of the institute. A total of 204 individuals who were admitted in the hospital and got PPI were enrolled. Participants of both genders with age equal to and more than 18 years were included in this study. Excluded from the research were hospitalized individuals who were taking treatment from the other were excluded. PPI appropriately indicated participants were those who were taking Proton pump inhibitors due to disease selected by American Gastroenterology Association (AGA) while individuals PPI inappropriately were those who were taking PPIs without disease described by AGA[9.] AGA defines a number of conditions: Barrett's esophagus, erosive esophagitis, gastroesophageal reflux disease, coagulopathy (platelet count <50,000/mm3, mechanical ventilation >48 hours, history of bleeding or gastrointestinal ulceration within 1 year prior to admission), or at least two of these risk factors: sepsis, intensive care unit stay >1 week, occult bleeding lasting six days or more or more, or intake of a maximum of 250 mg hydrocortisone or its equivalent. Data was analyzed through SPSS and entered into Microsoft excel and presented in the form of frequency and percentages

Results

A total of 204 patients took part in the current study out of which 102(50%) were female and 102 (50%) were male **(Figure 1)** .the mean age of study population was 57.27 ±1822 years. out of the total proton pump inhibitor formulation the most prevalent was esomeprazole 112(54.90%) followed by omeprazole 81(39.7%) and Dexlanprazole 11(5.3%) received by the study population respectively.((As shown in **pie graph 2**.) 152(74.50%) individuals taken the medicines orally and 52(25.4%) in injectable form (IV). The doses of omeprazole and esomeprazole were 40mg in 182 (89.2%) and 30mg Dexlansoprazole 9(4.4%). There were 13(6.3%) patients who continuously received omeprazole infusion of 9 mg per hour. The frequency of PPI was once a day in 182 (89.2%), Twice a day in 16(7.8%) and continuous infusion in 6(2.9%). Out of 204 Participants 142(69.60%) received PPI without any specific indication while 62(30.3%) taken with appropriate indication**. (table 1 and fig 1).**







1.	**Use of glucocorticoids**	**15(24.1)**
2.	**Gastrointestinal bleeding**	**15(24.1)**
3.	**Deranged Coagulation**	**13(20.9**
4.	**Thrombocytopenia**	**10(16.1)**
5.	**Sepsis**	**2(3.2)**
6.	**Mechanical Ventilation**	**2(3.2)**
7.	**More than 1 causes**	**5(8.0)**

Discussion

It is cleared from our study that the vast majority of people hospitalized use PPIs without the appropriate reasons. Our results are in line with previous studies that have been done internationally, and hospitalized patients receiving the incorrect PPI prescription is an international concern.[8-9] According to Perwaiz et al.,[3] nearly two thirds of the individuals getting treatment at a hospital in New York, USA, had intravenous omeprazole administered erroneously for an unidentified reason. Nearly 25% of patients who were admitted received PPI without a prescription from their doctor, and 2/3 of those studied were given a dosage higher according to a study conducted in an Irish hospital.[5] A study by Sarwar et al in Lahore, the second-biggest city in Pakistan, found that omeprazole was the 2nd most often administered drug among potentially inappropriate pharmaceutical prescriptions within hospital stays.[6] In contrast to the several research previously [3-9] stated that either focused just on the frequency of PPI infusions, we have examined the rate of PPI medication routes, with oral routes being more prevalent(74.50%) than intravenous routes. The same results have been observed in our local research as well as in these western assessments. A study by Sarwar et al[5] in Pakistan's Punjab region found that omeprazole proved the most frequently suggested drug for inpatients. In addition to creating an excessive cost on hospitals and patients themselves, unapproved PPI use may have some negative impacts within the hospital. A study done by Papas et al. found a relationship between PPI and high mortality rates. A major problem that is also linked to a higher death risk is the patient's needless continuing of the PPI they were taking at home just before admission. In addition to creating an excessive cost on hospitals and patients themselves, unapproved PPI use may have some negative effects within the hospital. Papas et al[8]

research has shown a relationship between PPI and increased patient mortality rates. The patient's unnecessary continuation of the PPI they were taking at home just before admission is a serious issue that is also associated with a greater mortality rate. Physicians who treat individuals taking PPIs for an extended period of time but who are not at high risk of UGIB should take advantage of this opportunity to discontinue the drug while that individual is still in the hospital. Interestingly, studies by Gamelas et al [2] have revealed that many hospitalized people are being discharged without having been prescribed for PPIs, even if these drugs were actually needed.

PPIs are not just troublesome for hospitalized patients, but they are also frequently prescribed in excess by outpatient clinics.[4-10-13] In addition to inappropriate PPI prescriptions, another issue is the prolonged use of these medications without a prescription.[13] Research suggests that taking immediate action could drastically lower the amount of unnecessary PPI prescriptions .[4-11-12] A previous stud suggested that this prescribing strategy could lead to fewer drug interactions, lesser adverse reactions, and cheaper medical costs.[11] There are several issues with our research. It was challenging to extend the findings to different hospitals with longer time periods because the study was limited in scope, was done in a single healthcare facility, and had a small sample size. Additionally, we did not collect data on the "inappropriate" reasons that physicians were considering using his prior to prescribing PPIs to hospitalized patients. This information could help focus the attention of health authorities on the real reason why PPIs are being prescribed incorrectly.

Conclusion

Our study concluded that misuse of Proton pump inhibitors is very common among hospitalized patients. Institutional rules, evidence-based medicine education, and frequent treatment plan reviews are necessary to avoid the incorrect use of PPIs.

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