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ASSESS KNOWLEDGE AND USE OF PROTON PUMP INHIBITORS AS GENERAL ANTACIDS BY REGISTERED PHARMACISTS AT COMMUNITY PHARMACY IN URBAN AREA

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ABSTRACT

Proton pump inhibitors (PPIs) are the most efficacious agents used for minimizing gastric acid secretions. The objective of this study is to evaluate the knowledge and preferences of proton pump inhibitors amongst pharmacists. PPIs are mainly used to treat Peptic Ulcer Disease (PUD), Gastroesophaygeal Reflux Disease (GERD), Erosive Esophagitis, Zollinger-Ellison Syndrome (ZES), Barrett's Esophagus, and an Upper Gastro-Intestinal bleeding. They are also a primitive measure to reduce acidity. A cross-sectional survey-based study was carried out to assess the knowledge and preferences of pharmacists regarding proton pump inhibitors for various ailments. Google form link for filling out the survey questionnaire was sent to pharmacists and were asked to fill it out accordingly. All the pharmacists included in this survey were given a copy of the information chart and were properly counseled for rationalizing PPIs as an essential OTC medication. Pharmacists primarily preferred pantoprazole as the treatment of choice for acidity and heartburn 50% followed by omeprazole 20% to 30%, lansoprazole 5% to 10%, and rabeprazole 5% to 15%. The majority 89% of pharmacists enquired about the patient details before dispensing the medication and 56% provided patient counseling. PPIs are widely used as an OTC medication at community pharmacies, there is a need to rationalize their use and dispensing amongst pharmacists. Pharmacists themselves need to acquire updated information via trustworthy sources regarding the PPI medications and must focus on more patient-based practice than just basic compounding and dispensing the medication.

KEYWORDS: Proton pump Inhibitor, Pharmacist, GERD, Over the Counter.

INTRODUCTION

Proton pump (H^+K^+ ATPase), present in the parietal cells of the stomach is the last pathway in acid secretion, and drugs that inhibit the action of this pathway irreversibly are known as proton pump inhibitors (PPIs). PPIs include Omeprazole, Rabeprazole, Pantoprazole, Lansoprazole, Esomeprazole, Dexrabeprazole and Ilaprazole. PPIs are benzimidazole derivatives and are regarded as the most efficacious agents for acid suppression.[1] They are mainly used to treat Peptic Ulcer Disease (PUD), Gastroesophaygeal Reflux Disease (GERD), Erosive Esophagitis, Zollinger-Ellison Syndrome (ZES), Barrett's esophagus, and Upper GI bleeding and also are a primitive measure to reduce acidity. In addition to this PPIs are widely prescribed to eradicate infections that are caused by *Helicobacter pylori*.[2]

Although long-term use of PPIs has been considered safe, few countable studies have scrutinized the long-term usage of PPIs. They may be associated with a higher risk of infections like Pneumonia and *Clostridium difficile*.[3] PPIs may decrease the absorption of certain minerals like calcium, magnesium, iron thereby causing hypocalcaemia, hypomagnesaemia, and iron imbalance respectively. PPIs have also evidenced decreased absorption of vitamin B12. Long-term acid suppression by them may lead to the development of atrophic gastritis which could be a precursor of cancer i.e. gastric cancer or colon cancer. Patients on PPIs are at increased risk of fractures, osteoporosis, thrombocytopenia, and endocrine disorders such as gynecomastia and impotency.[4]

Reduced HCL secretion due to PPIs may result in iatrogenic hypochlorhydria and hypergastrinemia, thereby causing parietal cell hypertrophy and enterochromaffin-like cell hyperplasia. Hence it may cause rebound hydrochloric acid hyper secretion.[5] Studies also reflect the role of PPIs in causing Acute Kidney Injury (AKI) with interstitial nephritis in longer exposed patients and risk increases in younger patients who were not previously given PPIs.[6]

Medication information negligence or misinformation is one of the leading causes of patient harm. Proper medication use and compliance are always necessary for any medication. Properly advised regimen for PPIs is also essential to avoid any kinds of patient distress. Hence, pharmacists herein play a vital role as a professional in either advising a regimen, providing patient education, and maintaining desired patient compliance.[7]

Another concerned duty of a pharmacist is providing pillboxes and wherever possible a Direct Observation Therapy (DOT) to patients. Pillboxes are generally dispensed with a proper plan to commuting or traveling patients or patients who easily get confused with medications whereas DOT is generally applied to geriatric patients. Pharmacists are fit to practice DOT as they are well trained to procure patient information and analyzing prescriptions. They are also in frequent contact with patients which is beneficial. As far as patient psychology is considered, they try to avoid visiting a physician and prefer self-medicating themselves. This attitude of self-medication, can be intervened by a pharmacist with his/her communication skills and hence avoid any problems. In the case of PPIs, pharmacists can adjust or alter the provided regimen according to the patient's symptomatic variability.[8,9]

A pharmacist as a professional is a key person in providing the most cost-effective treatment to a patient. Numerous distinct brands of PPIs are available with differential costs in the market, hence it is necessary for the patient's sake to provide him/her with the most appropriate medication. Pharmacists with expertise over several brands within easy reach can provide the most prudential and patient-sustaining medication. [10]

In India, PPIs are widely used by the patient as an Over the Counter (OTC) medication. Hence pharmacist's knowledge and attitude toward PPIs play an important role in improving their use. Thereby any adverse event, drug-drug interaction, or inappropriate use can be prevented.

METHODOLOGY

A cross-sectional survey-based study was carried out to assess the knowledge and preferences of pharmacists regarding proton pump inhibitors. Google form link for filling out the survey questionnaire was sent to registered pharmacists and were asked to fill out accordingly. The survey form consisted of four sections namely the Demographics, PPI questionnaire, General questionnaire, and the information chart for pharmacists. Pharmacists who had an idea about PPIs, attempted the 2nd section (PPI Questionnaire) after the demographics. In the last section, the information chart was included for a better understanding of pharmacists. A total of 65 qualified pharmacists attempted this survey. This survey aimed to check out the knowledge of pharmacists regarding these medications and also about which drugs were mostly preferred by them for most common Gastro Intestinal ailments. The survey assesses almost all the important aspects which are to be known by pharmacists efficiently. All the pharmacists included in this survey were given a copy of the information chart exclusively prepared by acquiring information from reliable sources containing particulars like dose, the preferred route of administration, adverse effects and drug interactions, etc., and were properly counseled for rationalizing PPI's use an essential OTC medication. As all the responses were collected digitally, they were compiled and processed in Microsoft Excel 2013 for result analysis.

RESULTS

A total of 80 pharmacists were provided with the questionnaire. Amongst which 81% responded. It is reflected that 74% were males and 7% females aged between 25 to 55 years. The majority of the respondents were Diploma in Pharmacy 62% and Bachelor in Pharmacy 10%. 57% of these pharmacists were aware of the PPIs (Table I).

Table I: Demographics of pharmacists.

Sr. No.	Parameter	Variable	Percentage
1.	Gender	Male	74%
		Female	7%
2.	Qualification	D. Pharm	62%
		B. Pharm	10%
		M. Pharm	9%
3.	Age (in years)	25 to 35	10%
		36 to 45	30%
		46 to 55	37%
		55 and above	4%
4.	Aware about PPIs	Yes	57%
		No	24%

Amongst the respondent pharmacists, 73% were aware of proper indications of proton pump inhibitors whereas the remaining 8% knew only about basic indications. Notably, 69% were not even concerned about the risks of overdose and did not have an idea about their mechanism of action. According to pharmacists 71% of patients

mostly demanded these medications for acidity on an OTC basis (Table II).

Table II: General understanding of PPI and usual patient demand.

Sr. No.	Parameter	Variable	Percentage
1.	Indication	Yes	73%
		No	8%
2.	Mechanism of Action Understanding	Yes	30%
		No	51%
3.	Risk of Overdose and Drug Interaction	Yes	12%
		No	69%
4.	Most common demand	Vomiting	0%
		Heart Burn	9%
		Acidity	71%
		Stomach Pain	1%

Pharmacists primarily preferred pantoprazole as the treatment of choice for acidity 45% and heartburn 50% followed by omeprazole 10% to 20%, rabeprazole 5% to 15%, and lansoprazole 2% to 10%, while esomeprazole was the least preferred 2% to 9%. Remarkably, for acid-induced vomiting and stomach pain, pharmacists preferred a combination of Ondansetron with any of the PPIs (Figure I).

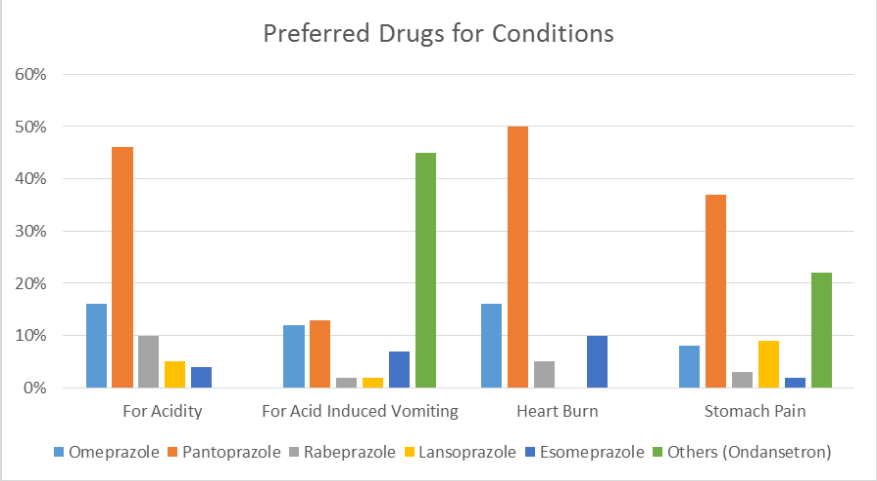

Figure I: Pharmacist's preferences to various PPIs according to conditions.

23% of pharmacists opted that the proper frequency of PPI administration is once daily on the other hand 11% of them thought of it being two times daily. 19% of pharmacists stated that maximum 3 days of therapy is appropriate for taking PPIs and 27% voted for up to 4 to 7 days (Figure II).

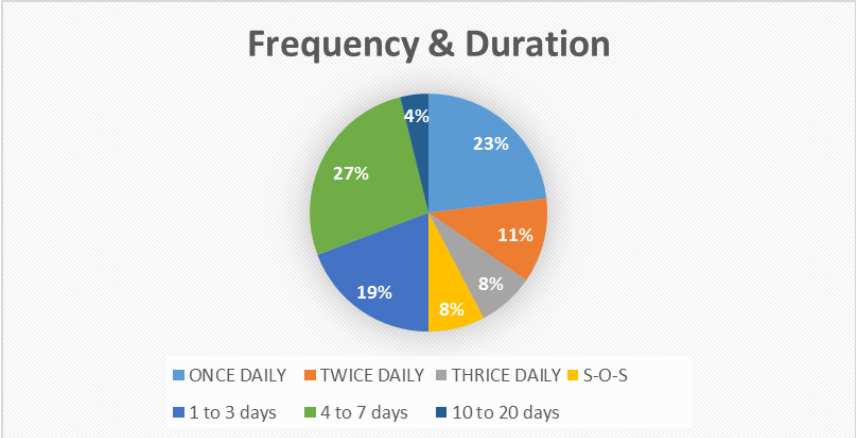

Figure II: Time preferences of administration according to pharmacists.

The majority 75% of pharmacists enquired about the patient details before dispensing the medication and 55% provided patient counseling. 59% of pharmacists themselves read the label instructions and conveyed them to the patient in understandable language (Table III).

Table III: Services provided by the pharmacist to the patient.

Sr. No.	Parameter	Variable	Percentage
1.	Patient Counseling	Yes	55%
		No	6%
		Sometimes	20%
2.	Patient Enquiry	Yes	75%
		No	2%
		Mostly not	4%
3.	Reading out Label Instructions	Yes	59%
		No	15%
		May Be	7%

DISCUSSION

A total of 65 pharmacists attempted this survey and amongst them, many were well versed with the use of PPIs. Most commonly PPIs are demanded for acidity, and heartburn hence it is a noticeable fact that satisfactory OTC usage of these drugs is carried out. A fact also needs to be considered that 51% of the pharmacists were not aware of the mechanism of action of these drugs; this can be a consequence of not remembering the cascade of mechanism due to its complexity.

Pharmacists have recommended the PPIs according to their personal patient-specific experiences. Fig. I. shows that the most preferred PPI is pantoprazole 50% and is hence widely utilized followed by omeprazole up to 16% and rabeprazole up to 10% whereas lansoprazole 10% and esomeprazole 10% remain the least preferred ones. These findings are quite similar to that in Rajendra et al, in which 74% of prescriptions contained pantoprazole for GI complaints, 9% omeprazole, and rabeprazole, and the remaining 8% esomeprazole.[11]

The concept is also evidenced from a Randomized Clinical Trial carried out by The Therapeutics Initiative in 2016, proving that no PPI is superior or efficient amongst all others. Hence though none of the PPIs is efficient, pantoprazole still remains the most favored amongst all the other PPIs.[12]

As all the medicines are provided with an information leaflet and label instructions, this study found out that only 59% of pharmacists read out the package label before dispensing the PPI to the patient. This is a partly satisfying outcome as negligence in dispensing may cause undesired effects. 75% of pharmacists did always enquire about the patient details, about symptoms, age, etc. and 55% counseled the patient/ caregiver about the proper methods of PPIs consumption and other aspects. Patient Counseling remains an integral part of dispensing medicine to avoid overuse of PPIs and hence minimizing any further complications. It is also briefed by Jason Poquette in The Pharmacy Times about the importance of patient counseling and the necessity of pharmacist's promptness in providing the same to every patient. As is suggested by Sumanta Mondal., patient counseling helps a person understand better about his/her illness and the medications taken to manage the illness.[13,14]

Farrell et al study state that the maximum duration of taking PPIs is 4 to 8 weeks standard regimen for GERD, but 45% of pharmacists believe that the appropriate duration is only 1 to 2 weeks (Table III). This shows that pharmacists are not well versed in standard doses of these medications and their frequency.[15]

Though there are no specifications for frequency adjustments, many texts like Essentials of Medical Pharmacology suggest following either OD / BD divided dosages only. Though many pharmacists have attempted either an OD /BD choice, on the contrary, some have also opted for administering PPIs 3 times a day which may cause excessive gastric acid suppression hence making a patient prone to infections.[16]

The utilization of PPIs through this study was seen to be slightly unsettling. Though PPIs were dispensed with satisfactory patient counseling in 55% of cases and after acquiring patient details, in 75% of cases they were provided as per patient demand. Hence, in 2% of cases, PPIs are dispensed as such without further investigation and 20% without counseling. Naunton et al.'s study highlight that 39.6% of patients were using PPIs for other indications and endoscopic proofs for commencing PPI therapy was obtained in only 54.1% of cases. Hence the study concluded that overuse of PPIs is happening to an extent. The study also suggests that symptomatic relief for some time is fine, but PPIs should not be advised for longer periods unless an endoscopy is performed. This study also presses upon the use of low efficacy agents like H2 receptor antagonists until endoscopic results are obtained.[17]

As far as drug interactions are concerned, only 12% of pharmacists are knowledged about avoiding co-administration of certain drugs with PPIs. Pharmacists do

not know that certain antiplatelet, antifungals, and antiepileptic drugs are to be avoided with PPIs.[18] Keeping this in mind a pharmacist needs to ask the patient about current and past medication history to avoid major drug interactions.

CONCLUSION

PPIs are widely used as an OTC medication at community pharmacies in urban areas by pharmacists and patients, thus there is a need to rationalize their use and dispensing amongst the pharmacists. Irrational use of PPIs can affect patient safety. Through this study, it is concluded that though a majority of pharmacists are aware of what PPIs are, they still are not well versed in assessing their use. They are not well trained, not much informed about the new PPIs and altogether uses of these drugs. This is so because pharmacists are not concerned about the drug interactions, overdose risk and hence can lead to a patient becoming vulnerable to undesired effects of the medication. To improve this scenario, pharmacists are needed to undergo Continuing Pharmacy Education (CPE) training regularly via seminars and workshops by healthcare providers like doctors and other well-trained and experienced professionals. Pharmacists themselves need to acquire updated information via trustworthy sources regarding the PPI medications and must focus on more patient-based practice than just compounding and dispensing the medication.

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