RESEARCH PAPER

Comparison of Usage of Proton Pump Inhibitors: Self-Administration Versus Prescription, A Cross-Sectional Study

Dr. K N Abhinav Kaushal[1], Dr. Sarala N[2*]

[1]Postgraduate, Department of Pharmacology, Sri Devaraj Urs Medical College, SDUAHER

[2*]Professor & Head, Department of Pharmacology, Sri Devaraj Urs Medical College, SDUAHER. ORCID: 0000-0002-0068-898X. Email: sarala241068@gmail.com (Corresponding Author)

ABSTRACT

Background: Self-medication is common in India with prevalence 8.3% to 92%. Proton pump inhibitors (PPIs) are used for gastritis and dyspepsia, based on advice from pharmacists, friends, family members or internet. Many users are not aware of side effects like headache, risk of fracture, diarrhoea. This study aimed to determine PPI usage patterns, prescription versus self-medication and assessed user's knowledge regarding side effects.

Methods: A cross-sectional study was conducted over 6-months in local pharmacies around Kolar after approval of protocol by Central Ethics Committee. Participants visiting pharmacies for PPIs either by prescription or self-medication were interviewed using a proforma after obtaining written informed consent and were followed up via telephone after one week. Data was analysed and expressed as descriptive and inferential statistics.

Results: The data of 510 participants was analysed, of whom 170 obtained PPIs through prescriptions and 340 through self-medication. The prescription group had 55% males and 45% females (mean age 43.92 ± 20 years), and self-medication had 57% males and 43% females (mean age 44.16 ± 20 years). Among prescription users, 66% adhered to consultant's instructions to complete the course. Self-medication users relied on pharmacists (77%), prior medical advice (14%), friends/family (6%), and internet (3%) for procuring PPIs. 66% of participants with prescription and 71% without prescription considered it to be safe for use. 89% of prescription users and 90% of self-medicators were not aware of the long-term side effects. 88% of participants with prescription knew PPIs should be taken on an empty stomach but in self-medication group only 40% were aware. The majority in both groups did not experience any side effects (>95%).

Conclusion: Prescription users had better knowledge regarding drug intake whereas in self-medication there was inappropriate use. Self-medication users relied on pharmacist and used previous prescriptions and were reluctant to consult doctor. Participants in both groups had limited awareness of long-term side effects of proton pump inhibitors.

Keywords: Proton pump inhibitors, Self-medication, Prescription

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Introduction

Self-medication (SM) involves using nonprescription drugs, including herbal or traditional products and over-the-counter medicines, to treat minor ailments without consulting a healthcare professional. Globally, the prevalence of SM ranges from 10.3% to 87.0% and in India, it varies between 8.3% and 92%, with an average prevalence of 53.57%.[1,2] Influences such as friends, family, previous prescriptions, and information from the internet play significant role in self-medication. Common ailments treated this way include headache, joint pain, fever, common cold, cough, allergy, acidity and diarrhea.[1]

Individuals frequently use proton pump inhibitors (PPIs) for gastritis, often unaware of the potential side effects.[3] Studies suggest overuse of PPIs with 25-70% prescriptions without proper indication.[3,4]In many countries PPIs are available as OTC (Over-the Counter) drugs resulting in taking these drugs for a long period. This has led to many side effects like headache, rashes, nutritional deficiency, risk of fracture (osteoporosis), gastric carcinoid, enteric infections – clostridium difficile diarrhoea, chronic kidney disease.[4,5] Family physicians and primary health care providers can help reduce complications related to self-medication with PPIs by encouraging individuals to consult them before taking. Creating awareness in the community about these risks is essential to prevent untoward effects of self-medication.

Although proton pump inhibitors (PPIs) are extensively used for managing peptic ulcer , there remains a considerable gap in understanding their irrational use, particularly in context to self-medication. A significant number of individuals take PPIs without appropriate medical advice or a confirmed diagnosis, largely due to their over the counter (OTC) availability and reliance on self-assessment of symptoms. Such unsupervised use can lead to longer treatment duration, unnecessary drug exposure, potential masking of serious underlying disorders, and an increased risk of side effects, including nutrient malabsorption, infections, and drug interactions. There are few studies on the use of proton pump inhibitors as OTC drugs globally, leading to scarcity of information. Therefore, we have conducted a study to assess the knowledge of PPI use and awareness of its side effects among the participants using prescription versus over-the-counter acquisition.

Materials and Methods

This was a cross-sectional Study conducted over a period of three months. The protocol was approved by central ethics committee and written informed consent was taken from the participants.

	Prescription (n = 170)	Self-Medication (n = 340)
Age(years)	43.92 ± 20.61	44.16 ± 20.77
Male/Female	94/76	195/145
Signature of doctor	96%	-
Seal of doctor	87%	-
Duration of drug use (days)	9.21 ± 2.91	4.68 ± 2.18
Compliance	66%	-

All participants, above 12 years, of either gender , who came to pharmacies with a prescription for PPIs or self-medication were included. Participants with hypersensitivity to PPIs, including those who had experienced allergic reactions such as urticaria after PPIs use and individuals with speech, auditory, cognitive disease and other disorders were excluded.

Sample size was calculated based on the expected difference of 15% between prescription and self-medication with 90% power and confidence interval of 95%, the estimated sample in ratio of 1:2 (prescription vs self-medication) required sample size was 170 in prescription and 340 in self-medication.[6]

The objective of the study was conveyed to the participants before data collection. Data was collected as per proforma which consist of sections assessing their knowledge and awareness regarding use and side effects of proton pump inhibitors. After one week, the included participants were contacted via telephone to find out whether they had experienced any side effects.

Statistical analysis

Data was analysed using SPSS Version 22.0 (Epi Info). Demographic data was analysed by descriptive statistics. Categorical variables were analysed using the chi-square test to determine associations between knowledge levels, treatment adherence and side effects. A p-value of less than 0.05 was considered statistically significant

Results

In this study, 510 participants were assessed, 170 in prescription group and 340 in self-medication group . The mean age in the prescription group was 43.92 ± 20.61 years and in self-medication group was 44.16 ± 20.77 years, with no significant difference between the two groups ($p > 0.05$). Majority were males in both the groups (55% Vs 57%)in the prescription and self-medication. Among patients receiving prescribed medications, 96% of prescriptions had the doctor's signature and 87% included an official seal, indicating appropriate prescription documentation. The mean duration of drug use was 9.21 ± 2.91 days in the prescription group and 4.68 ± 2.18 days in the self-medication group. Compliance with therapy was observed in 66% of participants in the prescription group, and this could not be assessed among individuals in the self-medication group [Table 1]

Table 1 : Demographics, frequency and duration of drug use

Source of information to purchase medications among self-medication users were pharmacists(77%), prior medical advice(14%), friends/family(6%), and internet(3%) for procuring PPIs as shown in Figure 1

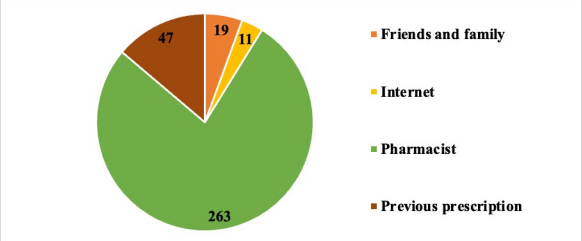

Fig 1: Sources of information regarding SM(n=340)

The common indication for PPIs in prescription group was prophylaxis and self-medication group was heart

burn as per Figure 2,other indications were dyspepsia , peptic ulcer disease (PUD) and gastroesophageal reflux disease (GERD)

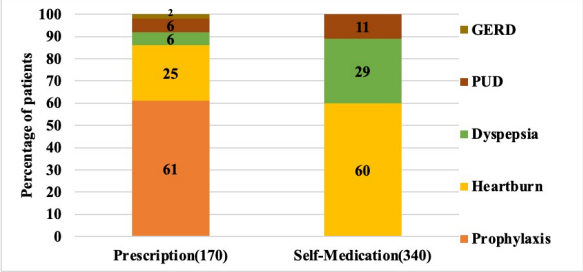

Fig 2: Indications for PPIs in percentage

The majority of participants in both groups did not experience any side effects (>95%), among those who experienced side effects, the most common were headache (2% vs 3%) and diarrhoea in SM group(2%) as shown in Figure 3

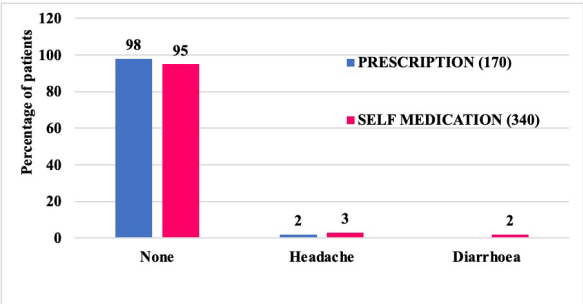

Fig 3: Side effects of PPIs

Knowledge, attitude and practices of PPIs

Majority (72%) of participants with prescription and 66% without prescription considered PPIs were safe to use. Awareness about side effects when PPIs were used for long term was poor in both the groups. Most participants in prescription group(88%) expressed willingness to consult doctor in future when compared to SM group(68%) which was statistically significant. Practice like taking PPIs before meals was more in prescription group(88%) than SM group(40%) which was statistically significant as shown in [Table 2]

Table 2 : Knowledge, Attitude, Practice of PPIs

		Prescription n=170 (%)	SM n=340 (%)	P- value
Do you think it is safe to use PPIs ?	YES	122(72)	226(66)	0.22
	NO	48(28)	114(34)	
Do you know any long-term side effects use of PPIs ?	YES	18(11)	33(10)	0.75
	NO	152(89)	307(90)	
Would you be open to using PPIs only after consultation in the future?	YES	149(88)	230(68)	0.0001
	NO	21(12)	110(32)	
Do you follow any precautions while taking PPIs	YES	150(88)	135(40)	0.0001
	NO	20(12)	205(60)	

Discussion

The present study shows a higher prevalence of proton pump inhibitor (PPI) use through self-medication compared to prescription-based use, reflecting the widespread availability and perceived safety of PPIs in the community. This finding aligns with reports from India and other low- and middle-income countries, where self-medication is common due to easy access to over the counter (OTC) drugs, limited healthcare access, and reliance on non-professional advice.[1,2]

The demographic profile of participants in this study showed a predominance of middle-aged adults, in the fourth decade, and a higher proportion of males in the self-medication group. Similar demographic trends have been reported in studies from Sri Lanka, Saudi Arabia, and South India, suggesting that working-age adults frequently self-medicate for dyspeptic symptoms to avoid time and financial constraints associated with healthcare visits.[1,3,4]

Pharmacists were identified as the primary source of PPIs among self-medication users (77%), followed by prior medical advice and informal sources such as friends and family. This pattern is consistent with findings from Subashini et al. and Ahmad et al., who highlighted the central role of community pharmacists in influencing self-medication behavior.[1,6] While pharmacists improve access to treatment, inadequate counselling regarding duration, precautions, and side effects may contribute to irrational drug use, even in spite of instructions the patients do not take it seriously may be due to financial constraints or when the symptoms reduce and the feel better. A key observation in this study was the poor awareness of long-term side effects of PPIs in both prescription and self-medication groups, with nearly 90% of participants unaware of potential complications. This mirrors findings by Almuzaini et al., who reported limited public knowledge regarding risks such as osteoporosis, renal impairment, micronutrient deficiencies, and enteric infections associated with prolonged PPI use.[3] Similar gaps in awareness have also been reported in hospital-based drug utilization studies from India.[4,5]

Despite comparable perceptions of safety between the two groups, prescription users demonstrated significantly better practices, including adherence to correct timing of administration (empty stomach). These findings reinforce the role of physician guidance in promoting rational PPI use. Shanmugapriya et al. similarly observed improved adherence and appropriate indication among patients receiving PPIs under medical supervision.[4] The higher proportion of side effects reported among self-

medication users further highlighting the risks associated with unsupervised PPI use. Although most participants did not report side effects during the short follow-up period, the higher occurrence in the self-medication group is consistent with concerns raised by Abukhalil et al., who found inappropriate PPI use to be associated with increased adverse outcomes.[5]

An encouraging finding of this study was that a majority of participants, particularly in the prescription group, expressed willingness to consult a doctor before using PPIs in the future. However, reluctance persisted among a significant proportion of self-medication users. This suggests that inappropriate PPI use is driven more by convenience and accessibility than by resistance to medical advice, highlighting the potential impact of targeted patient education, pharmacist-led counselling, and strict regulation of OTC PPI sales. Overall, the findings emphasize the need for improved public awareness regarding the rational use of PPIs, reinforcement of prescribing guidelines, and greater involvement of healthcare professionals in educating patients to minimize inappropriate self-medication and its associated risks.

Conclusion

This study reflects frequent use of proton pump inhibitors probable reason being availability as over the counter medication and heart burn be common problem. Self-medication users took the advice from pharmacist and used previous prescriptions could be due to easy accessibility of both . Self-medication participants were reluctant to consult the doctor and take precautions while using PPIs. The knowledge of long-term side effects of proton pump inhibitors was poor in both groups. Creating awareness by healthcare professionals regarding rational use of medications and also the realisation by the patients plays an important role to overcome irrational use and prevent untoward events.

References :

1. Subashini N, Udayanga L. Demographic, socio-economic and other associated risk factors for self-medication behaviour among university students of Sri Lanka: a cross-sectional study. BMC Public Health. 2020; 20:613-26
2. Rashid M, Chhabra M, Kashyap A, Undela K, Gudi SK. Prevalence and Predictors of Self-Medication Practices in India: A Systematic Literature Review and Meta-Analysis. Curr Clin Pharmacol. 2019; 15:90-101
3. Almuzaini R, Almuzaini A S, Alqifari M A, Alsohaibani A, Almutlaq Y L, Alwehaibi R, et al. Assessment of Awareness and Knowledge of Proton Pump Inhibitors Among the General Population in the Qassim Region, Saudi Arabia. Cureus. 2023; 15:467-49
4. Shanmugapriya S, Saravanan T, Suriya Dharsini J, Shuruthi S, Saravanan A. Drug Utilization Pattern of Proton Pump Inhibitors at a Tertiary Care Hospital in South India. J Indian Med Assoc. 2024; 122: 21-7
5. Abukhalil D A, Ali O, Saad A, Falana H, Al-Shami N, Naseef H, et al. Evaluation of Proton Pump Inhibitors Prescribing Among Hospitalized Patients: A Cross-Sectional Study. Int J Gen Med. 2023; 16:141–50
6. Ahmad A, Khan M, Srikanth A, Kumar B, Singh N, Trivedi N et.al. Evaluation of Knowledge, Attitude and Practice about Self-medication Among Rural and Urban North Indian Population. Int J Pharm Clin. 2015; 7: 326-32