ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar559

Proton Pump Inhibitors and Self-Medication: A Survey Conducted Among Patients in the Casablanca-Settat Region

Z.Atwani[2] ; A.Hinda[1, 2] ; A .Amri[1, 2] ; Y.Sebbahi[1, 2] ; S.Derraji[1, 2]

[1]Mohammed V Military Teaching Hospital, Rabat, Morocco
[2]Faculty of Medicine and Pharmacy, Mohammed V University of Rabat, Morocco

Publication Date: 2025/03/26

Abstract:

- ***Introduction***

Proton pump inhibitors (PPIs) are key medications in the treatment of acid-related gastric disorders. Their use has become widespread since their introduction to the market. However, this popularity has revealed significant issues of misuse, particularly concerning in the context of self-medication.

- ***Objective***

This study aims to evaluate self-medication practices related to this class of drugs among the population of the Casablanca-Settat region. The goal is to understand the habits associated with PPI use, identify potential dangers, and propose measures to improve the safety and efficacy of their use.

- ***Material and Methods***

A cross-sectional, observational, and descriptive study was conducted over two months, from July 17 to September 17, 2023. Data were collected through a comprehensive questionnaire on Google Forms, accessible via a link distributed to patients in the region.

- ***Results***

The survey included 105 participants, the majority of whom were women. Individuals aged 25 to 65 constituted 59% of the sample, and 81% of the participants had medical coverage. The main reported indications for PPI use were gastroesophageal reflux disease (37.5%), use in combination with non-steroidal anti-inflammatory drugs (19.5%), and dyspepsia (12.5%). A large majority of 79% of the participants expressed satisfaction with their self-medication practice, highlighting the perceived effectiveness of PPIs in managing their symptoms.

- ***Conclusion***

Although the high satisfaction rate, our study revealed various forms of misuse related to this practice. This concerning reality calls for close collaboration between healthcare professionals, patients, and health institutions to address this issue and promote rational use of this class of drugs. Increased awareness and education about the appropriate use of PPIs can help mitigate the risks associated with self-medication and improve patient outcomes.

Keywords: *Proton Pump Inhibitors – Self-Medication – Survey – Patients – Peptic Ulcer.*

How to Cite: Z.Atwani; A.Hinda; A .Amri; Y.Sebbahi; S.Derraji (2025) Proton Pump Inhibitors and Self-Medication: A Survey Conducted Among Patients in the Casablanca-Settat Region. *International Journal of Innovative Science and Research Technology*, 10(3), 1024-1032. https://doi.org/10.38124/ijisrt/25mar559

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar559

I. INTRODUCTION

Since their introduction in the 1980s,[1] proton pump inhibitors (PPIs) have revolutionized the management of acid-related gastric disorders. These conditions affect 25% to 35% of the general population [2] and rank among the top five reasons for self-medication.[3]

PPIs are currently the most potent antisecretory agents available, outperforming histamine H2 receptor antagonists in their ability to suppress gastric acid secretion. PPIs exert their effect by irreversibly inhibiting the H+/K+ ATPase enzyme, also known as the proton pump, located in the parietal cells of the stomach. This enzyme is critical as the final mediator of hydrogen ion secretion into the gastric lumen.[4]

Their efficacy and favourable safety profile have driven widespread adoption, both through physician prescriptions and self-medication by patients. However, this popularity has highlighted significant concerns regarding misuse, which is particularly concerning in the context of self-medication.

Self-medication is a widespread practice globally, with prevalence rates ranging from 11.7% to 92% across different regions. This growth is driven by a combination of economic, political, and cultural factors. However, self-medication is often described as a double-edged sword, offering both benefits and risks.[5]

Many countries promote patient empowerment in managing common ailments by expanding the availability of over-the-counter (OTC) medications. The global OTC drug market was valued at $125.28 billion in 2023 and is projected to exceed $229.01 billion by 2033, with a compound annual growth rate (CAGR) of 6.51% from 2024 to 2033. This trend reflects a shift towards patient autonomy,[6,7] positioning OTC medications as a cornerstone for optimizing healthcare systems, [6,8] while also representing a significant and sustainable economic market.

Proton pump inhibitors (PPIs) are among the OTC drugs available in several countries. OTC PPIs are specifically designed for short-term management of reflux symptoms, such as acid regurgitation and heartburn, in adults aged 18 years and older. These medications are offered at restricted doses and are intended for once-daily use before meals over a maximum of 14 consecutive days, with a recommended limit of three courses per year.[9]

In Morocco, PPIs are classified as List II drugs and are available only with a medical prescription. However, self-medication remains highly prevalent despite these regulations. The limited availability of specific data on self-medication practices makes it challenging to understand the underlying factors and behaviors, thereby heightening the risks associated with the improper use of PPIs. It is in this context that the present study aims to investigate self-medication practices involving PPIs within the population of the Casablanca-Settat region.

II. MATERIAL AND METHODS

A. Data Collection

A descriptive cross-sectional study was conducted among patients in the Casablanca-Settat region over a two-month period, from July 17 to September 17, 2023. The data for this study were collected through a link to a questionnaire hosted on Google Forms.

The multiple-choice questionnaire, designed with checkboxes, was developed to simplify self-completion by the patients. It consists of a limited number of clear and direct questions, allowing respondents to select multiple answers or add additional responses when needed. The questions are grouped into three distinct sections.

The first section gathers patient information, including gender, age, medical and surgical history, and health insurance. The second part focuses on the patient's condition and the symptoms they are experiencing. Finally, the third section addresses details regarding the proton pump inhibitor used, including its international non-proprietary name (INN), dosage, treatment duration, any adverse events experienced, and other medications taken concurrently.

The questionnaire also includes questions about the source of self-medication, the reasons for choosing this particular class of medication, and a self-assessment of the patient's satisfaction with their self-medication.

B. Sample Selection

The sample selection for this study was based on specific inclusion criteria: participants had to be residents of the Casablanca-Settat region, self-medicate with proton pump inhibitors (PPIs), and provide informed consent to complete the questionnaire. For minors, parental authorization was required. Non-inclusion criteria included non-residence in the Casablanca-Settat region, possession of a medical prescription for PPIs, and refusal to participate in the questionnaire.

C. Ethical Considerations

Participants in this study were fully informed about the research objectives, and their participation was entirely voluntary, with the freedom to withdraw at any time. The data collected were treated with strict confidentiality, ensuring that no information could be linked to a specific individual. Furthermore, since the study is purely observational and does not involve any direct intervention, prior approval from an ethics committee was not required.

III. RESULTS

- *Sample Characteristics*

Data were collected from 105 individuals. The baseline characteristics, along with demographic and comorbidity data of the included patients, are detailed in **Table 1**. As observed, the majority of participants were female, aged

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar559

between 25 and 65 years, and had medical insurance coverage. Digestive disorders, diabetes, and hypertension were the most commonly self-reported comorbidities.

➢ *Self-Medication for Digestive Symptoms*

Among the respondents, approximately 37% reported self-medicating based on the advice of a healthcare professional, while others turned to friends or family (32%), personal experience (25%), or media advertisements (6%). When it came to the reasons for self-medication, 37% of participants used PPIs for symptoms related to gastroesophageal reflux disease (GERD), 26% for unexplained epigastric pain, and 20% for the prevention of gastro-duodenal lesions linked to non-steroidal anti-inflammatory drug (NSAID) use.

Omeprazole emerged as the most frequently chosen medication, with 66% of patients selecting it. Additionally, a significant portion of the participants (56%) opted for the full dosage, and 54% reported taking a single dose. The majority of patients (54%) adhered to a short treatment duration, with only 24% using PPIs for 2 to 7 days and 13% opting for prolonged use beyond 7 days. Interestingly, 9% of participants continued their treatment for several months.

The primary reason for choosing PPIs was positive past experience, cited by 59% of the participants. Other reasons included the perceived lack of side effects (16%), the convenience of a single daily dose (14%), and the moderate cost (10%). A small number of participants (1%) chose PPIs due to the relatively short treatment duration.

Regarding adverse effects, 11% of participants reported experiencing side effects. Digestive disturbances were the most common, followed by headaches and abdominal pain. In terms of concurrent medication use, 37% of patients were also taking NSAIDs, while others were using psychotropic drugs, antidiabetic medications, and antihypertensives.

Finally, patient satisfaction with self-medication was generally positive, with 79% of participants expressing satisfaction. However, 3% of patients were dissatisfied, mainly due to the perceived ineffectiveness of the treatment.

Table 1 : Patterns of PPI Use: Patient Characteristics, Indications, and Adverse Events

VARIABLE	DESCRIPTION	N	FREQUENCY
GENDER (N=105)	Male	20	19 %
	Female	85	81 %
AGE (YEARS) (N=105)	<15	2	2 %
	15-24	30	29 %
	25-65	62	59 %
	>65	11	10 %
SELF-REPORTED	Digestive disorders	19	23 %
COMORBIDITIES	Diabetes	14	17 %
(N=84)	Hypertension	12	14 %
	Neurological disease	8	10 %
	Rheumatism	6	7 %
	Hypothyroidism	5	6 %
	Polycystic ovary syndrome	3	4 %
	Anemia	3	4 %
	Glaucoma	3	4 %
	Hyperlipidemia	2	2 %
	Osteoarthritis	2	2 %
	Scoliosis	1	1 %
	Multiple sclerosis	1	1 %
	Heart failure	1	1 %
	Benign prostatic hyperplasia	1	1 %
	Endometriosis	1	1 %
	Tuberculosis	1	1 %
	Asthma	1	1 %
SURGICAL	Chirurgie gynécologique et obstétrique	25	44 %
HISTORY	Chirurgie viscérale	11	20 %
(N=56)	Chirurgie thoracique et cardiovasculaire	6	11 %
	Chirurgie orthopédique et traumatologique	4	7 %
	Chirurgie oncologique	3	5 %
	Chirurgie ophtalmologique	3	5 %
	Neurochirurgie	2	4 %

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar559

	Chirurgie oto-rhino-laryngologique	2	4 %
HEALTH	Patients with health insurance	85	81 %
INSURANCE (N=105)	Patients without health insurance	20	19 %
SOURCES OF	Healthcare personnel.	42	37 %
SELF-MEDICATION	Friend or family member.	37	32 %
(N=114)	Personal experience.	28	25 %
	Social media.	7	6 %
INN (N=105)	Oméprazole	69	66 %
	Ésoméprazole	19	18 %
	Lansoprazole	12	11 %
	Pantoprazole	4	4 %
	Rabéprazole	1	1 %
DOSE (N=105)	Double dose	6	6 %
	Full dose	59	56 %
	Half dose	38	36 %
	Low dose	2	2 %
DURATION OF	Occasional use	57	54 %
TREATMENT	Repeated use (2 to 7 days)	25	24 %
(N=105)	Prolonged use (beyond 7 days)	14	13 %
	Chronic use (several months)	9	9 %
INDICATION	Gastroesophageal reflux disease	48	37 %
(N=128)	Epigastric pain of unknown etiology	33	26 %
	In association with NSAIDs	25	20 %
	Dyspepsia	16	12 %
	Undocumented Helicobacter pylori infection	4	3 %
	Recurrence after treatment with a gastric topical agent	2	2 %
REASON FOR	Positive experience	81	59 %
CHOOSING PPI	Low cost	14	10 %
(N=138)	Absence of side effects	22	16 %
	Taken once a day	20	14 %
	Short treatment duration	1	1 %
ADVERSE EVENTS	No AE	93	89 %
(N=105)	Reported AEs	12	11 %
ADVERSE EVENTS	Digestive disorders (diarrhea, constipation)	7	58 %
(N=12)	Flatulence	0	0 %
	Abdominal pain	2	17 %
	Headache	3	25 %
	Skin rash	0	0 %
MEDICATIONS	Non-steroidal anti-inflammatory drugs	30	37 %
TAKEN	Psychotropic	9	11 %
CONCOMITANTLY	Antidiabetic	8	10 %
(N=79)	Antihypertensive	8	10 %
	Thyroid hormones	4	5 %
	Antiplatelet	3	4 %
	Antiviral	3	4 %
	Antifungal	3	4 %
	Analgesic	3	4 %

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar559

	Gastric topical	2	3 %
	Hypolipidemic	2	3 %
	Dietary supplement	2	3 %
	Anticoagulant	1	1 %
DEGREE OF	Very satisfied	83	79 %
SATISFACTION (N=105)	Slightly satisfied	19	18 %
	Not satisfied	3	3 %

IV. DISCUSSION

In our study, women made up 81% of the sample, reflecting a general trend where women are more likely to engage in self-medication,[10] particularly for symptoms related to gastric acidity.[3,11] This can be attributed to several biological factors, including their higher likelihood of using ulcerogenic medications. [12–14]

The literature often cites the high cost of healthcare as a primary reason for resorting to self-medication.[11,15,16] While having health insurance is theoretically expected to reduce reliance on self-medication by covering medical consultation costs, our study found that the majority of participants were insured. Other studies suggest that individuals with higher education levels and better socio-economic conditions are more likely to self-medicate and manage their health autonomously. [3]

Regarding sources of self-medication, while many participants rely on advice from healthcare professionals or formal medical information, a significant proportion in the Casablanca-Settat region turns to recommendations from friends or family. This highlights the need to consider local cultural and social contexts when designing public health interventions to effectively address community-specific behaviors.

Our findings also emphasize that patients' therapeutic choices are influenced by a variety of factors beyond clinical recommendations, including personal considerations, treatment accessibility, positive past experiences, and cost.

In our study, the evaluation of self-medication practices with PPIs, compared to the recommendations of the French National Authority for Health (HAS), revealed several instances of misuse, particularly regarding indications and dosages.

Approximately 20% of PPI use was associated with the prevention of gastro-duodenal ulcers linked to NSAID use. This practice is supported by the high ulcerogenic potential of NSAIDs and the gastroprotective effect of PPIs, as confirmed in the literature.[17–19] However, this association is clinically justified only in the presence of specific risk factors. Studies have consistently highlighted significant misuse of PPIs for this indication, both in prescribed and self-medication contexts.[20] According to the data collected, three individuals were over 65 years old, one patient used a PPI in combination with both an anticoagulant and an NSAID, and five patients reported a history of digestive disorders without specifying the nature of these conditions. Due to the lack of access to patients' complete medical histories, which would confirm their risk of digestive complications, it is difficult to validate the appropriateness of PPI use alongside NSAIDs for the remaining 16 individuals.

The use of PPIs for the treatment of dyspepsia remains controversial and is not recommended by the French Agency for the Safety of Health Products (AFSSAPS) and the French HAS due to insufficient evidence supporting the use of antisecretory drugs for this off-label indication, especially when dyspepsia is not associated with reflux symptoms or documented GERD. [21,22] In contrast, guidelines from the American College of Gastroenterology (ACG) and the Canadian Association of Gastroenterology (CAG) recommend empirical PPI therapy for patients under 60 who test negative for *Helicobacter pylori* or remain symptomatic after eradication therapy. [23]

Blind treatment of epigastric pain of unknown origin carries risks, as it may mask symptoms of more severe conditions, delaying necessary medical intervention. This concern is supported by cases of persistent symptoms in some patients, even after extended PPI use.

Additionally, certain cases warrant further diagnostic evaluation, such as confirming *H. pylori* infection. Among patients using PPIs for this indication in this study, two hypotheses emerge: either a lack of verification of eradication following a previous infection, as failure rates of first-line therapy in France are estimated at 30%,[24] or the presence of symptoms suggesting infection, which led them to believe they were infected based on suggestions from their social or familial circles.

Regarding dosage, two main forms of misuse were identified. First, some patients used doses lower or higher than the recommended ones. Second, some patients excessively prolonged the treatment beyond the recommended duration, while others interrupt it prematurely.

Many patients reported taking PPIs on an as-needed basis. Numerous studies have evaluated the effectiveness of "as-needed" treatment; although this mode of administration is not FDA-approved, it has proven effective for many patients with non-erosive reflux disease (NERD) or mild erosive esophagitis. [25] This intermittent treatment is particularly appealing to patients, as it is practical, less costly, and reduces concerns about prolonged PPI use. [26]

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar559

However, the effectiveness of this treatment can be questioned, as the full effect of PPIs is only achieved after several days of daily administration. [9,27–29] The French HAS recommends the use of PPIs on an as-needed basis for GERD, but only after an initial 4-week course to stabilize symptoms. [21]

Additionally, an emerging class of antisecretory drugs, potassium-competitive acid blockers (P-CABs), appears to be a better candidate for non-continuous GERD therapy. [26] These drugs work by selectively and reversibly blocking the potassium-binding site on the proton pump, demonstrating a rapid and lasting effect, offering flexibility in the timing of administration, and being less affected by genetic variations in cytochrome P450 enzymes.[30–34]

The consequences of this misuse cannot be clearly defined, especially since reported adverse events are limited and the assessment of causality was not conducted. Furthermore, the study population presents a medical and surgical history that illustrates the complexity of their medical profile, as they are being treated for various conditions and are exposed to the risk of drug interactions of varying degrees, such as those with thyroid hormones, [35] antifungals, [35,36] antivirals, [35–44] cardiotonics, [35,40] psychotropics, [35] and antiplatelet drugs. [38,45–47] The effects resulting from these drug interactions have often been overlooked or gone unnoticed.

Despite gaps in monitoring and evaluation, the overall satisfaction expressed by the population suggests a positive perception of PPI use, though potential risks remain. Dissatisfaction among some participants may stem from factors such as misuse, rebound acidity after abrupt discontinuation of long-term treatment, [48–50] and individual variations in pathophysiology and pharmacological response, including esophageal hypersensitivity and genetic differences in the cytochrome P450 2C19 system. [51–54]

In general, the use of PPIs is not recommended for self-medication, except in countries where these medications are available over-the-counter (OTC). [55] OTC PPIs are only indicated for treating GERD symptoms. [56] An Italian study reports that 60-70% of patients with heartburn and regurgitation prefer to manage their symptoms with over-the-counter medications, including PPIs. [57] This use is even encouraged by some American gastroenterologists. [58] Data confirms that consumers can appropriately choose whether an OTC proton pump inhibitor is suitable for use, adhere to a 14-day treatment regimen, and seek medical intervention for long-term management of gastrointestinal issues.[59,60]

Short-term treatments with over-the-counter PPIs are generally well tolerated. [61] Adverse events reported after a 14-day treatment are mild and similar to those of a placebo. [55] In uncomplicated cases, and in the absence of red flag symptoms, short-term use of PPIs carries a low likelihood of masking a more serious condition or causing additional damage to the digestive tract. [62]

In a context where PPIs are not available over-the-counter, it is crucial to address the inappropriate self-medication practices among patients suffering from gastric acidity-related disorders. To tackle this issue, several recommendations can be considered: improving access to healthcare, strengthening regulations on the sale of prescription-only medications, and educating patients about the risks associated with self-medication. Additionally, patients should be informed about preventive measures for gastric acidity disorders, such as hygienic-dietary practices, [55] stress management,[63–66] and the prevention of issues caused by ulcerogenic medications and those promoting reflux. [67–69]

V. CONCLUSION

This study sheds light on the widespread yet often overlooked practice of self-medication with PPIs. While many studies focus on prescribed use, few explore self-medication. However, limitations include the lack of clinical confirmation for reported indications, potential biases due to self-reported data, and the specific nature of the sample, limiting generalizability. Additionally, the absence of medical follow-up prevents evaluation of long-term effects and drug interactions. These limitations emphasize the need for further research with larger, more diverse samples to better understand the risks and benefits of this practice.

REFERENCES

[1]. Edinoff AN, Wu NW, Parker K, Dudossat E, Linquest L, Flanagan CJ, et al. Proton Pump Inhibitors, Kidney Damage, and Mortality: An Updated Narrative Review. Adv Ther. 1 juin 2023;40(6):2693-709.
[2]. Fennerty MB. Acid peptic disease. Postgraduate Medicine [Internet]. 1 sept 2001 [cité 29 mai 2024]; Disponible sur: https://www.tandfonline.com/doi/abs/10.3810/pgm.2001.09.1016
[3]. Gonzaga CE, Kotze PG, Olandoski M. PREVALENCE OF SELF-MEDICATION FOR DYSPEPTIC SYMPTOMS IN PRIMARY CARE: A BRAZILIAN SURVEY. Arq Gastroenterol. 22 oct 2021;58:364-9.
[4]. Sachs G, Shin JM, Briving C, Wallmark B, Hersey S. The pharmacology of the gastric acid pump: the H+,K+ ATPase. Annu Rev Pharmacol Toxicol. 1995;35:277-305.
[5]. Rathod P, Sharma S, Ukey U, Sonpimpale B, Ughade S, Narlawar U, et al. Prevalence, Pattern, and Reasons for Self-Medication: A Community-Based Cross-Sectional Study From Central India. Cureus. 15(1):e33917.
[6]. CP-2013-09-18-3eme-forum-de-automedication.pdf [Internet]. [cité 21 févr 2024]. Disponible sur: https://neres.fr/wp-content/uploads/2019/01/CP-2013-09-18-3eme-forum-de-automedication.pdf
[7]. World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in self-medication. 2000.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar559

[8]. CP-2015-06-23-3eme-observatoire-europeen-sur-automedication.pdf [Internet]. [cité 21 févr 2024]. Disponible sur: https://neres.fr/wp-content/uploads/2019/01/CP-2015-06-23-3eme-observatoire-europeen-sur-automedication.pdf
[9]. Prilosec OTC Product Monograph [Internet]. [cité 20 sept 2023]. Disponible sur: https://prilosecotc.com/en-us/articles/prilosec-otc/product-monograph
[10]. Les femmes sont plus susceptibles de recourir à l'automédication que les hommes [Internet]. CORDIS | European Commission. [cité 21 avr 2024]. Disponible sur: https://cordis.europa.eu/article/id/33315-spanish-research-shows-women-are-more-likely-to-selfmedicate-than-men/fr
[11]. Chattha IR, Zaffar S, Tariq S, Siddiqui W, Zaman K, Kamran R, et al. Prevalence of Self-medication for Acid Peptic Disease amongst People of Manawa, Lahore. Cureus [Internet]. 30 janv 2020 [cité 5 oct 2023]; Disponible sur: https://www.cureus.com/articles/27397-prevalence-of-self-medication-for-acid-peptic-disease-amongst-people-of-manawa-lahore
[12]. Borum ML. GASTROINTESTINAL DISEASES IN WOMEN. Medical Clinics of North America. 1 janv 1998;82(1):21-50.
[13]. Common Gastrointestinal (GI) Problems in Women | ACG [Internet]. American College of Gastroenterology. [cité 21 avr 2024]. Disponible sur: https://gi.org/topics/common-gi-problems-in-women/
[14]. Isacson D, Bingefors K. Epidemiology of analgesic use: a gender perspective. European Journal of Anaesthesiology | EJA. 2002;19:5.
[15]. Shakoor O, Taylor RB, Behrens RH. Assessment of the incidence of substandard drugs in developing countries. Trop Med Int Health. sept 1997;2(9):839-45.
[16]. Kayalvizhi S, Senapathi DR. EVALUATION OF THE PERCEPTION, ATTITUDE AND PRACTICE OF SELF MEDICATION AMONG BUSINESS STUDENTS IN 3 SELECT CITIES, SOUTH INDIA. 1(3).
[17]. Joo MK, Park CH, Kim JS, Park JM, Ahn JY, Lee BE, et al. Clinical Guidelines for Drug-Related Peptic Ulcer, 2020 Revised Edition. Gut Liver. 15 nov 2020;14(6):707-26.
[18]. Hermansson M, Ekedahl A, Ranstam J, Zilling T. Decreasing incidence of peptic ulcer complications after the introduction of the proton pump inhibitors, a study of the Swedish population from 1974–2002. BMC Gastroenterol. 20 avr 2009;9(1):25.
[19]. Lanas A, García-Rodríguez LA, Arroyo MT, Bujanda L, Gomollón F, Forné M, et al. Effect of Antisecretory Drugs and Nitrates on the Risk of Ulcer Bleeding Associated With Nonsteroidal Anti-Inflammatory Drugs, Antiplatelet Agents, and Anticoagulants. Official journal of the American College of Gastroenterology | ACG. mars 2007;102(3):507.
[20]. fiche_bum_-_bon_usage_des_inhibiteurs_de_la_pompe_a_protons_ipp.pdf [Internet]. [cité 19 nov 2023]. Disponible sur: https://www.has-sante.fr/upload/docs/application/pdf/2022-09/fiche_bum_-_bon_usage_des_inhibiteurs_de_la_pompe_a_protons_ipp.pdf
[21]. COMMISSION DE LA TRANSPARENCE - HAS. Médicaments inhibiteurs de la pompe à protons chez l'adulte : réévaluation. 2009.
[22]. afssaps. RECOMMANDATIONS DE BONNE PRATIQUE : LES ANTISECRETOIRES GASTRIQUES CHEZ L'ADULTE. 2007.
[23]. Moayyedi PM, Lacy BE, Andrews CN, Enns RA, Howden CW, Vakil N. ACG and CAG Clinical Guideline: Management of Dyspepsia. Official journal of the American College of Gastroenterology | ACG. juill 2017;112(7):988.
[24]. argumentaire_-_depistage_de_linfection_a_helicobacter_pylori.pdf [Internet]. [cité 18 mai 2024]. Disponible sur: https://www.has-sante.fr/upload/docs/application/pdf/2010-08/argumentaire_-_depistage_de_linfection_a_helicobacter_pylori.pdf
[25]. Khan Z, Alastal Y, Khan MA, Khan MS, Khalil B, Shrestha S, et al. On-Demand Therapy with Proton Pump Inhibitors for Maintenance Treatment of Nonerosive Reflux Disease or Mild Erosive Esophagitis: A Systematic Review and Meta-Analysis. Gastroenterology Research and Practice. 12 août 2018;2018:e6417526.
[26]. Is It Time for Noncontinuous Therapy for Gastroesophageal Reflux Disease? – Gastroenterology & Hepatology [Internet]. [cité 26 mai 2024]. Disponible sur: https://www.gastroenterologyandhepatology.net/archives/may-2024/is-it-time-for-noncontinuous-therapy-for-gastroesophageal-reflux-disease/
[27]. Research C for DE and. Prilosec OTC (omeprazole) Information. FDA [Internet]. 11 mars 2018 [cité 21 mars 2024]; Disponible sur: https://www.fda.gov/about-fda/center-drug-evaluation-and-research-cder/prilosec-otc-omeprazole-information
[28]. Research C for DE and. Over-The-Counter (OTC) Heartburn Treatment. FDA [Internet]. 17 nov 2023 [cité 21 mars 2024]; Disponible sur: https://www.fda.gov/drugs/information-consumers-and-patients-drugs/over-counter-otc-heartburn-treatment
[29]. Research C for DE and. Questions and Answers on Zegerid OTC. FDA [Internet]. 11 mars 2018 [cité 21 mars 2024]; Disponible sur: https://www.fda.gov/about-fda/center-drug-evaluation-and-research-cder/questions-and-answers-zegerid-otc
[30]. Wong N, Reddy A, Patel A. Potassium-Competitive Acid Blockers: Present and Potential Utility in the Armamentarium for Acid Peptic Disorders. Gastroenterol Hepatol (N Y). déc 2022;18(12):693-700.
[31]. Rawla P, Sunkara T, Ofosu A, Gaduputi V. Potassium-competitive acid blockers - are they the next generation of proton pump inhibitors? World J Gastrointest Pharmacol Ther. 13 déc 2018;9(7):63-8.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar559

[32]. Kim DK, Lee KH, Kim SJ, Kim SJ, Lee SJ, Park CH, et al. Effects of Tegoprazan, a Novel Potassium-Competitive Acid Blocker, on Rat Models of Gastric Acid-Related Disease. J Pharmacol Exp Ther. juin 2019;369(3):318-27.
[33]. Sugano K. Vonoprazan fumarate, a novel potassium-competitive acid blocker, in the management of gastroesophageal reflux disease: safety and clinical evidence to date. Therap Adv Gastroenterol. 2018;11:1756283X17745776.
[34]. Oshima T, Miwa H. Potent Potassium-competitive Acid Blockers: A New Era for the Treatment of Acid-related Diseases. J Neurogastroenterol Motil. 30 juill 2018;24(3):334-44.
[35]. ANSM. THESAURUS DES INTERACTIONS MÉDICAMENTEUSES. 2023.
[36]. Résumé des caractéristiques du produit - LANSOPRAZOLE ALMUS PHARMA 15 mg, gélule gastro-résistante - Base de données publique des médicaments [Internet]. [cité 18 déc 2023]. Disponible sur: https://base-donnees-publique.medicaments.gouv.fr/affichageDoc.php?specid=69966450&typedoc=R
[37]. Crauwels H, van Heeswijk RPG, Stevens M, Buelens A, Vanveggel S, Boven K, et al. Clinical perspective on drug-drug interactions with the non-nucleoside reverse transcriptase inhibitor rilpivirine. AIDS Rev. 2013;15(2):87-101.
[38]. Résumé des Caractéristiques du Produit [Internet]. [cité 18 déc 2023]. Disponible sur: http://agence-prd.ansm.sante.fr/php/ecodex/rcp/R0231883.htm
[39]. Résumé des Caractéristiques du Produit [Internet]. [cité 22 mai 2024]. Disponible sur: http://agence-prd.ansm.sante.fr/php/ecodex/rcp/R0236522.htm
[40]. Résumé des Caractéristiques du Produit [Internet]. [cité 18 déc 2023]. Disponible sur: http://agence-prd.ansm.sante.fr/php/ecodex/rcp/R0307017.htm
[41]. Résumé des caractéristiques du produit - PARIET 20 mg, comprimé gastro-résistant - Base de données publique des médicaments [Internet]. [cité 18 déc 2023]. Disponible sur: https://base-donnees-publique.medicaments.gouv.fr/affichageDoc.php?specid=62909137&typedoc=R
[42]. Résumé des caractéristiques du produit - PANTOPRAZOLE CRISTERS PHARMA 40 mg, comprimé gastro-résistant - Base de données publique des médicaments [Internet]. [cité 18 déc 2023]. Disponible sur: https://base-donnees-publique.medicaments.gouv.fr/affichageDoc.php?specid=62034970&typedoc=R
[43]. Lee TH, Chan A, Bryan W, Park L, Hashem M, Townsend M, et al. Proton pump inhibitor usage reduces sustained viral response rates for veterans with HIV/HCV coinfection on ledipasvir/sofosbuvir: a real-world study from a multicentre VA cohort. J Viral Hepat. avr 2021;28(4):630-6.
[44]. Stark JE, Montgomery CM. Administering a Soda Beverage With the Hepatitis C Treatment Sofosbuvir/Velpatasvir and the Proton-Pump Inhibitor Pantoprazole: A Case Report. Journal of Pharmacy Practice. 30 juin 2023;08971900231183036.
[45]. Wedemeyer RS, Blume H. Pharmacokinetic Drug Interaction Profiles of Proton Pump Inhibitors: An Update. Drug Saf. 2014;37(4):201-11.
[46]. Drepper MD, Spahr L, Frossard JL. Clopidogrel and proton pump inhibitors - where do we stand in 2012? World J Gastroenterol. 14 mai 2012;18(18):2161-71.
[47]. Pang J, Wu Q, Zhang Z, Zheng T zhang, Xiang Q, Zhang P, et al. Efficacy and safety of clopidogrel only vs. clopidogrel added proton pump inhibitors in the treatment of patients with coronary heart disease after percutaneous coronary intervention: A systematic review and meta-analysis. IJC Heart & Vasculature. 1 juin 2019;23:100317.
[48]. Rochoy M, Dubois S, Glantenet R, Gautier S, Lambert M. [Gastric acid rebound after a proton pump inhibitor: Narrative review of literature]. Therapie. 2018;73(3):237-46.
[49]. Benedeto Stojanov D, Koraćević G, Stojanov D, Koraćević M, Ignjatović N. REBOUND PHENOMENON OF PROTON PUMP INHIBITOR THERAPY. AMM. 15 juin 2021;60(02):64-8.
[50]. Reimer C, Søndergaard B, Hilsted L, Bytzer P. Proton-pump inhibitor therapy induces acid-related symptoms in healthy volunteers after withdrawal of therapy. Gastroenterology. juill 2009;137(1):80-7, 87.e1.
[51]. Rohof WO, Bennink RJ, de Jonge H, Boeckxstaens GE. Increased Proximal Reflux in a Hypersensitive Esophagus Might Explain Symptoms Resistant to Proton Pump Inhibitors in Patients With Gastroesophageal Reflux Disease. Clinical Gastroenterology and Hepatology. 1 oct 2014;12(10):1647-55.
[52]. Dickson EJ, Stuart RC. Genetics of response to proton pump inhibitor therapy: clinical implications. Am J Pharmacogenomics. 2003;3(5):303-15.
[53]. Deshpande N, V. S, V. V. RK, H. V. V. M, M. S, Banerjee R, et al. Rapid and ultra-rapid metabolizers with CYP2C19*17 polymorphism do not respond to standard therapy with proton pump inhibitors. Meta Gene. 18 juin 2016;9:159-64.
[54]. Rani S, Padh H. Inter-individual variation in pharmacokinetics of proton pump inhibitors in healthy Indian males. Indian Journal of Pharmaceutical Sciences. 2006;68(6):754.
[55]. Boardman HF, Heeley G. The role of the pharmacist in the selection and use of over-the-counter proton-pump inhibitors. Int J Clin Phar,. oct 2015;37(5):709-16.
[56]. Boardman HF, Delaney BC, Haag S. Partnership in optimizing management of reflux symptoms: a treatment algorithm for over-the-counter proton-pump inhibitors. Current Medical Research and Opinion. 3 juill 2015;31(7):1309-18.
[57]. Keber E, Rocco P, Musazzi UM, Morselli-Labate AM, Floris NP, Pedrazzini A, et al. The management of upper gastrointestinal symptoms: A study on community pharmacies in Italy. Pharmacia. 7 mai 2021;68(2):401-9.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar559

[58]. Menees SB, Guentner A, Chey SW, Saad R, Chey WD. How Do US Gastroenterologists Use Over-the-Counter and Prescription Medications in Patients With Gastroesophageal Reflux and Chronic Constipation? Official journal of the American College of Gastroenterology | ACG. nov 2015;110(11):1516.
[59]. Fendrick AM, Shaw M, Schachtel B, Allgood L, Allgood G, Grender J, et al. Self-selection and use patterns of over-the-counter omeprazole for frequent heartburn. Clin Gastroenterol Hepatol. janv 2004;2(1):17-21.
[60]. Inadomi JM, Fendrick AM. PPI use in the OTC era: Who to treat, with what, and for how long? Clin Gastroenterol Hepatol. mars 2005;3(3):208-15.
[61]. Haag S, Andrews JM, Katelaris PH, Gapasin J, Galmiche JP, Hunt R, et al. Management of Reflux Symptoms with Over-the-Counter Proton Pump Inhibitors: Issues and Proposed Guidelines. Digestion. 2009;80(4):226-34.
[62]. Johnson DA, Katz PO, Armstrong D, Cohen H, Delaney BC, Howden CW, et al. The Safety of Appropriate Use of Over-the-Counter Proton Pump Inhibitors: An Evidence-Based Review and Delphi Consensus. Drugs. 2017;77(5):547-61.
[63]. Clere N. Stress et troubles digestifs. Actualités Pharmaceutiques. 1 nov 2018;57(580):43-6.
[64]. Melis G, Gelormino E, Marra G, Ferracin E, Costa G. The Effects of the Urban Built Environment on Mental Health: A Cohort Study in a Large Northern Italian City. Int J Environ Res Public Health. nov 2015;12(11):14898-915.
[65]. Lederbogen F, Kirsch P, Haddad L, Streit F, Tost H, Schuch P, et al. City living and urban upbringing affect neural social stress processing in humans. Nature. juin 2011;474(7352):498-501.
[66]. Le cortex cingulaire antérieur : contrôle exécutif, contrôle émotionnel [Internet]. 2021 [cité 19 juin 2024]. Disponible sur: https://neuronup.fr/neuropsychologie-et-informations/cerveau/le-cortex-cingulaire-anterieur-controle-executif-controle-emotionnel/
[67]. Tutuian R, Clinical Lead Outpatient Services and Gastrointestinal Function Laboratory. Adverse effects of drugs on the esophagus. Best Pract Res Clin Gastroenterol. avr 2010;24(2):91-7.
[68]. Mungan Z, Pınarbaşı Şimşek B. Which drugs are risk factors for the development of gastroesophageal reflux disease? Turk J Gastroenterol. déc 2017;28(Suppl 1):S38-43.
[69]. Zheng Z, Margolis KL, Liu S, Tinker LF, Ye W. Effects of Estrogen With and Without Progestin and Obesity on Symptomatic Gastroesophageal Reflux. Gastroenterology. juill 2008;135(1):72.