

**ORIGINAL ARTICLE**DOI: <https://doi.org/10.3329/mediscope.v10i1.65408>**Clinical Characteristics of Peptic Ulcer Disease & its Pharmacological Management in Primary Care**MK Alam<sup>1</sup>, \*B Islam<sup>2</sup>**Abstract**

**Background:** Peptic ulcer diseases (PUD) are common conditions reported in daily clinical practice. Proton pump inhibitors (PPIs) are the most potent pharmacological inhibitors of gastric acid secretion. **Aims & objectives:** This study aimed to evaluate & understand the clinical presentation and management of PUD with PPIs in general practice. **Methods:** This prospective study was conducted on 150 diagnosed cases of PUD patients in a single center of private practice in rural areas from February 2022 to August 2022. Patients were enrolled by following inclusion & exclusion criteria with informed written consent. Eight (08) weeks after the completion of treatment by giving PPIs, a repeat endoscopy was done to see the improvement of healing of the ulcer. All data were collated and results were expressed in percentages which are illustrated in different tables & figures. **Results:** Among 150 endoscopically diagnosed PUD patients major age group was 31-40 years (50%) of both sexes where the male (58.66%) were more predominant. Abdominal pain (82%), heartburn (56.66%), etc were the main clinical symptoms of the patients who were referred for endoscopy. After confirming the diagnosis, PPIs were given to the patients. Esomeprazole (34.66%), lansoprazole (22%), pantoprazole (18.66%), etc were prescribed frequently. After 8 weeks of treatment, repeat endoscopy revealed that the ulcer was completely healed in 65.33% of patients whereas only 6.66% had no improvement. **Conclusion:** The majority of the patient are almost cured of PUD by receiving various types of PPIs which are very effective drugs for healing peptic ulcer disease.

**Keywords:** Peptic ulcer, Clinical feature, PPIs

**Introduction**

Peptic ulcer disease (PUD) is a common condition that affects 4 million people throughout the world annually.<sup>1,2</sup> The incidence has been estimated at around 1.5% to 3%.<sup>1,2</sup> Lifetime prevalence is reported to be approximately 5%-10%.<sup>1,3,4</sup> PUD includes both ulcerations and erosions in the stomach and duodenum which develops due to an imbalance between defensive mechanisms such as a mucus-bicarbonate layer, prostaglandins, cellular renovation, and blood

flow etc, and aggressive factors like hydrochloric acid, pepsin, ethanol, bile salts, some medications, etc.<sup>2,3,5,6</sup> Historically, this imbalance is predominantly associated with the use of non-steroidal anti-inflammatory drugs (NSAIDs) and acetylsalicylic acid (ASA) and/or Helicobacter pylori infection.<sup>1-3,6-8</sup> Gastric acid hypersecretion, psychological stress, nicotine and/or alcohol consumption, immunosuppressive medication, and age-related decline in prostaglandin levels are other important risk factors for the development

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of PUD.<sup>1,6,7,9</sup> The disease most commonly involves the distal oesophagus, stomach, duodenum, or jejunum, at the margin of a gastroenterostomy, in association with a Meckel's diverticulum containing ectopic gastric mucosa.<sup>2,3</sup>

Heartburn, reflux and epigastric pain are frequently encountered symptoms with peptic ulcer disease and gastrointestinal reflux disease (GERD) has a high prevalence rate and is responsible for a negative impact on patient quality of life.<sup>3,10</sup> The main strategy against peptic ulcer disease (PUD) remains gastric acid suppression. Proton pump inhibitors (PPIs) are the most potent pharmacological inhibitors of gastric acid secretion currently available and are the mainstay medical therapy for presumed acid peptic diseases. PPIs inhibit gastric acid secretion by inhibiting the H<sup>+</sup>-K<sup>+</sup>-adenosine triphosphatase enzyme in the parietal cells of the gastric mucosa.<sup>10-13</sup> The 2010 revision of the guidelines for the good use of PPIs from the healthcare reimbursement authority, enumerates four indications for which the use of PPIs is recommended: (1) gastroesophageal reflux disease and reflux esophagitis, (2) NSAID-induced ulcers or their prevention in high-risk patients treated with non-steroidal anti-inflammatory drugs (NSAIDs), (3) gastroduodenal ulcers and eradication of *H. pylori*, and (4) Zollinger-Ellison syndrome.<sup>10</sup> PPIs are superior in comparison to another anti-secretory drug Histamine-2(H<sub>2</sub>)-receptor antagonists for the treatment of peptic ulcer and reflux disease for healing gastroduodenal ulcers and have a good safety profile. PPI therapy should be continued for 4 weeks for duodenal ulcers, whereas for healing of gastric ulcers, it must be continued for up to 8 weeks.<sup>4,10</sup>

Since the introduction of omeprazole in 1988, several other molecules from the same drug class have become available, including lansoprazole (1995), pantoprazole (1997), rabeprazole (1999), esomeprazole (2001) and dexlansoprazole (2009).<sup>10</sup> While proton pump inhibitors are undoubtedly effective agents, studies of their prescribing practice consistently suggest overuse of PPIs before endoscopy, use without appropriate indications and prescribing for indications in which less

potent agents are used.<sup>14</sup> These issues can produce hazards to health and also an economic burden to the patients. So PPIs should be used in appropriate indications with proper dose & duration. Therefore, our study aims to evaluate the clinical features and pharmacological management of diagnosed peptic ulcer disease in general practice.

## Materials and Methods

This is a prospective cross-sectional study conducted on 150 diagnosed (positive result in endoscopy) cases of peptic ulcer in private practice settings in Sathkhira carried out over 7 months from 1st February 2022 to 31st August 2022. Informed written consent was obtained from each patient before their recruitment in this study. A complete history taking and thorough physical examination and also proper counseling was done on each patient. A specially designed questionnaire was used to record participants' demographic profiles, signs/symptoms and other necessary information. Symptoms suggestive of peptic ulcer were subjected to upper gastrointestinal tract endoscopy with an empty stomach in the morning, no medication was used before the endoscopy and no attempt was made to measure the size of the ulcer. These procedures were carried out by the principal investigator. Patients aged  $\geq 20$  years of all sexes and who showed definite peptic ulcer were included in this study, whereas patients who were not willing to participate and patients with co-morbidities like DM, HTN, Heart disease, asthma etc. were excluded from the study. All diagnosed patients were treated with proton pump inhibitors alone and or triple therapy in some cases for 8 weeks. After receiving the treatment, a repeat endoscopy was performed to observe the treatment outcome in the healing of the ulcer and participants were interviewed with a follow-up visit to collect data on their experiences. All this information was listed in a predesigned follow-up sheet. After completion of collecting the information required for the study, data were collated in the form of different tables and figures by using Microsoft Excel 2007 spreadsheet and the results were expressed in percentages.

## Results

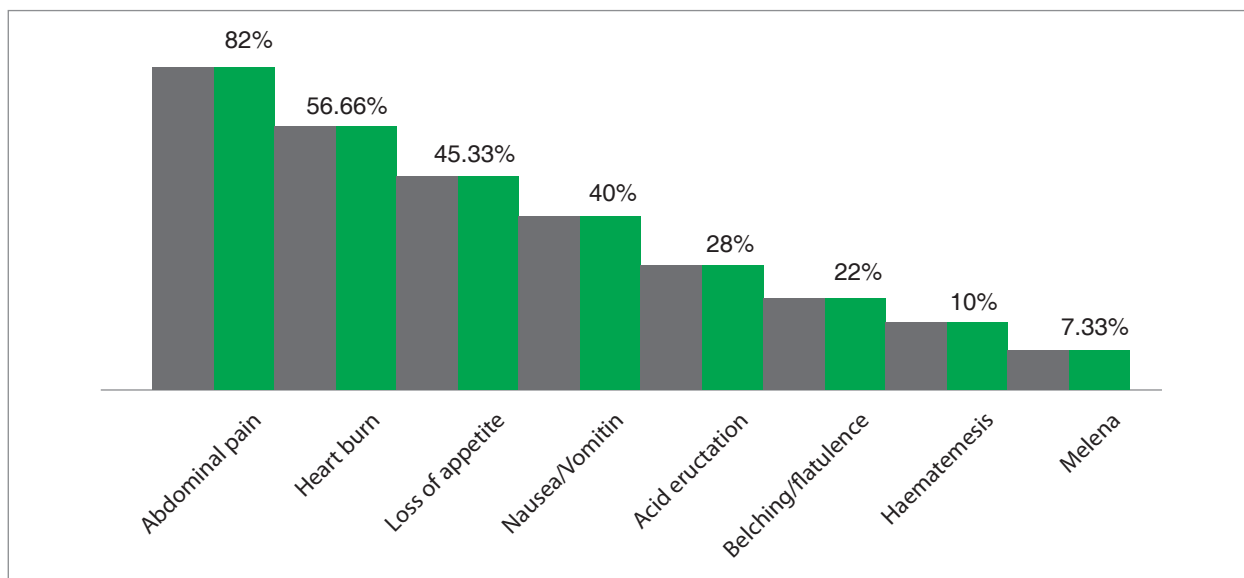
A total of 150 patients of endoscopically diagnosed PUD were studied of which the maximum number of patients were in the age group of 31-40 years (50%) followed by 20-30 years (26.66%) of both sexes where 58.66% were male and 41.33% were female. Most of the patients came from rural areas (58.66%) and their

socioeconomic condition was medium category (54.66%) whereas 28% belongs to low socioeconomic condition. 43.33% of patients gave a history of previous PUD followed by cigarette smoking (32%) and use of NSAIDs (24.66%). Most of the patients were involved in business (40%) followed by services (23.33%), housewife (16.66%), student (12%), and some others. All these demographic features are enlisted in Table 01.

**Table 01: Demographic characteristics of the study population**

Characteristics of the population		Total number (n=150)	Percentage (%)
Age (Years)	20-30	40	26.66%
	31-40	75	50%
	>40	35	23.33%
Gender	Male	88	58.66%
	Female	62	41.33%
Residence	Rural	88	58.66%
	Urban	62	41.33%
Socioeconomic status	Low	42	28%
	Medium	82	54.66%
	High	26	17.33%
Risk factors	Previous PUD	65	43.33%
	Cigarette smoking	48	32%
	Use of NSAIDs	37	24.66%
Occupation	Business	60	40%
	Service holder	35	23.33%
	Housewife	25	16.66%
	Student	18	12%
	Others	12	8%

**Figure 01** shows the different clinical presentation of the study population where abdominal pain was the main chief complaint in 123 (82%) patients followed by heartburn in 85 (56.66%), loss of appetite in 68 (45.33%), nausea/vomiting in 60 (40%), acid eructation in 42 (28%), belching/ flatulence in 33 (22%) and haematemesis & melena with few percentages of patients. It should be mentioned here that patients may have multiple complaints thus the summation percentage is more than one hundred.



**Figure 01: Symptoms of peptic ulcer diseases in the populations**

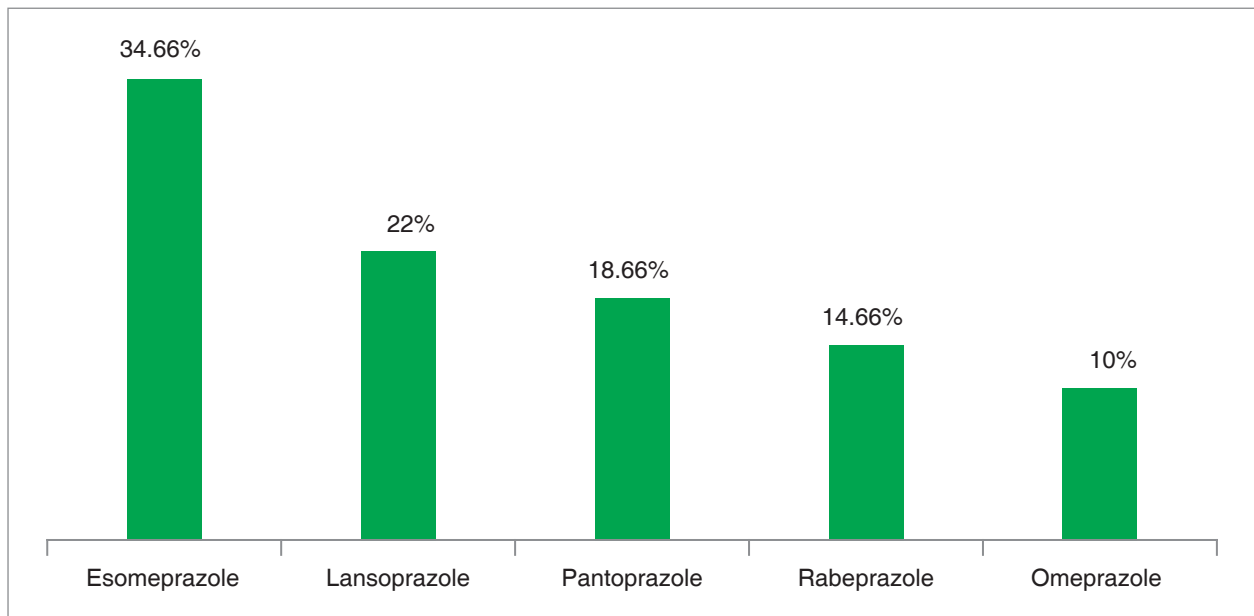
As abdominal pain was the main clinical symptom among the majority of the population, thereby, the characteristics of this pain are illustrated in **Table 02** which showed that 53 (43.08%) patients gave a history of pain for 1-2 years, burning type pain was most common in 72 (58.53%) patients. The most common site of pain was epigastrium found in 80 (65.04%) patients followed by right hypochondrium 18 (14.63%) and epigastrium+hypochondrium both in 11(8.94%) patients etc. Non-radiating PUD pain was found in 88 (71.54%) whereas pain toward the chest was found in 20 (16.26%) cases. 74 (60.16%) patients complained that pain started in empty stomach and pain relieved by taking food in 92(74.79%) patients.

**Table 02: Characteristics of abdominal pain (n= 123)**

Characteristics of pain		Total number (n=123)	Percentages (%)
Duration of history of pain	< 1 year	44	35.77%
	1-2 years	53	43.08%
	2-3 years	26	21.13%
Types of pain	Burning	72	58.53%
	Dull aching	35	28.45%
	Hunger pain	11	8.94%
	Indescribable	5	4.06%

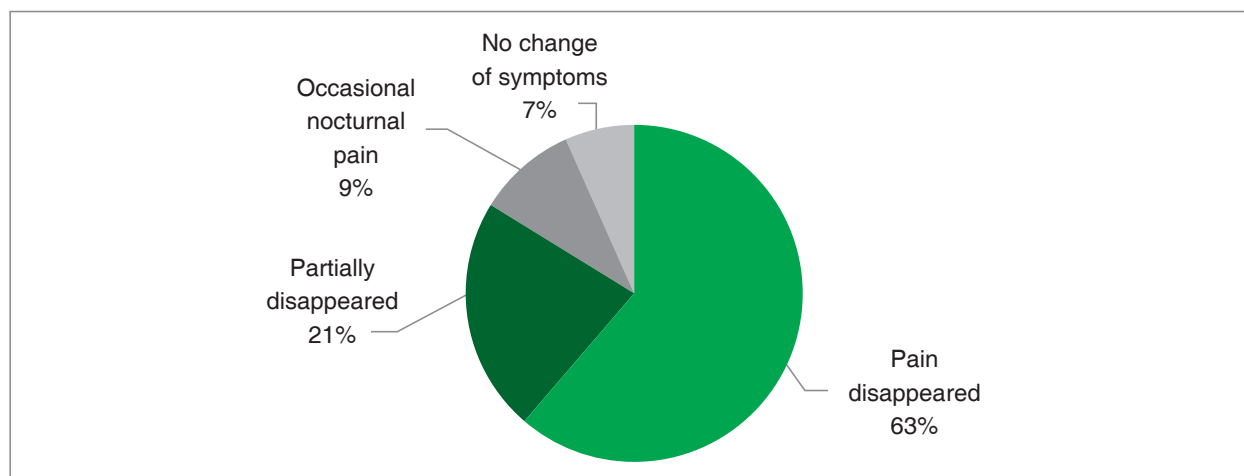
Site of pain	Epigastrium	80	65.04%
	Right hypochondrium	18	14.63%
	Epigastrium+Hypochondrium	11	8.94%
	Periumbilical	8	6.50%
	Generalized abdomen	6	4.87%
Radiation of pain	No radiation	88	71.54%
	Towards chest	20	16.26%
	Towards shoulder	7	5.69%
	To multiple sites	5	4.06%
	Both sides of the back	3	2.43%
Onset of pain	In empty stomach	74	60.16%
	Continuous pain	19	15.44%
	Nocturnal pain &discomfort	16	13%
	Immediately after food	10	8.13%
	1-2 hours after the food	4	3.25%
Effects of food	Relief of pain	92	74.79%
	Not relief of pain	31	25.20%

**Figure 02** showed the prevalence of various types of PPIs in the study population where esomeprazole was prescribed in 52 (34.66%) patients followed by lansoprazole 33 (22%), pantoprazole 28(18.66%), rabeprazole (14.66%), omeprazole with fewer percentages.



**Figure 02: Prevalence of various types of PPIs in the study population**

**Figure 03** showed clinical improvement after 08 weeks of PPIs received. The pain disappeared after taking PPIs in 62.66% of patients & partially disappeared in 21.33% of patients. Occasional nocturnal pain arises in 9.33% of patients whereas no change in symptoms in 6.66% of cases.



**Figure 03: Clinical improvement after 08 weeks of PPIs received**

**Table 03** revealed the endoscopic evidence of healing of the ulcer after 8 weeks of treatment. The ulcer is completely healed in 65.33% of patients followed by partially healed in 30 (20%) patients. We found mild duodenitis in 8% of cases. But unfortunately, no improvement occurred in 6.66% of cases.

**Table 03: Endoscopic evidence of healing of ulcer after 8 weeks of treatment**

Evidence of healing	Total number (n= 150)	Percentages (%)
Completely healed	98	65.33%
Partially healed	30	20%
Mild duodenitis	12	8%
No improvement	10	6.66%

**Discussion**

This study analysis was based on 150 patients with clinical suspicion of PUD who were referred for upper gastrointestinal endoscopy. Endoscopically diagnosed cases were enrolled here. The major age group was 31 to 40 years (50%) in this study which is consistent with other studies done by Abdihamid Mohamed Ali et al.<sup>1</sup> But some other studies showed that the prevalence of peptic ulcer disease increases with ages (>60 y).<sup>2,3,15</sup> In this study we found males (58.66%) were more predominant in PUD than females (41.33%). Male predominance is attributed to cigarette smoking.

Another contributing factor like males frequently stay outside and ingest spicy food which increases the chances of peptic ulcer disease as compared to females. Similar findings were found in other studies.<sup>1-3,5,6,14,15</sup> As the study was done in peripheral settings so maximum number of patients (58.66%) came from rural areas. Their socioeconomic status remains in the medium category (54.66%). Most of the patients are involved in business (40%) followed by services (23.33%) etc. History of previous PUD was the main risk factor among the majority of the patients (43.33%), followed by cigarette smoking (32%), use of NSAIDs (24.66%) etc. These findings are in

concordance with other studies.<sup>1,2</sup> Smoking causes direct injury to tissue due to free radical production. On the other hand, nonsteroidal anti-inflammatory drugs (NSAIDs) initiate gastroduodenal ulceration and promote bleeding and perforation.<sup>15</sup>

As most of the patients arrived from remote areas where inaccessibility of good health facilities, and lack of health education, and most of them were non-professional health workers, so positive previous history of peptic ulcer disease was observed. The majority of the patients came with complaints of severe abdominal pain (82%), heartburn (56.66%), loss of appetite (45.33%), nausea/vomiting (40%) and other symptoms like acid eructation, belching/flatulence, haematemesis, melena with varying percentages. In other countries like India, Malaysia, and Somalia, clinical symptoms are almost similar with different percentages.<sup>1,2,4,16</sup>

Our study demonstrated the characteristics of abdominal pain where 53 (43.08%) patients gave a history of pain for 1-2 years. This pain was burning in nature (58.53%), mainly felt in the epigastric region (65.04%) followed by the right hypochondrium (14.63%). No radiation of pain occurs in 71.54%. In the empty stomach, more pain intensity was found in 60.16% of patients and pain is relieved by giving food in 74.79% of cases. In the present study, proton pump inhibitors were given to the endoscopically diagnosed PUD patients for 8 weeks. PPIs are the most popular and effective prophylactic agents which were also shown in Lucija Kuna et al.<sup>17</sup> Among the various types of PPIs, esomeprazole was prescribed in 34.66% of patients followed by lansoprazole 22%, pantoprazole 18.66%, rabeprazole 14.66%, omeprazole 10% with appropriate dose, duration & frequency in our study. But in comparison with another group of anti-secretory drug H<sub>2</sub>-blocker like ranitidine, famotidine etc. PPIs are the most efficacious drug which provides maximum acid suppression causing high healing rates of ulcers and also causing symptom relief. So PPIs are recommended as initial and definitive therapy for most patients. This feature is also similar to another study done by

Ahmad Almeman et al.<sup>14</sup> All gastric ulcers require repeat endoscopy to evaluate the success of healing.

After 8 weeks of treatment in this study, a repeat endoscopy was done to see the clinical improvement and treatment outcome. After taking PPIs, abdominal pain disappeared in 62.66% of patients & partially disappeared in 21.33% of patients whereas 9.33% of patients complained about occasional nocturnal pain. But unfortunately, 6.66% of cases gave a history of no change of symptoms regarding peptic ulcer disease. We observed the endoscopic findings also where we found ulcer was completely healed in 65.33% of cases, and partially healed in 20% of cases. 8% of cases still featured mild duodenitis and unfortunately, there was no improvement seen in 6.66% of cases. It will be our major concern to give the focus 'no improvement' (6.66%) group side by side partially healed (20%) group for the cure of the ulcer by the diagnosis of the definitive cause of the ulcer and treatment accordingly. Nowadays PPIs are the most commonly prescribed anti-ulcerants throughout the world but the pattern of their use without appropriate guidelines might raise fears of safety and economic burden to society. Moreover, patients may allow continuing an unhealthy lifestyle which may aggravate the symptom of heartburn and others feature.<sup>14</sup> Some studies even showed that these drugs may delay the diagnosis of gastric cancer<sup>18</sup> and increase the risk of Community-acquired pneumonia.<sup>19</sup>

Based on the above discussion, there is no doubt that gastric acid suppressants (eg. PPIs) are important drugs in the management of peptic ulcer disease. But special care is needed to ensure that patients taking PPIs for the right indications & should not have their prescriptions stopped.

The current study had some limitations. Firstly, the study population is limited to only a single center in Satkhira. After taking treatment, the maximum number of patients were cured of their clinical sign-symptoms of PUD thereby some patients refused to do repeat endoscopies. That's why the sample size is reduced in number. Secondly, the

duration of the study was short due to time constrain and limited financial availability. Despite these limitations, the study reveals a better outcome of PPIs in diagnosed cases of peptic ulcer disease. Further studies are required to find and compare the response of PPIs with other groups of anti-ulcerant drugs and also suggest studies regarding triple therapy to eradicate *Helicobacter Pylori*-induced PUD.

### Conclusion

This study concludes that PPIs were the preferred gastric acid suppressants for the healing of ulcers in this study population where the majority of patients were on esomeprazole for better treatment outcomes.

**Conflict of interest:** None of the authors declared any conflict of interest regarding this study.

### References

1. Ali A. M., Mohamed A. N., Mohamed Y. G., & Kelesoglu, S. I. Clinical presentation and surgical management of perforated peptic ulcer in a tertiary hospital in Mogadishu, Somalia: a 5-year retrospective study. *World Journal of Emergency Surgery*,2022;17(1), 1–8.
2. Ganaie, A. R., Banoo, Z., Hela, A. H., Hakeem, I. A., & Khandwaw, H. M. (2021). Clinical Presentation and Management of Patients with Peptic Ulcer Perforation in Kashmir - A Prospective Study. *Journal of Evidence-Based Medicine and Healthcare*, 8(27), 2368–2372.
3. Yawar B., Marzouk A. M., Ali H., Ghorab T. M., Asim A., Bahli Z., et al. Seasonal Variation of Presentation of Perforated Peptic Ulcer Disease: An Overview of Patient Demographics, Management and Outcomes. *Cureus*, 2021;13(11). <https://doi.org/10.7759/cureus.19618>
4. Mustafa M., & Menon J. Muiandy R K., R.Fredie, MM.Sein, A.Fariz (2015). Risk Factors, Diagnosis, and Management of Peptic ulcer Disease. *IOSR Journal of Dental and Medical Sciences*,2015;14(7), 2279–2861.
5. Eisner F., Hermannr Di., Bajaeifer K., Glatzle J., Konigsrainer A., & Kuper M. A. Gastric Ulcer Complications after the Introduction of Proton Pump Inhibitors into Clinical Routine: 20-Year Experience. *Visceral Medicine*, 2017;33(3), 221–226.
6. Yuan Y, Padol IT, Hunt RH. Peptic ulcer disease today. *Nat Clin Pract Gastroenterol Hepatol* 2006;3:80–89
7. Ramakrishnan K, Salinas RC: Peptic ulcer disease. *Am Fam Physician* 2007;76: 1005–1012.
8. Osefo N, Ito T, Jensen RT. Gastric acid hypersecretory states: recent insights and advances. *Curr Gastroenterol Rep*, 2009;11: 433–441.
9. Tack J., Louis E., Persy V., & Urbain D. (2013). Optimal use of proton pump inhibitors for treating acid peptic diseases in primary care. *Acta Gastro-Enterologica Belgica*,2013; 76(4):393–402.
10. Mori H., & Suzuki H. Role of acid suppression in acid-related diseases: Proton pump inhibitor and potassium-competitive acid blocker. *Journal of Neurogastroenterology and Motility*,2019;25(1):6–14.
11. Lim J. H., Shin J., & Park J. S. (2022). Effect of a Proton Pump Inhibitor on the Duodenum Microbiome of Gastric Ulcer Patients. *Life*,2022;12(10):4–13.



12. Alfahad M., Jasim M. H. M., Qazzaz M. E., Alassaf F. A., & Abed M. N. (2021). Proton pump inhibitors and peptic ulcer management: Antioxidant mechanisms. *Journal of Drug Delivery and Therapeutics*,2021;11(4-S), 242–246.
13. Almeman A., Alkhoshaiban A. S., & Rasool S. Prescribing practices and cost of drugs for peptic ulcer in a primary health center in Pulau Penang, Malaysia. *Tropical Journal of Pharmaceutical Research*,2013;12(4):629–634.
14. Siri K. N., Arpita B. S., & Neelendra M. N. (2021). Burden of peptic ulcer disease among patients with upper gastrointestinal bleeding. *International Journal of Surgery Science*, 2021;5(4):151–155.
15. Rai R. R., Gangadhar A., & Mayabhate M. M. Clinical profiling of patients with Acid Peptic Disorders (APD) in India: a cross-sectional survey of clinicians. *International Journal of Basic & Clinical Pharmacology*,2017;6(1): 194-202.
16. Kuna L., Jakab J., Smolic R., Raguz-Lucic N., Vcev A., & Smolic M. Peptic ulcer disease: A brief review of conventional therapy and herbal treatment options. *Journal of Clinical Medicine*,2019;8(2).179; doi:10.3390/jcm 8020179
17. Naunton M, Peterson GM, Bleasel MD. Overuse of proton pump inhibitors. *J Clin Pharm Ther.* 2000 ; 25(5): 333-340.
18. Gulmez SE, Holm A, Frederiksen H, Jensen TG, Pedersen C, Hallas J . Use of proton pump inhibitors and the risk of community-acquired pneumonia. A population-based case-control study. *Arch Intern Med*, 2007; 167: 950-955.