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Original Research Article

Pantoprazole in the management of dyspepsia in diabetic gastroparesis: evaluating efficacy and safety

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ABSTRACT

Background: Pantoprazole is used in treatment of erosive esophagitis associated with gastroesophageal reflux disease (GERD). This questionnaire-based study aims to provide insights into pantoprazole's real-world effectiveness and safety in managing dyspepsia due to diabetic gastroparesis (DGP).
Methods: This questionnaire-based study was conducted among Indian healthcare professionals (HCP) from September 2024 to March 2025. A questionnaire comprising 13 questions explored preferences of HCPs for use of pantoprazole in last 10 patients with dyspepsia due to diabetic gastroparesis.
Results: A total of 86 HCP were included in this study. The highest percentage of HCPs (30.23%) reported duration of diabetes in patients greater than 10 years with age group of patients 40-60 years. A majority of 89.53% HCPs reported GERD, with abdominal discomfort reported by 38.37% of HCPs. Symptoms like post-prandial fullness and early satiety was observed at frequency of 6/10 patients by 38.37% HCPs, while poor glycemic control at a frequency of 5/10 patients by 38.37% of HCPs. Majority of 59.30% HCPs prescribed pantoprazole treatment for 4 weeks and 95.35% of HCPs added a prokinetic to pantoprazole. The largest proportion of HCPs (43.02%) reported symptom relief in 8/10 patients with 48.84% of HCPs observed glycemic control improvement in <8 patients. Loose stools were the most commonly reported adverse effect by 70.93% of HCPs. Approximately 90% of HCPs rated pantoprazole's efficacy, safety and adherence to treatment as excellent and good.
Conclusion: This study revealed strong clinical, therapeutic, and patient-centric outcomes across India for use of pantoprazole in patients with dyspepsia due to DGP.

Keywords: Proton-pump, Satiety, Glycemic control, Prokinetic, Abdominal discomfort

INTRODUCTION

Gastroparesis (GP) is typically characterized by a combination of upper gastrointestinal (GI) symptoms and delayed gastric emptying (GE) in the absence of any mechanical upper GI obstruction. It is a rare disorder linked to increased mortality.[1] Functional dyspepsia is a common and non-serious gastrointestinal condition that mimics the symptoms of other disorders, which can be hurdle in the diagnostic process.[2] Epidemiologically and pathophysiological GP overlaps with FD. Presence of one or more of the following symptoms: postprandial fullness, early satiation, epigastric pain or epigastric burning is regularly observed in FD.[3] In diabetic gastroparesis (DG), prominent upper GI symptoms include epigastric discomfort, nausea, vomiting, early satiety, and bloating.[4]

It is more frequent in people with type 1 diabetes than type 2 diabetes. Changes in diet and intake of medications is practiced in management of DG.[5] The primary approach to treating DG involves paying attention to contributing factors, such as stabilizing blood glucose levels, ensuring proper nutritional support, and utilizing prokinetic agent. The main goals of treatment are to reduce symptoms, accelerate gastric emptying, enhance the patient's nutritional status, and ultimately improve glycemic control.[6]

Proton pump inhibitors (PPIs), which reduce gastric acid secretion, are commonly prescribed for patients with dyspepsia.[7] PPIs have been shown to be highly effective in treating and alleviating symptoms in patients with mild to severe gastroesophageal reflux disease (GERD).[8] Pantoprazole is a PPI used in the treatment of erosive esophagitis associated with gastroesophageal reflux disease, eradicating *Helicobacter pylori* bacteria and preventing peptic ulcer re-bleeding and/or NSAID-induced ulcers.[9] Sometimes, prokinetic drugs are administered along with PPIs. These drugs improve coordinated gastrointestinal movement and facilitate the passage of contents through the gastrointestinal tract by enhancing the strength and synchronization of gastrointestinal muscles.[3]

Given the growing number of diabetic patients who suffer from gastroparesis, it is essential to evaluate the clinical benefits and potential risks of pantoprazole therapy in this population. This questionnaire-based study aims to provide insights into pantoprazole's real-world effectiveness and safety in managing dyspepsia due to diabetic gastroparesis, thus guiding more tailored therapeutic strategies for last 10 patients treated by Health care providers (HCPs).

METHODS

Study design

This questionnaire-based study was designed to evaluate the real-world use of pantoprazole in managing dyspepsia in diabetic gastroparesis among HCPs across India between September 2024 to March 2025. Participation in the study was completely voluntary. All study-related information, including the questionnaire, was thoroughly explained to participants and verbal consent was obtained before participation. The study process, along with the data analysis, ensured the confidentiality and anonymity of the HCPs.

Study questionnaire

The study questionnaire was designed based on existing literature, clinical guidelines, and expert opinions. It consisted of 13 questions focusing on dyspepsia due to diabetic gastroparesis, duration, age, symptoms, glycemic control, patient response to treatment and ease of symptoms. The questionnaire focused on last 10 patients with dyspepsia due to diabetic gastroparesis, treated with pantoprazole. The study protocol was approved by the independent ethics committee (ACEAS-Independent Ethics Committee, Ahmedabad, Date of approval: 16 August 2024).

Data collection method

Participants in the study were provided with a concise overview of the study's nature and the process for completing the questionnaire. The questionnaire was given to the HCP either in person, via phone calls, or through online platforms, as per the HCP's convenience.

Data analysis

Responses to questions were entered into Microsoft excel. Descriptive analysis was performed and outcome was presented as percentages.

RESULTS

A total of 86 HCPs were included in this study. The highest percentage of HCPs (30.23%) reported duration of diabetes in patients greater than 10 years. A notable HCPs (27.91%) also noted patients within the 4-5 years range, suggesting early onset of gastroparesis-related dyspepsia symptoms.

The most common age group of patients experiencing dyspepsia due to diabetic gastroparesis was between 40-50 years and 50-60 years as per observed by 39.53% of HCPs each. A substantial majority of 89.53% HCPs reported patients had concomitant GERD. Only a small proportion (10.47%) of HCPs did not report concomitant GERD in patients. Abdominal discomfort was the most frequently reported symptom by 38.37% of HCPs among patients, followed by bloating, nausea and vomiting noted by 31.40% and 22.09% of HCPs, respectively.

When HCPs were asked about post-prandial fullness and early satiety in their last 10 patients, the largest proportion of HCPs (38.37%) experienced it at a frequency of 6 out of 10 patients. A significant number of HCPs (29.07%) reported symptoms in 5 out of 10 patients. Primarily, 38.37% of HCPs experienced poor glycemic control at a frequency of 5 out of 10 patients. An additional 26.14% of HCPS noted 6 out of 10 patients with poor glycemic control. When, HCPs were asked whether they attribute the poor glycemic control in these patients to diabetic gastroparesis, 83.72% HCP said yes, while 16.28% said no (Table 1).

Majority of 59.30% HCPs prescribed pantoprazole treatment for a duration of 4 weeks, while 15.12% and 19.77% HCPs prescribed for 2 and 3 weeks, respectively. A substantial majority of HCPs (95.35%) added a prokinetic to pantoprazole therapy. Domperidone was the most frequently chosen prokinetic by HCPs (52.33%), followed by itopride chosen by 44.19% of HCPs. The

largest proportion of HCPs (43.02%) reported symptom relief in 8 out of 10 patients, while 23.26% HCPs noted relief in <8 patients post pantoprazole administration. Nearly half (48.84%) of HCPs observed glycemic control improvement in fewer than 8 patients post treatment. Improvement in glycemic control for 8 out of 10 patients was observed by 24.42% of HCPs. Loose stools were the most commonly reported adverse effect of pantoprazole, experienced by 70.93% of patients (Table 2).

Table 1: Response of HCPs towards patient demographics and symptoms.

Questions and options	Response of HCPs (n=86) (%)
What was the duration of diabetes in these patients with dyspepsia due to diabetic gastroparesis?	
<4 years	13 (15.12)
4-5 years	24 (27.91)
5-7 years	14 (16.28)
7-10 years	9 (10.47)
>10 years	26 (30.23)
What was the most common age group of these patients with dyspepsia due to diabetic gastroparesis?	
30-40 years	11 (12.79)
40-50 years	34 (39.53)
50-60 years	34 (39.53)
>60 years	7 (8.14)
Did these patients have concomitant GERD?	
Yes	77 (89.53)
No	9 (10.47)
What were the key symptoms observed in these patients with dyspepsia?	
Abdominal discomfort	33 (38.37)
Bloating	27 (31.40)
Nausea and vomiting	19 (22.09)
Belching	6 (6.98)
Abdominal pain	1 (1.16)
How many of these patients had post-prandial fullness and early satiety?	
5/10 patients	25 (29.07)
6/10 patients	33 (38.37)
7/10 patients	14 (16.28)
>7/10 patients	14 (16.28)
How many of these patients had poor glycemic control?	
5/10 patients	33 (38.37)
6/10 patients	22 (25.58)
7/10 patients	17 (19.77)
>7/10 patients	14 (16.28)
Would you attribute the poor glycemic control in these patients to diabetic gastroparesis?	
Yes	72 (83.72)
No	14 (16.28)

Data represented as n (%), HCPs: health care providers; GERD: gastroesophageal reflux disease

Table 2: Response of HCPs towards prescription of treatment regime and patient response.

Questions and options	Response of HCPs (n=86)
What was the duration of treatment of pantoprazole in these patients?	
1 week	5 (5.81)
2 weeks	13 (15.12)
3 weeks	17 (19.77)
4 weeks	51 (59.30)
Did you add a prokinetic to pantoprazole to treat these patients?	
Yes	82 (95.35)
No	4 (4.65)
Which prokinetic drug did you add to pantoprazole?	
Domperidone	45 (52.33)

Continued.

Questions and options	Response of HCPs (n=86)
Itopride	38 (44.19)
Mosapride	3 (3.49)
After administration of pantoprazole, how many patients reported relief from dyspepsia?	
<8 patients	20 (23.26)
8/10	37 (43.02)
9/10	12 (13.95)
All patients	17 (19.77)
How many patients did glycemic control improve after treatment with pantoprazole?	
<8 patients	42 (48.84)
8/10	21 (24.42)
9/10	11 (12.79)
All patients	12 (13.95)
What are the most common adverse effects of pantoprazole reported in these patients?	
Abdominal pain	25 (29.07)
Loose stools	61 (70.93)
Data represented as n (%), HCPs, Health care providers	

Data represented as n (%), HCPs: health care providers

Half of the clinicians (50%) rated pantoprazole's efficacy as excellent, an additional substantial proportion (46.51%) rated efficacy as good. A majority of clinicians (58.14%) rated the safety profile of pantoprazole as excellent, while 39.53% rated safety as good. Adherence to treatment with pantoprazole in treating dyspepsia was rated excellent by 53.49% of HCPs, while 41.86% of HCPs rated it good (Figure 1).

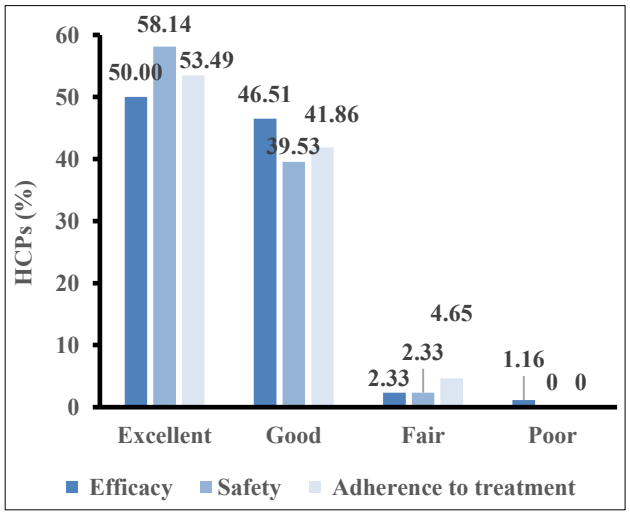

Figure 1: HCPs rating for efficacy, safety and adherence to treatment of pantoprazole in treating dyspepsia in patients with diabetic gastroparesis.

DISCUSSION

Given the growing number of diabetic patients who suffer from gastroparesis, it is essential to evaluate the clinical benefits and potential risks of pantoprazole therapy in this population. This study provides insights into pantoprazole and its real-world effectiveness and safety in managing diabetic gastroparesis.

The highest percentage of HCPs (30.23%) indicated that their patients had been living with diabetes for over 10 years, highlighting a notable prevalence of diabetic gastroparesis in individuals with long-term diabetes.[10] The most common age group of patients experiencing dyspepsia due to diabetic gastroparesis was between 40-50 years and 50-60 years this result was similar to study by Sato et al where they reported prevalence of GP in late 50–60 years of age.[1] Majority of HCPs (89.53%) reported that patients had concomitant GERD, underscoring a strong association between diabetic gastroparesis and GERD symptoms. Similar results in another study were observed, the incidence of gastroparesis in 100 patients with GERD showed 41% had delayed gastric emptying.[11]

Abdominal discomfort was the most frequently reported symptom by 38.37% of HCPs among patients, followed by bloating, nausea and vomiting, in a parallel study also abdominal pain was frequent symptom in patients with GP.[12] The prevalence of abdominal discomfort and bloating suggests these symptoms could serve as important diagnostic indicators for clinicians evaluating diabetic gastroparesis.

The majority of HCPs, approximately 67.44% experienced post-prandial fullness and early satiety symptoms at a moderate frequency in patients (5-6 out of 10 patients), suggesting commonality and significance in symptom management plans. A study by Parkman et al evaluated above symptoms has common and severe in 50-60% patients.[13]

A significant number of HCPs (64.51%) experienced poor glycemic control at a frequency of 5-6 out of 10 patients. Homko et al experienced same results where they found, GP has a significant impact on patients' perceived ability to self-manage and control their diabetes.[14] While most patients reported moderate glycemic control difficulties, the distribution emphasizes that continuous glycemic monitoring and proactive diabetes management should be

integral components of care plans for patients with diabetic gastroparesis.

Majority of 59.30% HCPs prescribed pantoprazole treatment for a duration of 4 weeks, reflecting a common clinical practice of extended treatment for symptom management in diabetic gastroparesis.[9]

A significant proportion of healthcare professionals (43.02%) reported symptom relief in 8 out of 10 patients following pantoprazole administration. This aligns with the results of the single arm pilot study, which demonstrated that the combination of pantoprazole and itopride led to significant improvements in various symptoms of diabetic gastroparesis, including nausea, bloating, and early satiety.[15]

Approximately 24.42% of clinicians observed improvement in glycemic control in 8 out of 10 patients' post-treatment. This is parallel with study findings of Ortiz et al where pantoprazole increased late and total insulin secretion and decreased HbA1c values in drug-naïve patients with type 2 diabetes mellitus.[16]

The combined ratings of "excellent" and "good" by 96.59% HCPs confirm pantoprazole as an effective and reliable treatment choice for managing dyspeptic symptoms in diabetic gastroparesis patients.

The limitation of this study includes a small sample size, which may limit the generalizability of the findings.

CONCLUSION

The present multicenter questionnaire based, clinical study evaluates the use of pantoprazole predominantly in combination with prokinetic agents in patients with dyspepsia due to diabetic gastroparesis revealed strong clinical, therapeutic, and patient-centric outcomes across India. Early patient recognition, targeted screening, clinician consensus on combination therapy, substantial symptom relief, improved glycemic control, and exceptional patient adherence highlight pantoprazole's overall positive clinical impact.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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