

# Epidemiology and Natural History of Gastroparesis



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## KEYWORDS

- Gastroparesis • Epidemiology • Quality of life • Natural history
- Diabetic gastroparesis • Idiopathic gastroparesis

## KEY POINTS

- Gastroparesis is a syndrome characterized by delayed gastric emptying and symptoms thereof in the absence of gastric outlet obstruction.
- Most studies on the epidemiology of gastroparesis have been conducted in selected case series rather than in the population at large.
- In the only community-based study, the age-adjusted prevalence of idiopathic gastroparesis per 100,000 persons was higher in women (37.8; 95% CI, 23.3–52.4) than men (9.6; 95% CI, 1.8–17.4).
- In the only community-based study of gastroparesis in diabetes mellitus (DM), the average cumulative incidence of symptoms and delayed gastric emptying over 10 years was higher in type 1 DM (5%) than in type 2 DM (1%) and controls (1%).
- In the United States, the incidence of hospitalizations related to gastroparesis increased substantially between 1995 and 2004, and particularly after 2000.

## INTRODUCTION

Gastroparesis is a syndrome characterized by delayed gastric emptying (GE) and symptoms thereof in the absence of gastric outlet obstruction. In diabetes mellitus (DM), delayed GE is often asymptomatic.<sup>1</sup> This term should be reserved for patients with delayed GE and upper gastrointestinal symptoms. DM and idiopathic disease are the 2 primary causes associated with gastroparesis. Only 2 studies have evaluated the epidemiology of gastroparesis in the population.<sup>2,3</sup> Even these studies are based on data collected from patients who presented for medical attention rather than a

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random sample of people in the community. Currently, GE can only be assessed with scintigraphy, which requires specialized laboratories and radiation exposure, limiting population-based studies of the epidemiology of gastroparesis. Hence, understanding of many facets of the epidemiology of gastroparesis is primarily based on case series or hospital-based databases rather than on the population. These studies suggest that gastroparesis is not uncommon and can impair quality of life. The incidence of hospitalizations associated with a diagnosis of gastroparesis has increased considerably since 2000.<sup>4</sup>

Several organic diseases affect gastric neuromuscular functions through causing an extrinsic or enteric neuropathy or a myopathy. Among patients who do not have an underlying disorder that is known to be associated with gastroparesis, the pathogenesis of gastroparesis is poorly understood.

## PREVALENCE AND INCIDENCE

Only 1 study on the epidemiology of idiopathic gastroparesis in the population has been published.<sup>2</sup> That study, which was conducted in the Rochester Epidemiology Project, defined gastroparesis as definite (ie, delayed GE according to standard scintigraphy and typical symptoms for >3 months), probable (ie, typical symptoms and food retention on endoscopy or upper gastrointestinal study), and possible (ie, typical symptoms alone or delayed GE according to scintigraphy without gastrointestinal symptoms). A total of 83 patients had definite gastroparesis, 127 had definite or probable, and 222 had any of the 3 definitions. On January 1, 2007, the age-adjusted prevalence of definite gastroparesis per 100,000 persons was approximately 4-fold higher in women (37.8; 95% CI, 23.3–52.4) than in men (9.6; 95% CI, 1.8–17.4). Likewise, the age-adjusted incidence per 100,000 person-years of definite gastroparesis for 1996 through 2006 was approximately 4-fold higher in women (9.8; 95% CI, 7.5–12.1) than in men (2.4; 95% CI, 1.2–3.8).

Earlier reports from tertiary referral centers observed that up to 60% of patients with long-standing type 1 DM (T1DM) and gastrointestinal symptoms had diabetic gastroparesis.<sup>5,6</sup> However, these studies predated the routine use of intensive insulin therapy for T1DM.

More recently, population-based studies of gastrointestinal symptoms in DM have been based on symptoms alone or symptoms and delayed GE. Compared with the studies in selected populations mentioned previously, the cumulative incidence of diabetic gastroparesis among patients with DM in the community is lower. In the only community-based study from Olmsted County, MN, the cumulative incidence of symptoms and delayed GE over 10 years was 5% in T1DM (hazard ratio [HR], 33; 95% CI, 4.0, 274; adjusted for age and gender vs controls), 1% in type 2 DM (T2DM) (HR, 7.5; 95% CI, 0.8, 68; adjusted for age and gender vs controls) and 1% in controls (**Table 1**).<sup>3</sup> The risk of gastroparesis in T1DM was significantly greater than in T2DM (HR, 4.4; 95% CI, 1.1, 17). Gastroparesis was documented by physician diagnosis, evaluating GE with scintigraphy, or symptoms and retained food at endoscopy. Because gastroparesis was identified only in people who presented for care, people in whom GE was not evaluated may not have been identified. Hence, this study assessed the cumulative incidence of diabetic gastroparesis (over 10 years) rather than the prevalence of diabetic gastroparesis.

Several studies have evaluated the epidemiology of upper gastrointestinal symptoms but not GE among people with diabetes in the community. In most community-based studies, the prevalence of gastrointestinal symptoms was not significantly higher in people with diabetes than in asymptomatic controls. In the

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