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REVIEW ARTICLE

Functional dyspepsia, definition and epidemiology

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Abstract

Functional dyspepsia is a medical condition that significantly affects an individual's daily activities and is characterized by the presence of one or more of the following symptoms: postprandial fullness, early satiation, epigastric pain, and epigastric burning, in the absence of organic, systemic, and metabolic disease. It is a very common condition, with a global prevalence of 7.2%. In Latin American countries, its prevalence ranges from 6.6% to 10.6%. There are two subgroups of functional dyspepsia: postprandial distress syndrome and epigastric pain syndrome; however, overlap of both occurs in up to one-third of cases. These subgroups have different pathophysiological mechanisms and treatment responses. Functional dyspepsia is associated with poorer quality of life and has a significant impact on healthcare costs.

Keywords: Functional dyspepsia. Postprandial distress syndrome. Epigastric pain syndrome. Prevalence. Diagnosis.

Definición y aspectos epidemiológicos de la dispepsia funcional

Resumen

La dispepsia funcional es una condición médica que afecta significativamente las actividades habituales de un individuo y se caracteriza por la presencia de uno o más de los siguientes síntomas: plenitud posprandial, saciedad temprana, dolor epigástrico y ardor epigástrico, en ausencia de enfermedad orgánica, sistémica y metabólica. Es una afección muy frecuente, con una prevalencia global del 7.2%. En los países latinoamericanos, su prevalencia oscila entre el 6.6% y el 10.6%. Existen dos subgrupos de dispepsia funcional: el síndrome de distrés posprandial y el síndrome de dolor epigástrico; sin embargo, existe sobreposición de ambos hasta en una tercera parte de los casos. Estos subgrupos tienen mecanismos fisiopatológicos y respuesta al tratamiento diferentes. La dispepsia funcional se asocia a una peor calidad de vida y tiene un impacto significativo en los costos sanitarios.

Palabras clave: Dispepsia funcional. Síndrome de distrés posprandial. Síndrome de dolor epigástrico. Prevalencia. Diagnóstico.

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Definition and diagnostic criteria

In May 2016, the Rome Foundation (an international group of experts) published a supplement in the journal *Gastroenterology* dedicated to functional gastrointestinal disorders, which from that moment were redefined as disorders of gut-brain interaction. That supplement presented the latest update of the Rome criteria: the Rome IV criteria, which included eight categories. Category B corresponded to gastroduodenal disorders and included functional dyspepsia (FD), which was defined as a medical condition that significantly affects an individual's usual activities and is characterized by the presence of one or more of the following symptoms: postprandial fullness, early satiation, epigastric pain, and epigastric burning, in the absence of organic, systemic, or metabolic disease[1,2].

In this update of the Rome criteria for dyspepsia, emphasis is placed on the two subgroups that comprise it: postprandial distress syndrome (PDS) and epigastric pain syndrome (EPS). It is suggested to distinguish between them because they not only appear to have different pathophysiological mechanisms, but also different treatments. PDS refers to symptoms related to food ingestion, primarily postprandial fullness and early satiation, although nausea, pain, and burning may also be present. EPS, on the other hand, is not necessarily related to food consumption, may occur during fasting, and may even improve with food intake. The presence of epigastric bloating, belching, and nausea, although not considered cardinal symptoms of dyspepsia, may be present and are considered complementary symptoms[1]. It should be noted that overlap between the two types of dyspepsia may occur in 16-35% of patients, and apparently this group has the greatest impairment of pathophysiological mechanisms[3,4].

The next Rome diagnostic criteria are scheduled for publication in 2026. It is possible that the distinction between these two subgroups of dyspepsia will be even greater and that underlying pathophysiological markers will be included to allow for targeted treatment rather than solely symptom-based management, and to identify groups that respond to specific interventions[5]. The current diagnostic criteria are described in Table 1.

As can be noted, in these criteria, to establish the diagnosis of FD, an evaluation is required to rule out structural abnormalities, making endoscopy essential. However, because it is an invasive method that increases healthcare costs, it is only justified under certain circumstances. The term uninvestigated dyspepsia refers to cases in which the patient meets the diagnostic criteria but has not undergone endoscopy, and management strategies exist for these cases. Approximately 80% of patients do not present endoscopic abnormalities that justify their symptoms and are classified as FD[6]. The term organic dyspepsia or secondary dyspepsia is used when structural abnormalities that justify the symptoms are found, such as peptic ulcer disease or cancer[1].

The test-and-treat strategy refers to the use of non-invasive tests to detect *Helicobacter pylori* and treat it if the results are positive. This strategy is recommended by most clinical practice guidelines for patients with uninvestigated dyspepsia for two reasons. First, this strategy would cure the majority of patients with *H. pylori*-associated peptic ulcer. Second, even in the absence of ulcer disease, eradication therapy appears to produce sustained improvement in a subset of patients. This may be due to the symptoms being induced by changes generated by the presence of the bacterium in the stomach or by the effect of antibiotic use, which extends beyond the mere eradication of *H. pylori*. In these cases, it is considered to be secondary dyspepsia associated with *H. pylori*. Some authors consider that the diagnosis of FD should only be established in cases where there is persistence or recurrence of symptoms following eradication[1,7].

Global and Latin American prevalence

In 2021, the Rome Foundation published the results of a global epidemiological study that aimed to determine the worldwide prevalence and impact of disorders of gut-brain interaction. 33 countries from all continents participated. In addition to the Rome IV diagnostic criteria, several questionnaires were applied to identify variables associated with disorders of gut-brain interaction. In 24 countries, the surveys were conducted online, in seven through home interviews, and in three both methods were used. FD was the most frequent gastroduodenal disorder, with a prevalence of 7.2% (7.1-7.4%) in the Internet-based surveys and 4.8% (4.5-5.1%) in the household interviews. PDS was the most frequent subtype and was present in 66% of the Internet-based surveys and in 59.5% of in-home interviews. EPS was present in 15.3% and 28.1% of cases, and the overlap of PDS and EPS in 18.1% and 12.4%, respectively. The average rate of FD was higher in women than in men, with an odds ratio (OR) of 1.5 (1.5-1.7). Both subtypes of FD were more frequent in younger individuals and the rates decreased with age[8]. 26% of individuals who met criteria for FD also had

Table 1. Rome IV diagnostic criteria – Functional Dyspepsia

Entity	Diagnostic criteria	Supporting notes/Data
Functional dyspepsia (FD)	One or more of the following: Bothersome postprandial fullness Early satiation Epigastric pain Epigastric burning No evidence of structural disease to explain the symptoms (including endoscopy) Symptoms present for ≥ 3 months, with onset ≥ 6 months before diagnosis	For classification: Postprandial distress syndrome (PDS) Epigastric pain syndrome (EPS)
B1a. Postprandial distress syndrome (PDS)	At least 1 of the following ≥ 3 days/week: Bothersome postprandial fullness (interferes with usual activities) Bothersome early satiation (prevents completion of a regular-sized meal) No organic, systemic, or metabolic disease to explain it Symptoms present for the last 3 months, with onset ≥ 6 months prior	The following may coexist: epigastric pain/burning, epigastric distension, excessive belching, nausea Heartburn is not a dyspeptic symptom (may coexist) Symptoms relieved by defecation or flatulence are not FD May coexist with GERD or IBS
B1b. Epigastric pain syndrome (EPS)	At least 1 of the following ≥ 1 day/week: Bothersome epigastric pain (interferes with usual activities) Bothersome epigastric burning (interferes with usual activities) No structural disease to explain it (including endoscopy) Symptoms present for the last 3 months, with onset ≥ 6 months prior	Pain may be induced or alleviated by food, but it can occur during fasting. The following may coexist: epigastric distention, belching, nausea. Heartburn is not a dyspeptic symptom (although it may coexist). The pain must not meet criteria for biliary pain Other symptoms (GERD, IBS) may coexist

Translated from Stanghellini et al.[1].

criteria for irritable bowel syndrome, 9% for functional heartburn, and 7% for chronic nausea and vomiting. Meeting criteria for FD was significantly associated with an increased prevalence of anxiety and depression, and with a lower quality of life. Fulfilling criteria for FD was also associated with a more frequent diagnosis of fibromyalgia and with a higher frequency of cholecystectomy, hysterectomy, and appendectomy[9].

Four Latin American countries participated in the Rome Foundation's global epidemiological study. Of these, Brazil presented the highest prevalence at 10.6% (9.2-11.9%), followed by Colombia with 7.2% (6-8.3%), Argentina with 6.9% (5.8-8.0%), and Mexico with 6.6% (5.5-7.7%). In all four countries, the most frequent subtype was PDS[10].

The Rome Foundation study is particularly valuable because during the same time period, identical surveys were conducted using the same methodology across different regions of the world. Although differences were found between countries, these were not as pronounced as those reported in other studies and meta-analyses.

On the other hand, it should be considered that, since these are Internet-based surveys or those administered during home visits, the reported prevalence actually correspond to uninvestigated dyspepsia, as no studies were conducted to rule out organic pathology. A meta-analysis specifically addressed the prevalence and risk factors of uninvestigated dyspepsia[11]. In a total of 103 evaluated studies that reported the prevalence of uninvestigated dyspepsia in 100 different populations and included more than 312,000 individuals, the pooled prevalence was 20.8% (95% confidence interval [95% CI]: 17.8-23.9%). Prevalences ranged from 1.8% to 57.0%, depending on the country and the criteria used; they were lower when Rome III criteria were employed and higher when broader definitions of dyspepsia were considered[11].

Risk factors

In the meta-analysis by Ford et al.[11], which aimed to establish the global prevalence and risk factors for uninvestigated dyspepsia, the prevalence was higher in women (OR: 1.24; 95% CI: 1.13-1.36), smokers (OR: 1.25; 95% CI: 1.12-1.40), nonsteroidal anti-inflammatory drug users (OR: 1.59; 95% CI: 1.27-1.99), and individuals with positive *H. pylori* testing (OR: 1.18; 95% CI: 1.04-1.33). In a longitudinal study, a high body mass index was an independent predictor for the development of FD. Psychiatric comorbidity appears to be a

relevant risk factor. A Swedish study showed that the likelihood of developing FD was eight times higher in individuals with anxiety than in individuals without anxiety. Two Australian longitudinal studies demonstrated a bidirectional relationship between the gut and the brain: patients with FD at baseline were more likely to develop anxiety and depression during follow-up than those without FD. Conversely, individuals with anxiety and depression at baseline were more likely to develop FD than those without anxiety and depression. Another meta-analysis that included 19 studies showed that the likelihood of developing FD was three times higher in individuals who experienced a gastrointestinal infection compared to those who did not[6]. Finally, a meta-analysis of 16 studies showed that dietary consumption of wheat and fats was associated with the presence of dyspeptic symptoms[12].

Impact on quality of life and healthcare costs

An epidemiological study conducted via the Internet in the general English-speaking population of the United States of America, Canada, and the United Kingdom identified prevalence rates of FD of 12%, 8%, and 8%, respectively, from a population of 6,300 respondents. This study also showed that individuals with FD had greater health deterioration and greater use of health services[13]. These results are consistent with those reported in the global study by the Rome Foundation, in which individuals who met criteria for FD had significantly lower physical and mental quality of life scores on the PROMIS Global-10 than the rest of the population[9].

The economic impact of FD is higher in the United States of America than in Asia due to direct and indirect costs: in the United States of America, the estimated expenditure is $80,000 per 1,000 persons, compared to $35,000 per 1,000 persons in Asia[6].

Conclusions

FD is a condition characterized by the presence of one or more of the following symptoms: postprandial fullness, early satiety, epigastric pain, and epigastric burning, in the absence of organic disease. It is a common condition, with a global prevalence of 7.2%, and significantly impacts the quality of life of those who suffer from it and healthcare costs. It is important to distinguish between its two subgroups, not only because their pathophysiological mechanisms are different, but also because treatment responses differ. Currently, the Rome IV criteria are used for its diagnosis; although performing an endoscopy is essential to rule out structural disease, it is only indicated in certain cases. For uninvestigated dyspepsia, guidelines propose management strategies.

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Conflicts of interest

The author has been a speaker for Laboratorios Chinoin, Europharma, and M8.

Ethical considerations

Protection of human and animal. The author declares that no experiments were performed on human subjects or animals for this research.

Confidentiality, informed consent, and ethical approval. The study does not involve patient personal data nor require ethical approval. SAGER guidelines do not apply.

Statement on the use of artificial intelligence. The author declares that no generative artificial intelligence was used in the writing of this manuscript.

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