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Do Functional Gastrointestinal Disorders Affect Growth and Nutrition?

Functional gastrointestinal disorders (FGIDs) are common in children of all ages and dominate pediatric outpatient practice. Symptoms in FGIDs cannot be attributed to structural or biochemical abnormalities; thus, diagnosis relies solely on history, physical examination, and symptom-based criteria.[1] The prevalence of FGIDs is increasing in the pediatric population, with infant regurgitation the most common form in infants and functional constipation the most common among toddlers, children, and adolescents.[2] More than one-half of new pediatric patients in gastrointestinal clinics meet criteria for at least 1 FGID.[3]

See related article, p 171

Inflammatory gastrointestinal disorders, such as Crohn's disease, ulcerative colitis, and celiac disease, are well known to affect nutrition and growth in children[4]; however, few reports exist on FGIDs, which are generally considered benign disorders and are rarely associated with tissue damage or disease. The exceptions are diarrhea in toddlers, which causes weight loss when mismanaged with elimination diets,[5] and rumination, which can lead to dental erosions.[6] In their article in this volume of *The Journal*, Pawłowska et al[7] describe nutritional abnormalities in children with FGIDs.

The current literature on nutrition in patients with FGIDs is sparse and controversial, and focuses on body mass index (BMI). Of the various FGIDs, no association has been found between functional constipation and BMI in adults.[8-10] Functional abdominal pain (FAP), especially accompanied by nausea and vomiting, is more common in patients who are obese.[10,11] A meta-analysis reported increasing BMI in adults with upper abdominal pain but not with lower abdominal pain.[8] The prevalence of irritable bowel syndrome (IBS) in patients who are overweight or obese is variable. Most studies report that IBS is more common in adults with higher BMI and is associated with more intense symptoms in patients with morbid obesity.[9,10] The proposed mechanisms include increased colonic transit,

BMI	Body mass index
FAP	Functional abdominal pain
FGID	Functional gastrointestinal disorder
IBS	Irritable bowel syndrome

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stool frequency, stool bile salt concentration, and bile salt sensitivity in patients who are overweight or obese with IBS.[10] However, a study of a small cohort of adult males showed a protective effect of BMI on IBS,[11] whereas another study found no association.[12] In pediatrics, FAP syndrome and IBS are more prevalent in children who are obese or overweight,[13,14] but a meta-analysis revealed strongly conflicting data for functional constipation.[15] Several studies showed higher obesity rates in children with constipation,[14-16] wheereas others found no difference in the prevalence of functional constipation across different BMI groups.[17-19]

The authors provide a brief, concise overview of body composition and linear growth proportions in a cohort of children with functional constipation, IBS, and FAP. They describe anthropometric measurements, including skinfold thickness indices, trunk, and limb length, in a carefully selected sample. They thoughtfully chose their reference population to include international criteria for body weight, and use reference charts that include a wide age range and a variety of somatic measurements. Similar to previous literature, they find excessive body weight to be most common in children with IBS. It is possible that these children may have disordered eating leading to obesity. In contrast to previous studies, the authors report the highest rates of underweight in children with FAP, followed by those with functional constipation. It is not uncommon to find pain and nausea affecting appetite in children with FAP, which could lead to undernutrition. Similarly, in constipated children, fecal impaction and presence of a fecal mass in the rectum may cause abdominal fullness, nausea, and decreased appetite. Short stature in a patient with refractory constipation usually prompts an investigation for Hirschsprung disease, celiac disease, or hypothyroidism. The authors present new and provocative data suggesting that chronic constipation itself may result in poor growth and stunting.

We congratulate Pawłowska et al for raising awareness among pediatricians toward the risk of malnutrition in children with FGIDs. We hope this article will encourage future efforts toward larger studies with long-term outcomes that also assess for nutritional abnormalities in other childhood FGIDs, such as functional nausea and vomiting, functional diarrhea, subtypes of functional dyspepsia, and IBS. Although intestinal barrier dysfunction, dysmotility,[20] and abnormalities in bile acid signaling pathways[21] have been implicated, the pathophysiology of nutritional disturbances in FGIDs remains unclear and merits further investigation. ■

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Functional gastrointestinal disorders (FGD) are common disorders characterized by persistent and recurring gastrointestinal symptoms due to abnormal functioning of the enteric system and where no structural (e.g., tumors or masses) or organic (e.g., inflammation or ulcers) pathology is identified. From: Travel Medicine (Fourth Edition), 2019. Functional gastrointestinal disorders (FGID), also known as disorders of gutâ€“brain interaction, include a number of separate idiopathic disorders which affect different parts of the gastrointestinal tract and involve visceral hypersensitivity and motility disturbances. Terms such as functional colonic disease (or functional bowel disorder) refer in medicine to a group of bowel disorders which are characterised by chronic abdominal complaints without a structural or biochemical cause that could explain Functional Bowel Disorders: Definition and Impact. A functional gastrointestinal disorder comprises symptoms arising in the mid or lower gastrointestinal tract that are not attributable to anatomic or biochemical defects.[4,5,6] The symptoms include abdominal pain, early satiety, nausea, bloating, distention, and various symptoms of disordered defecation. The 3 most common functional bowel disorders are irritable bowel syndrome (IBS), constipation, and functional dyspepsia. IBS, the most common functional bowel disorder, is characterized by chronic or recurrent symptoms of