

# Low FODMAP diets—Boon or bane for individuals with GI disorders

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The prebiotic concept speculates that consuming non-digestible carbohydrates can positively affect the human gut microbiota, providing favorable health benefits (Vandeputte & Joossens, 2020). Multiple studies have corroborated these findings, reporting a notable increase in the numbers of bacteria from the families *Bifidobacteriaceae* and *Lactobacillaceae* (Mora-Flores et al., 2023; Vandeputte & Joossens, 2020). These bacteria work by either fermenting the prebiotic components in the diet (primary degraders) or stimulating the growth of other bacterial species through the metabolization of prebiotics, thereby generating viable substrates by way of cross-feeding (You et al., 2022). Consequently, the consumption of prebiotics imparts various health benefits via multiple mechanisms, for instance, the production of short-chain fatty acids (SCFAs) (Sanders et al., 2019) and the stimulation of the microbiome resulting in an increase in the population of favorable bacteria, or a reduction in the numbers of unfavorable bacteria (such as *Akkermansia muciniphila*, *Faecalibacterium prausnitzii*) thereof (Verhoog et al., 2019). The dysbiotic microbiomes of diseased individuals, however, present a considerably different challenge altogether, stemming from the high likelihood of side effects (water retention and gas production) induced by the fermentation of non-digestible carbohydrates at various sites in the small intestine and colon and that in turn can interfere with the symptoms (e.g., bloating, gas, abdominal pain, and diarrhea) commonly attributable to chronic gastrointestinal (GI) conditions, such as irritable bowel disorder (IBD), and irritable bowel syndrome (IBS) (Halmos & Gibson, 2019).

Therefore, diets low in fermentable carbohydrates emerged as a viable alternative support mechanism for patients with GI disorders such as IBS. Termed the low fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAP) diet, the support for the strategy was reinforced by the observed symptom relief in GI disorder patients (Bellini et al., 2020), with many patients reporting improvements within 2–4 weeks of the dietary changes (Morariu et al., 2023), as well as a marked reduction in GI distress, and consequently, a significant improvement in the quality of life (Hill et al., 2017). Moreover, low-FODMAP diets involve a structured elimination and reintroduction process. They can be personalized from the perspective of individual tolerances, aiding the patients in effectively managing the symptoms through

identifying trigger foods and a balanced intake (Bertin et al., 2024). Furthermore, as patients are encouraged to seek professional advice from healthcare experts, guidance and support can help prevent any adverse health outcomes commonly attributed to dietary limitations (Morariu et al., 2023).

However, despite their popularity for obvious beneficial health aspects, low FODMAP diets are not without controversies, drawbacks, and risk factors. Studies indicate that long-term and strict adherence to these diets can manifest in nutritional deficiencies, particularly fiber, magnesium, and calcium since high FODMAP diets are rich in these minerals. The restrictive nature of these diets has also been shown to adversely impact individuals susceptible to disordered eating behaviors, for instance, by inducing increased anxiety levels centered around food choices and the inherent fear of triggering the symptoms (Barakat et al., 2023). Some research studies have also questioned the long-term sustainability of low FODMAP diets, as prolonged restriction of FODMAPs in diets may have negative implications for the diversity of gut microbiota, in particular, a marked decline in the beneficial bacterial populations pivotal to the maintenance of intestinal integrity, and prevention of inflammation (Lomer, 2024). Variations in efficacy are another factor that should be taken into account when opting for low FODMAP diets, as the individual response in the context of symptom relief may vary, and various studies have reported, when compared to earlier research, lower-than-expected efficacy rates (Jent et al., 2023). The popularity of low FODMAP diets could translate into increased adoption. However, provided that healthcare expert guidance is crucial in this regard, the likelihood of misapplication on the part of the individuals will increase significantly if they decide to do so without expert advice. Such misinterpretations can lead to unwarranted restrictions or misidentification of food triggers (Wilson et al., 2021).

Despite gaining significant recognition as a feasible first-line therapeutic strategy, as well as a second-line treatment (after the failure of the initial dietary advice) for individuals with GI disorders, particularly IBS, the concerns regarding nutritional adequacy remain in the case of long-term adoption of the low FODMAP diet. Therefore, the future success and acceptance of this dietary intervention in clinical practice depends on several factors. Foremost of these is the need for comprehensive and long-term investigative studies to evaluate the sustained efficacy and safety of

these diets, including, but not limited to, the adoption impact on nutritional adequacy, quality of life, and long-term utilization in healthcare. Future research should also be directed at the personalization aspect of the treatment, whereby the focus should be on identifying the predictors/biomarkers of individual responses to the low FODMAP diet, which could aid in more effective tailoring of dietary interventions. Another key factor that should be explored is the education and support in the context of both healthcare providers and patients, whereby the former should be trained for the effective implementation of low FODMAP dietary strategies, while the latter should be provided with standardized educational resources for ensuring greater understanding and adherence. Continued research, therefore, will help refine this dietary strategy and ensure that patients with various GI disorders receive treatments based on holistic management principles.

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