

Review Article

Low-FODMAP Diet Versus Standard Dietary Advice in Irritable Bowel Syndrome: A Randomized Controlled Trial

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Abstract

Background: A diet low in fermentable oligo-, di-, monosaccharides and polyols (FODMAPs) is widely recommended for irritable bowel syndrome (IBS), but its benefit relative to standard first-line dietary advice remains debated.

Objective: To synthesise trial and review evidence comparing low-FODMAP diet with standard dietary advice for symptom control, reintroduction/adherence, microbiota effects, and IBS subtypes.

Methods: Narrative review of published randomised trials, systematic reviews/meta-analyses, and mechanistic studies.

Findings: Head-to-head trials and pooled meta-analyses show low-FODMAP diet and standard dietary advice produce broadly equivalent global symptom response (50% vs 46% responders in one trial; 52% vs 41% in another), though low-FODMAP more consistently improves abdominal pain. Reintroduction restores tolerated FODMAPs and supports adherence, while restriction transiently reduces luminal Bifidobacteria.

Conclusions: Both approaches are effective first-line options; standard advice first, with low-FODMAP reserved for non-responders and followed by structured reintroduction, is the most evidence-consistent strategy.

Keywords: Low-FODMAP diet; Irritable bowel syndrome; Dietary advice; Gut microbiota; Symptom severity

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Introduction

Irritable bowel syndrome (IBS) affects an estimated 4-5% of adults worldwide by Rome IV criteria and remains a leading cause of gastroenterology referral and reduced quality of life [1]. The low-FODMAP diet was developed from the observation that poorly absorbed short-chain fermentable carbohydrates - fructans, galacto-oligosaccharides, lactose, excess fructose, and polyols - are osmotically active and rapidly fermented, distending the small and large bowel and provoking pain, bloating, and altered transit in visceral-hypersensitive

patients [2]. Standard, first-line dietary advice, exemplified by UK National Institute for Health and Care Excellence (NICE) and British Dietetic Association (BDA) guidance, instead targets meal regularity, fluid and alcohol intake, caffeine, fat, insoluble fibre, and identifiable trigger foods, without the systematic three-phase restriction-reintroduction-personalisation structure of the low-FODMAP approach [3]. Both strategies are now embedded in international dietetic practice, yet clinicians and patients continue to ask whether the more restrictive, dietitian-intensive low-FODMAP diet offers a genuine incremental benefit over simpler first-line advice, or whether it should be reserved for those who fail initial management.

Standard dietary advice has the practical advantage of being deliverable by a general practitioner, nurse, or single dietetic consultation, whereas the full low-FODMAP pathway - restriction, structured reintroduction, and personalisation - typically requires several dietitian appointments and sustained patient engagement, resources that are not uniformly available even in well-resourced health systems [3]. Understanding whether the additional complexity of low-FODMAP diet translates into additional clinical benefit, and for which patients and symptom domains, is therefore a question of health-service efficiency as much as of physiology.

This narrative review synthesises randomised trials directly comparing the two approaches, complemented by systematic reviews, meta-analyses, and mechanistic studies of gut microbiota, to characterise comparative efficacy on global and individual symptoms, the reintroduction phase and long-term adherence, and differential effects across IBS subtypes (constipation-, diarrhoea-, and mixed-predominant).

Methods

This is a narrative review, not a report of a single

unpublished trial. Relevant publications were identified through PubMed, Europe PMC, and Crossref, using combinations of "low-FODMAP", "FODMAP", "irritable bowel syndrome", "traditional dietary advice", "NICE guidelines", "reintroduction", "microbiota", and "randomised controlled trial". Priority was given to head-to-head randomised trials, systematic reviews and meta-analyses, Rome Foundation and BDA/NICE guideline documents, and mechanistic studies of the colonic microenvironment. Each reference was individually verified against Crossref and Europe PMC records for correct authorship, journal, volume, and pagination before inclusion; findings and statistics reported below are drawn directly from the cited publications.

Symptom Control: Low-FODMAP Diet versus Standard Dietary Advice

A controlled feeding trial first demonstrated that a diet low in FODMAPs reduces overall gastrointestinal symptom scores significantly more than a typical Western diet in IBS patients studied under strict dietary control [4], providing the efficacy signal that subsequent pragmatic, dietitian-delivered trials sought to test against standard care. The pivotal Swedish trial randomised 75 IBS patients to a 4-week low-FODMAP diet or traditional dietary advice based on NICE-equivalent guidance; both groups showed highly significant reductions in IBS Severity Scoring System (IBS-SSS) scores from baseline ($P < 0.0001$ each), the validated instrument used across nearly all trials discussed here [5], with no significant between-group difference ($P = 0.62$), and near-identical responder rates of 50% (low-FODMAP) versus 46% (traditional advice) achieving a ≥ 50 -point IBS-SSS reduction [6] (Figure 1). A US trial in diarrhoea-predominant IBS similarly found no significant difference in the proportion reporting adequate relief (52% low-FODMAP vs 41% modified-NICE, $P = 0.31$), yet low-FODMAP produced

significantly more abdominal-pain responders (51% vs 23%, $P = 0.008$) and greater reductions in bloating, stool consistency, frequency, and urgency [7]. A three-arm UK trial comparing traditional dietary advice, low-FODMAP, and gluten-free diets in non-constipated IBS likewise found comparable global response across all three, with traditional advice rated most acceptable and least burdensome by patients [8]. The Swedish CARIBS trial extended this comparison to a low-carbohydrate diet and pharmacological therapy, finding low-FODMAP-plus-traditional-advice produced symptom reductions comparable to, and in some measures exceeding, drug treatment [9]. Pooled evidence across randomised trials confirms this pattern: meta-analyses report that low-FODMAP diet reduces IBS-SSS and improves quality of life versus habitual or comparator diets [10,11,12], a synthesis reinforced by a gluten-free-diet comparison meta-analysis showing FODMAP restriction, not gluten withdrawal per se, drives symptom improvement in self-reported gluten-sensitive patients [13,14]. A recent network meta-analysis ranked low-FODMAP diet among the most effective dietary interventions for global IBS symptoms, alongside traditional dietary advice, with overlapping confidence intervals between the two [15].

Table 1: Selected randomised controlled trials comparing low-FODMAP diet with standard/traditional dietary advice in IBS [6,7,8,9].

Study	Comparison	Design	Duration	Key outcome
Böhn 2015	Low-FODMAP vs traditional advice	Multi-centre RCT	4 weeks	Equivalent IBS-SSS reduction; 50% vs 46% responders
Eswaran 2016	Low-FODMAP vs modified NICE	RCT (IBS-D)	4 weeks	Equivalent adequate relief; low-FODMAP better for abdominal pain
Rej 2022	Traditional advice vs low-FODMAP vs gluten-free	3-arm RCT	4 weeks	Comparable response; traditional advice most acceptable

Study	Comparison	Design	Durati on	Key outcome
Nybacka (CARIBS) 2024	Low-FODMA P+advice vs low-carbohydrate vs drugs	Single-blind RCT	4 weeks	Diet arms comparable to, or exceeding, drug therapy

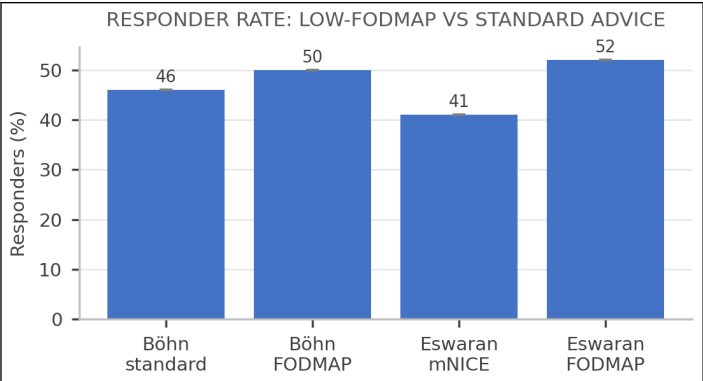


Figure 1: Global responder rates for standard/traditional dietary advice versus low-FODMAP diet in two head-to-head randomised trials: a 4-week Swedish trial using a ≥ 50 -point IBS-SSS reduction threshold [6], and a US diarrhoea-predominant IBS trial using adequate relief as the primary endpoint [7]. Neither trial found a statistically significant between-group difference in global response.

Comparisons with Other First-Line and Alternative Dietary Therapies

Beyond standard dietary advice, low-FODMAP diet has been compared against gut-directed hypnotherapy, itself an established non-dietary first-line option: a randomised trial found equivalent global symptom improvement between hypnotherapy and low-FODMAP diet, supporting a stepped, patient-preference-guided approach to first-line IBS management [16]. Collectively, these comparative data indicate that the incremental benefit of low-FODMAP diet over standard dietary advice is modest and concentrated in specific symptom domains - notably abdominal pain and bloating - rather than in overall responder rate, a distinction with direct implications for treatment sequencing and resource allocation (Table 1) (Figure 2).

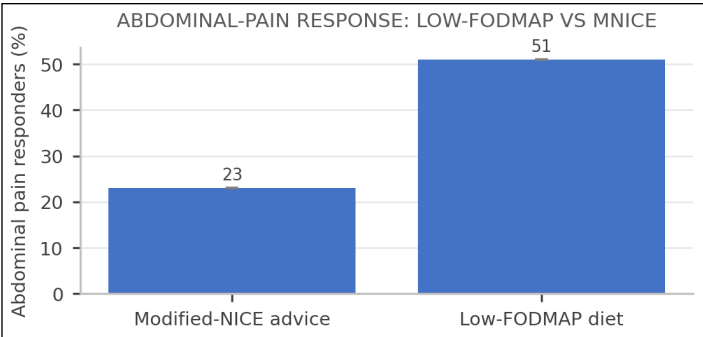


Figure 2: Abdominal-pain responder rate for modified-NICE (standard) dietary advice versus low-FODMAP diet in diarrhoea-predominant IBS, illustrating a symptom-domain-specific advantage for low-FODMAP diet despite equivalent global response rates [7].

Reintroduction and Long-Term Adherence

The low-FODMAP diet is intended as a short-term (2-6 week) restriction followed by systematic reintroduction and personalisation, yet many patients remain on strict restriction beyond this window without formal food-challenge testing [17]. A blinded, randomised reintroduction trial demonstrated that structured food-based FODMAP challenges after restriction reliably identify individual symptom triggers, allowing most patients to liberalise their diet substantially while maintaining control [18]. Long-term UK follow-up (median 16 months) of patients taught the full three-phase approach found sustained symptom improvement, dietary liberalisation relative to the strict restriction phase, and reduced healthcare utilisation, supporting personalisation as durable rather than merely short-term [19]. A separate long-term reintroduction study found that most patients tolerated reintroduced FODMAPs without symptom recurrence, and long-term IBS-SSS improvement was maintained a median of 16 months after initial restriction [20]. A systematic review and meta-analysis of long-term outcomes similarly concluded that personalised, reintroduction-phase low-FODMAP diet maintains symptom control and quality-of-life gains beyond the initial restriction period, without evidence of nutritional compromise when

dietitian-supervised [21] (Table 2). These findings argue against indefinite blanket restriction and for structured dietetic follow-through as integral to any low-FODMAP prescription.

Table 2: Selected systematic reviews and meta-analyses of low-FODMAP diet efficacy and long-term outcomes in IBS [10,11,12,13,15,21].			
Review	Scope	Studies pooled	Key conclusion
Marsh 2016	Low-FODMAP vs comparator diets	Systematic review/meta-analysis	Significant symptom and quality-of-life improvement
Altobelli 2017	Low-FODMAP diet efficacy	Meta-analysis	Significant reduction in overall IBS symptoms
van Lanen 2021	Low-FODMAP diet in adult IBS	12 RCTs	Moderate-to-large reduction in symptom severity
Dionne 2018	Gluten-free vs low-FODMAP diet	Meta-analysis	FODMAP restriction, not gluten withdrawal, drives benefit
Cuffe/For d 2025	Network meta-analysis, dietary interventions	Multiple RCTs	Low-FODMAP and traditional advice both highly ranked
Pouladi 2025	Long-term low-FODMAP diet outcomes	Systematic review/meta-analysis	Sustained symptom control after reintroduction/personalisation

Effects on Gut Microbiota

FODMAP restriction predictably reduces substrate available for colonic fermentation, and controlled feeding studies confirm that a low-FODMAP diet lowers total bacterial abundance and specifically depletes luminal Bifidobacteria relative to a typical or high-FODMAP diet [22]. A UK randomised trial found this Bifidobacterium reduction was reversible with concurrent probiotic co-administration without compromising symptom benefit [23], and long-term follow-up of personalised low-FODMAP diet showed Bifidobacteria abundance recovered towards baseline once reintroduction and liberalisation occurred, alongside sustained symptom control [24]. A Norwegian trial varying dietary FODMAP content found corresponding shifts in faecal short-chain

fatty acids and cytokine profiles alongside symptom change, supporting a microbiota-mediated mechanism [25]. Notably, baseline faecal microbial profiles have been shown to predict which patients will respond to low-FODMAP diet, raising the prospect of microbiota-guided patient selection rather than universal trial-and-error prescription [26]. These microbiota effects are not observed, or are markedly attenuated, with standard dietary advice, since it does not systematically restrict fermentable substrate, representing a genuine mechanistic distinction between the two approaches even where clinical outcomes converge [27].

IBS Subtype Considerations

Comparative and mechanistic data suggest differential effects across IBS subtypes. The diarrhoea-predominant trial found particularly strong low-FODMAP effects on stool frequency and consistency [7], consistent with reduced osmotic and fermentative load easing accelerated transit, whereas constipation-predominant patients may derive less incremental benefit from FODMAP restriction alone and can experience worsened constipation if fibre intake falls concurrently, a risk standard dietary advice's fibre-titration guidance is designed to avoid [3]. Subtype-stratified analyses within the major meta-analyses have not consistently shown one dietary strategy to be subtype-specific in efficacy, but clinical guidance increasingly recommends fibre and fluid optimisation as first-line for constipation-predominant IBS, with low-FODMAP diet considered where bloating and pain predominate regardless of bowel habit [12,15]. Mixed-type IBS, in which bowel habit alternates, poses a particular challenge for dietary sequencing, since fibre adjustments that ease constipation phases can aggravate diarrhoeal phases; pragmatic trial protocols have generally allowed dietitians to titrate soluble fibre and FODMAP restriction concurrently rather than treating them as mutually exclusive strategies, an approach

reflected in the personalisation phase common to both the low-FODMAP pathway and BDA/NICE-based standard advice [17,3].

Conclusion

Randomised head-to-head evidence indicates that the low-FODMAP diet and standard, first-line dietary advice achieve broadly similar global symptom control in IBS, with low-FODMAP diet offering a modest additional benefit for abdominal pain and bloating at the cost of greater restrictiveness, dietitian time, and a reversible reduction in luminal Bifidobacteria. Given comparable overall efficacy, guideline-consistent practice favours starting with simpler standard dietary advice, reserving low-FODMAP diet with structured reintroduction and personalisation for patients who do not respond, and tailoring fibre and fermentable-carbohydrate intake to IBS subtype. Future trials should standardise reintroduction protocols and report subtype-stratified, microbiota-linked outcomes to refine this sequencing further. From a health-service perspective, a stepped-care pathway - simple, low-resource standard dietary advice as the initial intervention, with dietitian-delivered low-FODMAP restriction and reintroduction escalated only for non-responders or those with pain- and bloating-predominant symptoms - would align clinical practice with the balance of randomised evidence while conserving scarce specialist dietetic capacity for the patients most likely to benefit from it.

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