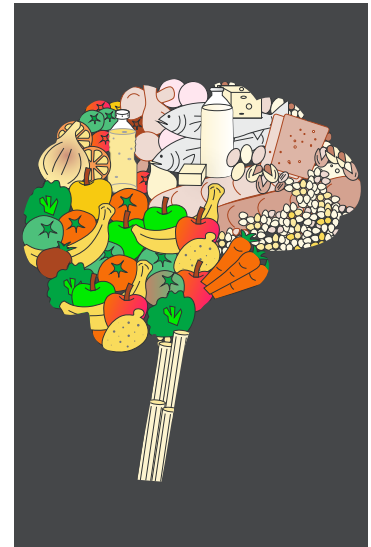


Mistakes in dietary management of IBS and how to avoid them

Zlatan Mujagic, Jenny Brouns, Daniel Keszthelyi and Jean W.M. Muris

People with irritable bowel syndrome (IBS) experience chronic intermittent symptoms, such as abdominal pain, bloating and/or altered bowel movements. These symptoms may negatively impact their daily life, prohibiting participation in social activities or leading to work absenteeism, and they are associated with increased healthcare utilisation.^{1,2} More than 85% of people with IBS indicate that food is one of the triggers for their gastrointestinal symptoms.³ Many of them have also tried diets, eliminated certain foods, taken supplements or used over-the-counter remedies before consulting a doctor or dietitian.⁴ Somewhat contradictorily, according to surveys of patients' expectations in primary care, patients with IBS expect their general practitioner to provide reassurance or drug treatments, but less than 10% value dietary intervention.⁵ This is despite the fact that almost 95% of general practitioners report that they start the treatment of IBS by giving nutritional advice.⁵ Dietary interventions are also given a prominent place in the guidelines as both first- and second-line treatments for IBS.⁶⁻⁸

In daily clinical practice, the preferences and experiences of doctors, the available resources and access to dietitians, play an important role in choosing and implementing dietary interventions. Mistakes or misconceptions are not uncommon, sometimes caused by a lack of strong evidence for certain approaches or by contradictory findings in studies. Here, we discuss the mistakes that are made when managing patients with IBS through dietary interventions and provide advice on how to avoid them. Most of the discussion is evidence based, but where evidence is lacking the discussion is based on the clinical experience of the authors.



Mistake 1 Forgetting to take patient expectations into account and setting unrealistic treatment goals

Choosing dietary treatment solely based on the doctor's or dietitian's preferences, without clear management of the patient's expectations, is a mistake that is often made. This omission can lead to unsatisfactory treatment results and, in turn, to increased healthcare utilisation (including referrals) and dependence on healthcare providers. Understanding the concerns and expectations of the individual patient and setting realistic treatment goals is the key to providing a therapy that the patient perceives as successful.^{9,10} One of the dangers of having too-high expectations of dietary interventions is that the patient will continue to eliminate foods in the belief that this will lead to maximum symptom relief. It is well known that experimentation with diet by IBS patients can lead to them having an unbalanced diet of low quality compared with the diet of healthy controls.¹¹

The main goal of dietary treatment of IBS is to provide the patients with tools to reduce their symptom burden, while maintaining a balanced,

high-quality diet, without misconceptions about the negative effects of food products on their health, and to support a self-reliant attitude.

Mistake 2 Selecting exclusion diets based on the results of immunological tests

Food allergies are rare and are not more common in IBS patients than in the general population.¹³ They lead not only to gastrointestinal symptoms, but also to urticaria or airway problems and give rise to reproducible symptoms shortly after exposure, often within minutes.^{6,9}

For this reason, guidelines advise against the use of routine immunological tests for food allergies in patients with IBS—by specific serum IgE or skin-prick tests,⁶ and also by allergen-specific IgG or IgG4 tests.¹² In addition, it is important to be aware that, due to low specificity, false-positive results for serum IgE or skin-prick tests may lead to unnecessary restriction of food by IBS patients, without providing any symptom relief. Furthermore, IgG-based tests only indicate that the person has previously been exposed to a specific antigen, but do not provide any information on allergies. Also,

negative results may be misleading because they cannot rule out specific food intolerances.

It should be noted that a recent potential breakthrough in this field has provided evidence of a local rather than systemic immune response to food antigens that is localised in the mucosa of the gut, causing meal-induced abdominal pain, via an IgE- and mast-cell-dependant mechanism.¹⁴ This finding may change the diagnostic approach in the future, but more research is needed on this topic.

Mistake 3 Thinking that there is supportive evidence for the efficacy of low-histamine diets in patients with IBS

There is increasing evidence that both mast-cell activation and the activity of histamine and histamine receptors in the intestine have a role in relation to the pathogenesis of visceral hypersensitivity in IBS.¹⁴⁻¹⁷ Hypersensitivity has been postulated to be induced by specific food antigens that can trigger an H₁-receptor-mediated sensitization of visceral afferents.¹⁴ An increased number of mast cells in the vicinity of nerve endings and the release

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of mast-cell mediators possibly enhance these hypersensitivity reactions.^{14,15} While mast-cell stabilisers and anti-histamine therapies used to target these mechanisms may find their place in the treatment of IBS,^{16,17} there is no evidence to support the use of low-histamine diets. Restricting histamine-rich foods has no effect on the mast-cell-dependent mechanism of visceral hypersensitivity. The diamino oxidase enzyme that is present in the small intestine quickly breaks down any histamine present in food.⁹ Therefore, based on current knowledge the use of restrictive diets low in histamine is not recommended for the treatment of IBS.

Mistake 4 Using a breath test to detect food intolerance in patients with IBS

Breath tests can be used to detect, amongst other things, lactose or fructose intolerance and small intestinal bacterial overgrowth. Patients and doctors sometimes view breath tests as an objective measure to identify an organic cause of gastrointestinal symptoms in the setting of IBS. However, the predictive values of the tests vary and are often low. Indeed, there are various tests available, different dosages of glucose, lactose or fructose are ingested, and there are different interpretations of the results, in combination with a low a priori probability that the specific underlying condition is present.^{18,19} The tests depend on the presence and activity of H₂-producing gut microbes, which can vary between individuals.

Furthermore, the dose-effect response should be considered. Although the lactose breath test may give an abnormal result if a large amount of lactose is used, this does not necessarily indicate that the patient is intolerant to lower amounts of dairy products. The host-microbiome interaction has a role in this tolerance. Even individuals who have a variation in the lactase (*LCT*) gene that is known to have a recessive effect on lactose intolerance, may be able to consume dairy products due to higher *Bifidobacterium* abundance in their gut,²⁰ providing evidence for the symbiosis between the gut microbiota and the host.

In conclusion, rather than focusing on breath tests as a guide for implementing elimination diets, we propose personalizing the approach for patients who may be less tolerant to a specific food, and to use targeted elimination-provocation approaches under the guidance of a dietitian to identify potential triggers and dose-thresholds for symptoms.

Mistake 5 Choosing the wrong fibres

Fibres can have positive effects on several gastrointestinal symptoms experienced by patients with IBS, such as bloating, flatulence, pain or altered bowel movements. However, they

can also trigger or worsen these symptoms. Fibres that are soluble or insoluble in water may have different effects on the gastrointestinal tract, but their functional characteristics—including viscosity and fermentability—are more complex.^{21.}

Psyllium, which is a soluble, viscous and poorly fermentable fibre with unique physico-chemical properties (allowing for water retention but limited bacterial fermentation), is shown to improve symptoms in unselected IBS patients.^{22,23} On the other hand, many prebiotics, such as inulin-type fructans, galacto-oligosaccharides (GOS) or fructo-oligosaccharides (FOS), which are fibres that are used to utilize gut microorganisms conferring a health benefit to the host, may worsen gastrointestinal symptoms in people with IBS due to increased gas production.²⁴ Coadministration of psyllium has been shown to reduce inulin-induced colonic gas production in IBS.²²

While psyllium is an isolated fibre, a mix of different fibres are present in food and they may have differing properties, posing an additional challenge when giving informed advice to patients with IBS. The bottom line is that people with IBS may be more sensitive to dietary fibres, due to fermentation and consequent gas production, in combination with altered nociception. However, advising patients not to consume food products that are high in fibre, such as wholegrain bread, specific vegetables, fruits, legumes and nuts, can lead to an imbalanced diet and may not be necessary. We would argue for making the patient aware of the potential effects of certain fibres on their symptoms and the presence of a dose-effect response, identifying symptom thresholds for the specific patient, and adding psyllium to increase tolerability.

Mistake 6 Seeing gluten as the trigger for gastrointestinal symptoms in patients with IBS

Having a gluten-free diet (GFD) is of growing interest to the general public. Some studies show positive effects of a GFD on the reduction of gastrointestinal symptoms in patients with IBS. However, meta-analyses conclude that based on the available pooled data there is insufficient evidence to support the use of a GFD for the treatment of IBS.²⁵ In addition, in this case, the effect may all come down to careful patient selection.

Some individuals who don't have coeliac disease, report gastrointestinal symptoms upon intake of gluten, and improvement when on a GFD—they are classified as having non-coeliac gluten/wheat sensitivity (NCGS or NCWS),²⁶ which may overlap with IBS.²⁶ The question remains, however, is gluten the culprit, as gluten-containing products are often rich in fructans, which are FODMAPs (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols)

and are shown to induce symptoms in patients with IBS.²⁷ Furthermore, gluten-containing products also contain amylase trypsin inhibitors (ATIs). These proteins are found in wheat and have antimicrobial properties, and they may induce gastrointestinal symptoms via activation of the innate immune system.²⁸

In daily practice, coeliac disease should be excluded in all patients who have diarrhoea (i.e. IBS-D and IBS-M), and in all subjects who indicate that they are gluten intolerant. Based on the current evidence, when coeliac disease is excluded, the use of a GFD is not recommended in patients with IBS. However, if chosen, dietary intervention should not focus on complete elimination of gluten, but rather on symptom reduction. Furthermore, focusing on the consumption of less fructan-rich food could be considered (e.g. advising the patient to eat sourdough bread). A personalized approach that includes reintroduction of food products should be considered.

Mistake 7 Focusing too much on a low-FODMAP diet

Due to the success and extensive evidence of efficacy of a diet low in FODMAPs for the treatment of IBS,²⁹ both patients and physicians may focus primarily on a low-FODMAP diet when considering dietary interventions. A recent meta-analysis has indeed shown that the low-FODMAP diet is most effective at reducing abdominal pain severity, bloating and distension, and improving stool pattern, when compared with other diets, including the National Institute for Health and Care Excellence (NICE) dietary advice.²⁹ However, the differences in response rates were small.

A low-FODMAP diet is a restrictive diet and it should be implemented with professional consultation. In addition, FODMAPs that have no effect on the symptoms of the individual patient should be reintroduced. Following a low-FODMAP diet is not an easy road to take, and alternatives, such as the NICE diet for IBS, which is comparable with traditional dietary advice for IBS patients used in most Western countries, may be more patient friendly. This alternative dietary advice focuses on regular meals, taking time to eat, avoiding missing meals, drinking enough fluids, and restriction of coffee, alcohol, fizzy drinks, and gas-producing foods, and may be almost as effective as the low-FODMAP diet.³⁰

Based on the available evidence, and in particular on practicalities, the NICE diet is more suitable as a first-line dietary treatment for IBS. A low-FODMAP diet should be offered as second- or third-line dietary intervention with professional consultation, to ensure proper reintroduction and to keep in sight the overall diet quality.

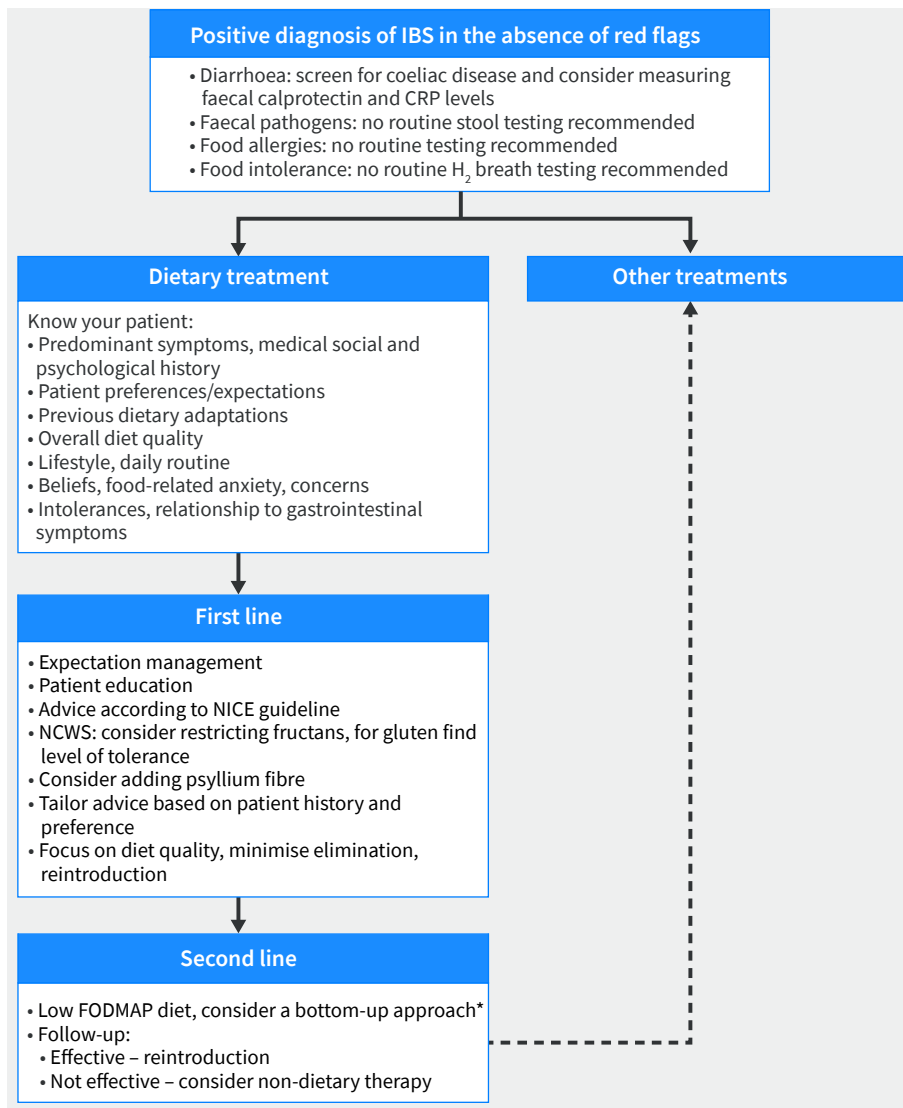


Figure 1 | Flowchart summarizing the dietary management of irritable bowel syndrome, as discussed in the current article. *A bottom-up low-FODMAP approach = targeted elimination of specific FODMAPs first, rather than all at once. CRP, c-reactive protein; FODMAP, fermentable oligosaccharides, disaccharides, monosaccharides and polyols; NCWS, non-coeliac wheat sensitivity.

Mistake 8 Not taking the potential long-term effects of a low-FODMAP diet into account

A low-FODMAP diet is, by definition, a diet low in nondigestible carbohydrates and may result in an altered gut microbiota composition and activity and, in particular, a lower production of short-chain fatty acids. It has the opposite effect to prebiotic supplementation, and may cause a reduction in bifidobacteria and an increase in bacteria associated with dysbiosis.³¹ While in the short term the low-FODMAP diet may reduce the symptoms in IBS patients, the long-term effects on health have not been studied yet. This shows, once again, that it is important to reintroduce FODMAPs into the diet after initial elimination, at least those FODMAPs that don't contribute to symptom reduction in the specific patient. Furthermore, as both symptoms and tolerability

to food may change over time in patients with IBS, elimination of specific FODMAPs is never lifelong advice.

In addition, whether based on certain patient characteristics, such as ethnicity,³² or on biomarkers, such as gut microbiota composition,³³ careful patient selection, whereby a 'bottom-up' approach of targeted elimination of specific FODMAPs, rather than all of them, may be more successful, as this personalized approach is more patient friendly.

Mistake 9 Being unaware of the risks of restrictive diets on the development of eating disorders

Elimination of food that may cause symptoms is often a cornerstone of dietary advice in those with IBS. Also, patients themselves eliminate food for that reason.³⁵ On the other hand, up to

40% of patients with IBS have symptoms of anxiety or even an anxiety disorder.³⁴ Taking this into account, the risk of exacerbating pre-existent or developing new disordered eating and nutritional deficiencies in patients with IBS are important considerations prior to prescribing elimination diets.³⁵

The development of eating disorders in patients with IBS is not associated with altered body image, as is the case with classic eating disorders. In this scenario, it is rather the negative anticipation of gastrointestinal symptoms after food intake that is responsible. The DSM-5 (Diagnostic and Statistical Manual of Mental Disorders) has given this type of eating disorder its own specific classification: avoidant/restrictive food intake disorder (ARFID). Although the exact prevalence of ARFID in IBS patients is still unknown, food-related anxiety is common.³⁵ Therefore, before advising that an elimination diet be implemented, the identification of patients at risk of developing food-related anxiety is important, to evaluate whether the benefits of the diet will outweigh the risks, and whether psychological treatment is indicated.

Mistake 10 Treating IBS according to a 'one size fits all' approach

IBS is a heterogeneous disorder that has a broad range of symptoms and different patient characteristics. Various pharmacological and nonpharmacological treatments, including dietary interventions, are available, all of which are only effective in a subgroup of patients.

Unfortunately, to date there are no objective markers to guide the choice of treatment. But this does not mean that a tailor-made approach is not possible. Taking the time to understand the patient's predominant symptoms, history, social and psychological state, concerns and preferences is crucial for a treatment to have any chance of success.¹⁰ As shown in Figure 1, in dietary counselling, it is preferable to start from a healthy balanced diet, and then select a personalized approach based on local availability of expertise and, in particular, patient preference.

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Your dietary management of IBS briefing

UEG Week

- 'IBS: What's new in 2021?' session at UEG Week Virtual 2021 [<https://ueg.eu/library/session/ibs-whats-new-in-2021/194/2965>].
- 'News in IBS' session at UEG Week Virtual 2021 [<https://ueg.eu/library/session/news-in-ibs/194/3097>].
- 'IBS: Diet as therapy' presentation in the 'Nutritional approaches in various GI disorders' session at UEG Week Virtual 2021 [<https://ueg.eu/library/ibs-diet-as-therapy/248383>].
- 'Efficacy and timing of a blinded reintroduction phase for the low-fodmap diet in IBS' presentation in the 'Diet, microbiota & more' session at UEG Week Virtual 2021 [<https://ueg.eu/library/efficacy-and-timing-of-a-blinded-reintroduction-phase-for-the-low-fodmap-diet-in-ibs/248411>].
- 'Predictors of treatment response to the low fodmap and the traditional diet in patients with irritable bowel syndrome' presentation in the "IBS I" session at UEG Week Virtual 2020 [<https://ueg.eu/library/predictors-of-treatment-response-to-the-low-fodmap-and-the-traditional-diet-in-patients-with-irritable-bowel-syndrome/234719>].
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- 'The low FODMAP diet: Selecting the right candidate' presentation in the 'Tips and tricks for the IBS patient' session at UEG Week 2018 [<https://ueg.eu/library/the-low-fodmap-diet-selecting-the-right-candidate/185141>].

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