**Supplementary data**

**Dietary intervention**

The LFD involves restricting dietary intake of fructans, galacto-oligosaccharides (GOS), lactose, fructose in excess of glucose, and polyols, and is described elsewhere.1 The sham diet was designed for this trial and restricted a similar number of staple and non-staple foods, required a similar intensity and duration of dietary counselling and similar difficulty of dietary change to the LFD and did not impact on intakes of nutrients, fibre and FODMAPs.2 Dietary compliance was measured weekly by self-report during weekly telephone calls. Patients were considered compliant if they reported following the diet ≥50% of the time on at least two of the four weekly assessments in line with previous work.3

The probiotic was a multi-strain preparation containing *Streptococcus thermophilus DSM 24731, Bifidobacterium breve DSM 24732, B. longum DSM 24736, B. infantis DSM 24737, Lactobacillus acidophilus DSM 24735, L. plantarum DSM 24730, L. paracasei DSM 24733, L. delbrueckii subsp. bulgaricus DSM 24734*  (now exclusively available in Europe under the trademark Vivomixx® and in the United States under the trademark Visbiome™) and was provided in sachets in freeze dried form with maltose and silicon dioxide as inactive excipients. The placebo sachets contained the same inactive excipients but no bacteria. Participants received two sachets per day (11·95 log10 bacteria in the intervention group) to be taken in the morning with cold food or fluid. Patients were considered compliant with the supplement if 80% of sachets were taken based on return of all unused sachets.

**Clinical outcomes**

Symptoms were measured at baseline and follow-up using the IBS Symptom Scoring System (IBS-SSS).4 The primary outcome of the parent study used the global symptom questionnaire to define response, which requires synthesis of the totality of patient symptoms into a single binary response.5 However, given the focus of this predictive work was the clinical setting, the IBS-SSS multi-item instrument was deemed to be a more clinically meaningful outcome to measure in the current study as it combines four individual components: abdominal pain, distension, bowel habit and interference with life. In addition, a reduction from baseline of ≥50 points on the IBS-SSS is widely accepted as a minimally clinically important difference (MCID) to define patients as responders.4 Patients with a change of <50 on the IBS-SSS were defined as non-responders.

**SUPPLEMENTARY TABLE: Accuracy, sensitivity and specificity of the end of treatment low FODMAP diet model and end of treatment probiotic model in allocating responders and non-responders to the low FODMAP diet or probiotic intervention or sham/placebo**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | **Accuracy (%)** | **Sensitivity (%)** | **Specificity (%)** |
| End of Treatment Model | Responders | Non-responders | Median | Mean | C.I. | Median | Mean | C.I. | Median | Mean | C.I. |
| **Low FODMAP diet(n=39)** | 30 | 9 | 100 | 96 | [93-98] | 100 | 100 | [99-100] | 100 | 82 | [70-92] |
| **Probiotic (n=44)** | 29 | 16 | 89 | 91 | [88-94] | 100 | 92 | [88-96] | 100 | 90 | [84-96] |

Results of 10-fold cross-validation produced by the Odoreader platform when classifying baseline samples from patients who went on to respond and not respond to low FODMAP diet or probiotic interventions. Partial least squares was used as the modelling technique. 95% C.I. = confidence intervals

**References:**

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