The Effects of a Low FODMAP Diet Compared to Other Diet Guidelines in Patients Over 18 with IBS

Tara Keller, MMS (c)

Faculty Advisor: Jodi Freeman, MMS, PA-C

Department of Medical Science

ARCADIA UNIVERSITY
FOUNDED 1853

Abstract

Irritable bowel syndrome (IBS) is a chronic disorder that affects the gastrointestinal system (GI) and is associated with abdominal pain and changes in bowel movements. The standard first-line dietary interventions for IBS are healthy eating and lifestyle changes. Once these diets are associated with failure, more intense therapies are necessary. New approaches for management of symptoms of IBS-D/IBS-C and quality of life has emerged such as a low fermentable oligo-, di-, monosaccharides, and polyols (FODMAP) diet because of its elimination process. This study found several studies through a literature review that adults (≥ 18 years old) benefitted from this novel therapy. More research is needed until a low FODMAP diet intervention can be confirmed as effective or superior to other dietary guidelines or restrictions.

Introduction

Irritable Bowel Syndrome (IBS)

Overview

- Altered GI motility, visceral hypersensitivity, and/or altered brain-gut axis
- Affects ~10% of the adult population globally
- Certain foods can be a trigger to GI symptoms

Symptoms

- Abdominal pain, changes in bowel movements – diarrhea and/or constipation, bloating, flatus, fatigue and difficulty sleeping
- Associated with anxiety, depression, and decreased quality of life

Treatment

- 1st line dietary interventions for IBS are healthy eating and lifestyle changes
- Currently, a low FODMAP intervention diet is a novel approach to treat IBS symptoms.
- Therefore, this review analyzes the use of a low fermentable oligo-, di-, monosaccharides, and polyols (FODMAP) diet (I) for management of symptoms of IBS-D/ IBS-C and quality of life (O) in adults ((≥ 18 years old) with Irritable Bowel Syndrome (P) comparable to other dietary guidelines or restrictions (C).

Methods

Literature Search

- Performed in October 2018 using
  - ✓Clinical Key
  - ✓PubMed
- Seven articles consisting of randomized control trials (RCT) were selected based on their relevance to the research question, intervention technique, sample population, and outcome measures. These articles were later compared based on their study design, results, and statistical relevance.

Results

1. Aziz I, Trott N, Briggs R, North JR, Hadjivassiliou M, Sanders DS. Efficacy of a Gluten-Free Diet in Subjects With Irritable Bowel Syndrome-Diarrhea Unaware of Their HLA-DQ2/8 Genotype. Clinical Gastroenterology and Hepatology. 2016;14(5). doi:10.1016/j.cgh.2015.12.031

- RCT of 41 participants designed to test the efficacy of a GFD diet with HLA-DQ2/8 positive genotype in the treatment of IBS-C/IBS-D when compared to a GFD with HLA-DQ2/8 negative genotype

2. Böhn L, Störsrud S, Liljebo T, et al. Diet Low in FODMAPs Reduces Symptoms of Irritable Bowel Syndrome as Well as Traditional Dietary Advice: A Randomized Controlled Trial. Gastroenterology 2015;149(6). doi:10.1053/j.gastro.2015.07.054

- RCT of 66 participants designed to test the efficacy of a low FODMAP diet in the treatment of IBS-C/IBS-D when compared to a traditional IBS diet

3. Eswaran S, Chey WD, Jackson K, Pillai S, Chey SW, Han-Markey T. A Diet Low in Fermentable Oligo-, Di-, and Monosaccharides and Polyols Improves Quality of Life and Reduces Activity Impairment in Patients With Irritable Bowel Syndrome and Diarrhea. Clinical Gastroenterology and Hepatology. 2017;15(12). doi:10.1016/j.cgh.2017.06.044

- RCT of 79 participants designed to test the efficacy of a low FODMAP diet in the treatment of IBS-C/IBS-D when compared to a mNICE diet

4. Halmos EP, Power VA, Shepherd SJ, Gibson PR, Muir JG. A Diet Low in FODMAPs Reduces Symptoms of Irritable Bowel Syndrome. Gastroenterology. 2014;146(1). doi:10.1053/j.gastro.2013.09.046.

- RCT of 38 participants designed to test the efficacy of low FODMAP diet in the treatment of IBS-C/IBS-D when compared to a diet containing FODMAP's of a typical Australian diet

5. Hustoft TN, Hausken T, Ystad SO, et al. Effects of varying dietary content of fermentable short-chain carbohydrates on symptoms, fecal microenvironment, and cytokine profiles in patients with irritable bowel syndrome. *Neurogastroenterology & Motility*. 2016;29(4). doi:10.1111/nmo.12969

- RCT of 20 participants designed to test the efficacy of a low FODMAP diet in the treatment of IBS-C/IBS-D when compared to a high FODMAP diet

6. Shahbazkhani B, Sadeghi A, Malekzadeh R, et al. Non-Celiac Gluten Sensitivity Has Narrowed the Spectrum of Irritable Bowel Syndrome: A Double-Blind Randomized Placebo-Controlled Trial. Nutrients. 2015;7(6):4542-4554. doi:10.3390/nu7064542

- RCT of 72 participants designed to test the efficacy of a GCD diet in the treatment of IBS-C/IBS-D when compared to a GFD diet

7. Vazquez–Roque MI, Camilleri M, Smyrk T, et al. A Controlled Trial of Gluten-Free Diet in Patients With Irritable Bowel Syndrome-Diarrhea: Effects on Bowel Frequency and Intestinal Function. Gastroenterology. 2013;144(5). doi:10.1053/j.gastro.2013.01.049

- RCT of 45 participants designed to test the efficacy of a GFD diet in the treatment of IBS-C/IBS-D when compared to a GCD diet

Table 1. Comparison of Results

Study	Demographics	Control Diet	Interventional Diet	Diet Length	Outcome Measure
1	Female: 31 Male: 10	GFD with HLA-DQ2/8 negative	GFD with HLA-DQ2/8 positive	6 wks	IBS-SSS, HADS, FIS, SF-36 QOL
2	Female: 56 Male: 11	Traditional IBS diet	Low FODMAP	29 days	IBS-SSS, BSFS, HADS, VSI, Multidimensional Fatigue Inventory-20
3	Female: 65 Male: 27	mNICE	Low FODMAP	4 wks	BSFS, IBS-QOL, HADS, Work Productivity and Activity Impairment, Seep and Fatigue
4	Female: 27 Male: 11	Diet containing FODMAP content of a typical Australian diet	Low FODMAP	21-day diet, washout pd of at least 21 days, then cross over to 21-day to the alternate diet	Gastrointestinal symptoms were measured by VAS, KSC
5	Female: 15 Male: 5	Low FODMAP	High FODMAP	2 day IBS school, 9 wks of LFD, then after 3 wks supplement of either high FODMAP (A) or low FODMAP (B) followed by a 3-wk washout, and then reverse sequence	IBS-SSS
6	Female: 53 Male: 19	GFD	GCD	6 wks GFD, then 6 wks of either GFD or GCD	Bloating, abdominal pain, defecation satisfaction, nausea, fatigue, and overall symptoms, and scored with the VAS
7	Female: 43 Male: 2	GCD	GFD	4 wks	BSFS, HADS, HLA Genotyping, Measurement of Gastric Emptying, Small Bowel and Colonic Transit with Scintigraphy

Key: IBS-SSS: IBS-Symptom Severity Score, HADS: Hospital Anxiety and Depression Scale, SF-QOL: Short-form 36 Quality of Life; GFD: Gluten-Free Diet, VAS: Visual analogue scale, KSC: King's Stool Chart, BSFD: Bristol Stool Form Scale, FODMAP: Fermentable oligo-, di-, monosaccharides, and polyols

Discussion

4/7 studies report that a low FODMAP diet has equal or greater efficacy than 1st line of healthy eating and lifestyle changes in the treatment of IBS

&

3/7 studies report that a GFD diet has equal or greater efficacy than 1st line of healthy eating and lifestyle changes in the treatment of IBS

Strengths

- All studies are RCT → allows for unbiased distribution of confounding variables
- Statistically significant results → 7/7 studies used p-values < 0.05
- Blinding Methods → minimized bias and maximized the validity of the results
- No study reported negative side-effects of the dietary interventions

Limitations

- Small sample sizes
- Recruitment methods
- Short study duration with only one study having an 18-month follow-up

Future Research

- Comparing a low FODMAP and GFD dietary intervention
- Recruit larger, more diverse population samples
- Long-term effects of low FODMAP and GFD diet
- Cost effectiveness of adhering to the diet

Conclusion

The study results are **positive**, however **more research is needed** in order to make a definitive conclusion. For the patients suffering from IBS who have failed current first-line dietary recommendations and lifestyle modifications, a low FODMAP appears to be a **practical and potentially effective option**.

Until more research is available, it remains unclear if symptom relief provided by a low FODMAP diet can be sustained for long-term IBS management after the elimination phase and reintroduction phase. There is not yet enough evidence to validate a change in the standard IBS treatment practice, however there are significantly enough positive results to promote future research.

In regards to future research, it should aim to compare a low FODMAP and GFD dietary intervention and their effectiveness in the management of symptoms and quality of life, as well as, the long term effectiveness of these interventions.