



## Role of Nutrition in Pediatric Irritable Bowel Syndrome

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### Abstract

Pediatric irritable bowel syndrome is one of the functional gastrointestinal disorders. Its prevalence is increasing. Abdominal pain, diarrhoea and constipation are the common symptoms. It's easy to get cognitively biased and over investigate & treat these kids. Appropriate diagnosis with the help of Rome Criteria is necessary. Management of these children with help of pediatric gastroenterologist, certified dietician and psychologist is now possible. Role of dietary modifications in management is discussed in this review.

**Keywords:** Irritable bowel syndrome; FODMAPs; Nutrition; Abdominal pain; Constipation; Diarrhoea

**Abbreviations:** IBS: Irritable Bowel Syndrome; FODMAP: Fermentable Oligo-di- and Monosaccharides and Polyols.

### Introduction

Functional gastrointestinal disorders are increasingly diagnosed in Pediatric Gastroenterology practice according to the symptom based Rome IV criteria. Irritable bowel syndrome is one of the Functional Gastrointestinal diseases. Proper diagnosis, appropriate management, avoiding cognitive bias to rule out organic etiologies, pharmacological add-ons and nutrition are the cornerstones in management of Pediatric irritable bowel syndrome. Multi-factorial etiological involvement in patho- physiology of IBS is well known [1]. Directing treatment at nutritional issues is one of the important aspects in management of these children.

Many factors in diet are involved in management. Age appropriate nutritional issues add to the complexity.

Individualization of diet and food is sometimes necessary. Diet along with intestinal microbial [2,3]. Play a crucial role in threshold of phenotypic expression of functional GI disorder. It's known that the fermented food products produced secondarily due to micro-organisms in gut have a role in IBS [4]. Diets such as low fermentable oligo, di and monosaccharides may provide benefit to patients with IBS. Patients with mild symptoms in a diagnosed IBS would benefit from education regarding IBS and eliminating offending dietary substances causing symptoms from the diet. These symptoms should be noted in a food diary and clinically correlated. In Kids with moderate to severe symptoms pharmacotherapy may be used. Cognitive behavioral therapy and other psychological treatment modalities are also considered to be of help in these children.

### Definition of Pediatric IBS [5] as Per Rome IV

H2b: Diagnostic Criteria for Irritable Bowel Syndrome.

Must include all of the following: Criteria fulfilled for at least 2 months before diagnosis.

- a. Abdominal pain at least 4 days per month associated with one or more of the following:
  - i. Related to defecation.
  - ii. A change in frequency of stool.
  - iii. A change in form (appearance) of stool.
- b. In children with constipation, the pain does not resolve with resolution of the constipation (children in whom the pain resolves have functional constipation, not irritable bowel syndrome).
- c. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition.

### Dietary Therapy for Pediatric IBS

Reduction of dietary sugars like lactose and sorbitol or fructose is studied for pediatric IBS [6]. Low FODMAP (fermentable, oligo-di- and monosaccharides and polyols) diet is shown to be efficacious in school age children with IBS [7,8]. There are very few double blind randomized pediatric studies. Psyllium fiber 6gm for 7-11 years and 12gm for 12-18 years is studied in a randomized double blind trial. Kids with fibers experienced significantly greater reduction in abdominal pain episodes. Abdominal pain intensity but is unaffected. Fiber treatment does not alter the gut permeability. More studies with larger sample size are needed [9].

### What are FODMAPs?

Fermentable oligo-di and monosaccharides and polyols are highly fermentable but poorly absorbed food products. They contain oligosaccharides like fructans, fructo-oligosaccharides, and galacto-oligosaccharides. Fructose and polyols like sorbitol, mannitol, xylitol, polydextrose and isomalt. Thickened and sweetener used in food additives can also classified as FODMAPS. Diet high in FODMAPS is considered to exacerbate the IBS symptoms. FODMAPS in normal kids help in increasing stool bulk enhance calcium absorption and moderate immune function [10]. These beneficial effects are lost in low FODMAPS diet in IBS patients. Short chain fatty acid produced after fermentation in large intestine has trophic effects on colonocyte metabolism. This effect too is reduced in IBS patient on low FODMAPS diet.

A high dose of fructose or fructane is noted to worsen IBS [11]. Low FODMAPS diet is studied in IBS patients only for short duration [10]. Long term efficacy of Low FODMAPS Diet in kids of growing age is not known. Compliance variability to such modified IBS diet is uncertain. Low FODMAPS diet may impose indirect restriction of several nutrients. These diets reduce abdominal pain, bloating

and diarrhea in IBS but their superiority to conventional IBS diet in long term effect is unclear [12].

### Interaction of Microbia with FODMAPs

The phenomenon is complex and difficult to extrapolate to the large & differential size of pediatric IBS patients. Kids with microbia of greater sacchrolytic capacity can serve as a biomarker for those [6]. Who may respond to FODMAP avoidance? One of the studies in adults compared diet suggested by National Institute for health and care excellence for IBS-D with FODMAPS and found low FODMAP better [13]. More studies are needed in children.

### High FODMAP Diet [10]

- a. Wheat, barley, rye.
- b. Lentils, beans, chickpeas, soya, peas.
- c. Artichokes, asparagus, cauliflower, garlic, leeks, mushroom, onion, scallions, shallots, snowpeas.
- d. Apple, apricot, pear, blackberry, cherry, figs, jackfruit, mangos, nectarines, peach pear, persimmon, plums, prune, tamarillo, watermelon, white peach, grape.
- e. Regular milk, ice cream, soft cheese, yogurt.
- f. Sweeteners.

### Practical Tips of Diet in Pediatric IBS

- a. Take diet history, ask specifically for food diary.
- b. Note high FODMAPS food like apple, pears, pumpkin, sweet, potato, milk, yoghurt, wheat based pasta in diet.
- c. Try reducing your intake of resistant starches.
- d. Limit fizzy drinks.
- e. Restrict intake of caffeinated drinks (for example, tea, coffee or cola).
- f. Avoid foods high in fat, such as chips, fast foods, burgers and sausages, crisps and cakes.
- g. Ensure a good fluid intake.
- h. Take help of Pediatric Gastroenterologist and Certified Dietician if pattern persist.

### Conclusions

Diet is one of the important aspects in management of pediatric IBS. Judicious use of High FODMAP diet avoidance with education & pharmacotherapy is sometimes required. Long term studies comparing one treatment modality with other are needed for IBS - constipation, IBS - diarrhea and IBS - abdominal pain. Differential dietary approach is possible. Individualization in each case makes dietary management in pediatric IBS interesting as well as difficult. Organic etiologies should

be excluded if required with the help of Pediatric Gastroenterologist.

### Key Learning Points

1. Use ROME IV criteria to diagnose Pediatric IBS.
2. Judicious avoidance of High FODMAPS in diet is desirable.
3. Team work between Pediatric Gastroenterologist, Pediatrician, Certified dietician & Counselor is must in management of Pediatric IBS.

### References

1. Drossman DA (2016) Functional Gastrointestinal Disorders: History, Pathophysiology, Clinical Features, and Rome IV. *Gastroenterology*, doi: 10.1053/j.gastro.2016.02.032.
2. Biedermann L, Rogler G (2015) The intestinal microbiota: its role in health and disease. *Eur J Pediatr* 174(2): 151-167.
3. Shreiner AB, Kao JY, Young VB (2015) The gut microbiome in health and in disease. *Curr Opin Gastroenterol* 31(1): 69-75.
4. Rajilic-Stojanovic M, Jonkers DM, Salonen A, Hanevik K, Raes J, et al. (2015) Intestinal microbiota and diet in IBS: causes, consequences, or epiphenomena? *Am J Gastroenterol* 110(2): 278-287.
5. Hyams JS, Di Lorenzo C, Saps M, Shulman RJ, Staiano A, et al. (2016) Functional Disorders: Children and Adolescents. *Gastroenterology* pii: S0016-5085(16)00181-5. doi: 10.1053/j.gastro.2016.02.015.
6. Dabritz J, Mühlbauer M, Domagk D, Voos N, Hennebohl G, et al. (2014) Significance of hydrogen breath tests in children with suspected carbohydrate malabsorption. *BMC Pediatr* 14: 59.
7. Chumpitazi BP, Cope JL, Hollister EB, Tsai CM, McMeans AR, et al. (2015) Randomised clinical trial: gut microbiome biomarkers are associated with clinical response to a low FODMAP diet in children with irritable bowel syndrome. *Aliment Pharmacol Ther* 42(4): 418-427.
8. Chumpitazi BP, Hollister EB, Oezguen N, Tsai CM, McMeans AR, et al. (2014) Gut microbiota influences low fermentable substrate diet efficacy in children with irritable bowel syndrome. *Gut Microbes* 5(2): 165-175.
9. Shulman RJ, Hollister EB, Cain K, Czyzewski DI, Self MM, et al. (2017) Psyllium Fiber Reduces Abdominal Pain in Children with Irritable Bowel Syndrome in a Randomized, Double-blind Trial. *Clin Gastroenterol and Hepatol* 15(5): 712-719.
10. Catassi G, Lionetti E, Gatti S, Catassi C (2017) The Low FODMAP Diet: Many Question Marks for a Catchy Acronym. *Nutrients* 9(3): E292.
11. Major G, Pritchard S, Murray K, Alappadan JP, Hoad CL, et al. (2017) Colon Hypersensitivity to Distension, Rather Than Excessive Gas Production, Produces Carbohydrate-Related Symptoms in Individuals With Irritable Bowel Syndrome. *Gastroenterology* 152(1): 124-133.
12. Altobelli E, Del Negro V, Angeletti PM, Latella G (2017) Low-FODMAP Diet Improves Irritable Bowel Syndrome Symptoms: A Meta-Analysis. *Nutrients* 9(9): E940.
13. Eswaran S, Chey WD, Jackson K, Pillai S, Chey SW, et al. (2017) 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. *Clin Gastroenterol Hepatol* 15(12): 1890-1899.