

Examination of Dietary Patterns and FODMAPs Intake in Patients with Irritable Bowel Syndrome

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ABSTRACT

Background: There is growing evidence that supports the efficacy of a diet low in fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAPs) for symptom management in irritable bowel syndrome (IBS). Utilizing a food frequency questionnaire (FFQs) to determine current dietary practices of those with and without IBS allows the Registered Dietitian Nutritionist (RDN) to understand usual dietary intake as it related to FODMAP ingestion. **Objective:** To identify the average lactose, fructose, and polyol intake in people with and without IBS to gauge if there are differences in usual dietary intake. **Methods:** VioScreen™, a web-based FFQ, was offered to all patients in the outpatient Gastroenterology, Hepatology and Nutrition (GHN) clinic at The Ohio State University Wexner Medical Center to assess dietary patterns and lactose, fructose, and polyols intake. Those that completed the FFQ were stratified into those with and without IBS. Demographic data and health variables including age (yr), weight (kg), and BMI (kg/m²) were collected as part of the electronic FFQ. **Results:** Participants (N=140) were included in this study. Mean age was 43.0 ± 15.5 years with an average BMI of 28.2 ± 7.4 kg/m². Those with IBS (n=24) were of similar age as those without IBS (41.9 ± 17.1 years vs 43.3 ± 15.2 years, respectively). No difference in the average fructose (36 g ± 38 vs 25 g ± 34; P = 0.156), lactose (14 g ± 10 vs 12 g ± 14; P = 0.655) and polyols (1 g ± 0.5 vs 1 g ± 0.6; P = 0.260) was detected between those with and without IBS. **Conclusion:** Patients with IBS do not consume significantly less fructose, lactose, and polyols compared to patients without IBS. Data suggests high-FODMAPs foods can trigger or worsen IBS symptoms. RDNs should evaluate the dietary patterns before the education of low-FODMAPs to ensure the education is targeting patient-specific high FODMAPs foods or potential trigger foods.

Table 1. Summary of FODMAPs

FODMAP	Associated with Pathophysiology	Food Sources
Fructose	Absorbed by the small bowel → a concentration gradient	Fruit, honey, high-fructose corn syrup
Lactose	Inadequate lactase secretion	Milk, cheese, yogurt
Fructans/ Galactans	No enzymes to break down → fermentation and gas formation	Wheat, legume
Polyols	Slowly absorbed by passive diffusion	Sugar alcohol, sugar substitute

INTRODUCTION

- Irritable bowel syndrome (IBS) is a group of disorders classified as functional gastrointestinal disorders. In North America, approximately 10% of individuals have symptoms associated with IBS.
- Signs and symptoms include cramping, abdominal pain, bloating, gas, and diarrhea or constipation, or both.
- A diet low in FODMAPs has been proposed as an efficacious dietary pattern that reduces symptoms of IBS. This diet is used to help patients to identify trigger foods.
- Patients have reported worsening symptoms when consuming certain food items, some being rich in FODMAPs. However, there is no adequate data to approve that patients can self identify and avoid high FODMAPs before receiving medical nutrition therapy.

RESEARCH QUESTIONS

- What is the average consumption of fructose, lactose, and polyols in patients with and without IBS as measured by food frequency questionnaire (FFQs)?
- Do patients with IBS consume significant less fructose, lactose, and polyols compared to patients without IBS as measured by FFQ?

METHODS

- FFQs were offered to all patients in the outpatient Gastroenterology, Hepatology and Nutrition (GHN) clinic at The Ohio State University Wexner Medical Center (OSUMC) from April 2018 to November 2019.
- Charts were reviewed to confirmed all GI diagnoses. 140 participants were included in analysis (N=140).
- All dietary information, anthropometric data, exercise patterns, multivitamin use and age were self-reported through the FFQ platform.
- Means, medians, standard deviations, and p-values were calculated to describe dietary intake
- This study was approved by The Ohio State University Institutional Review Board.

Figure 1. VioScreen Food Frequency Questionnaire

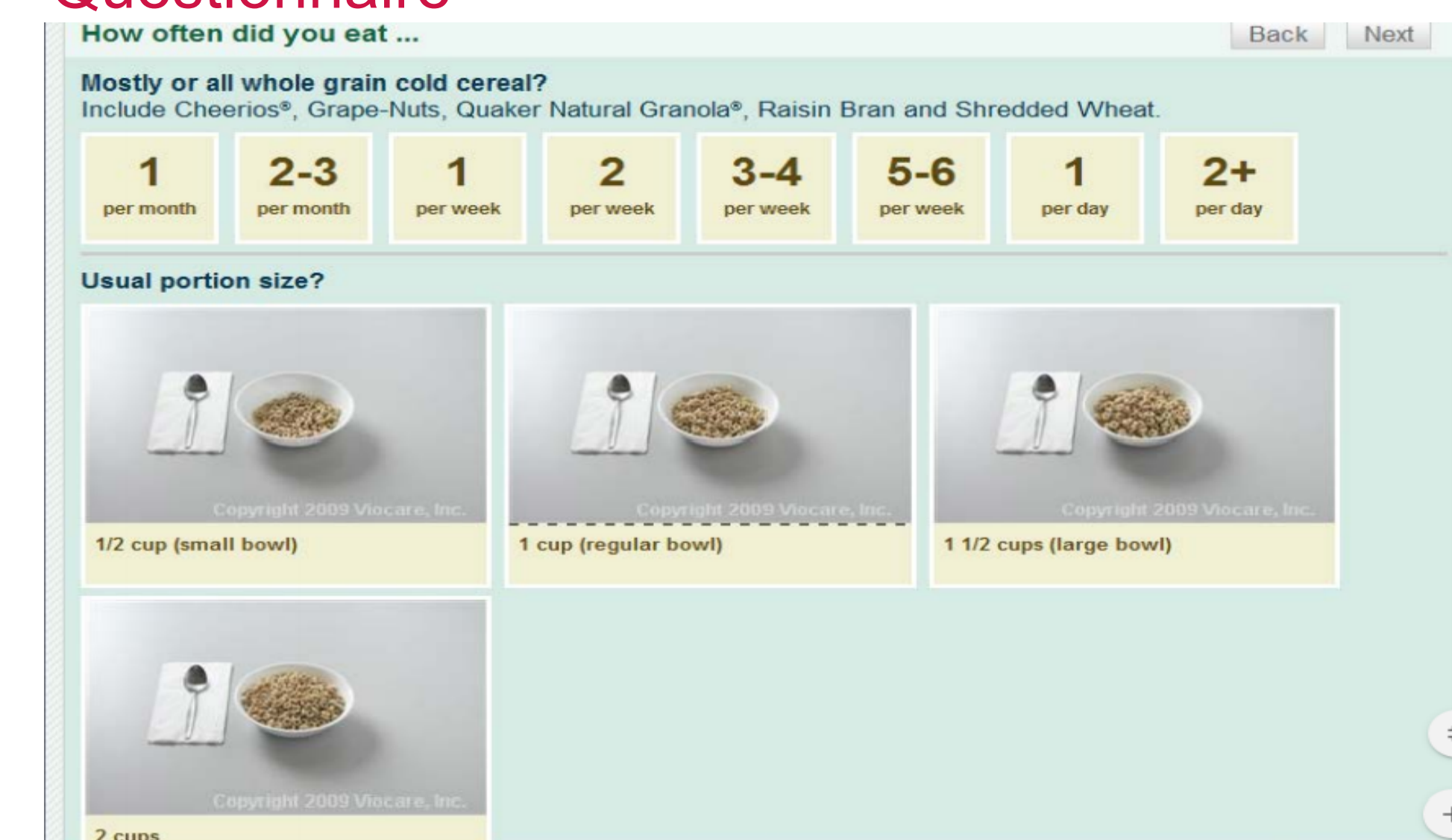


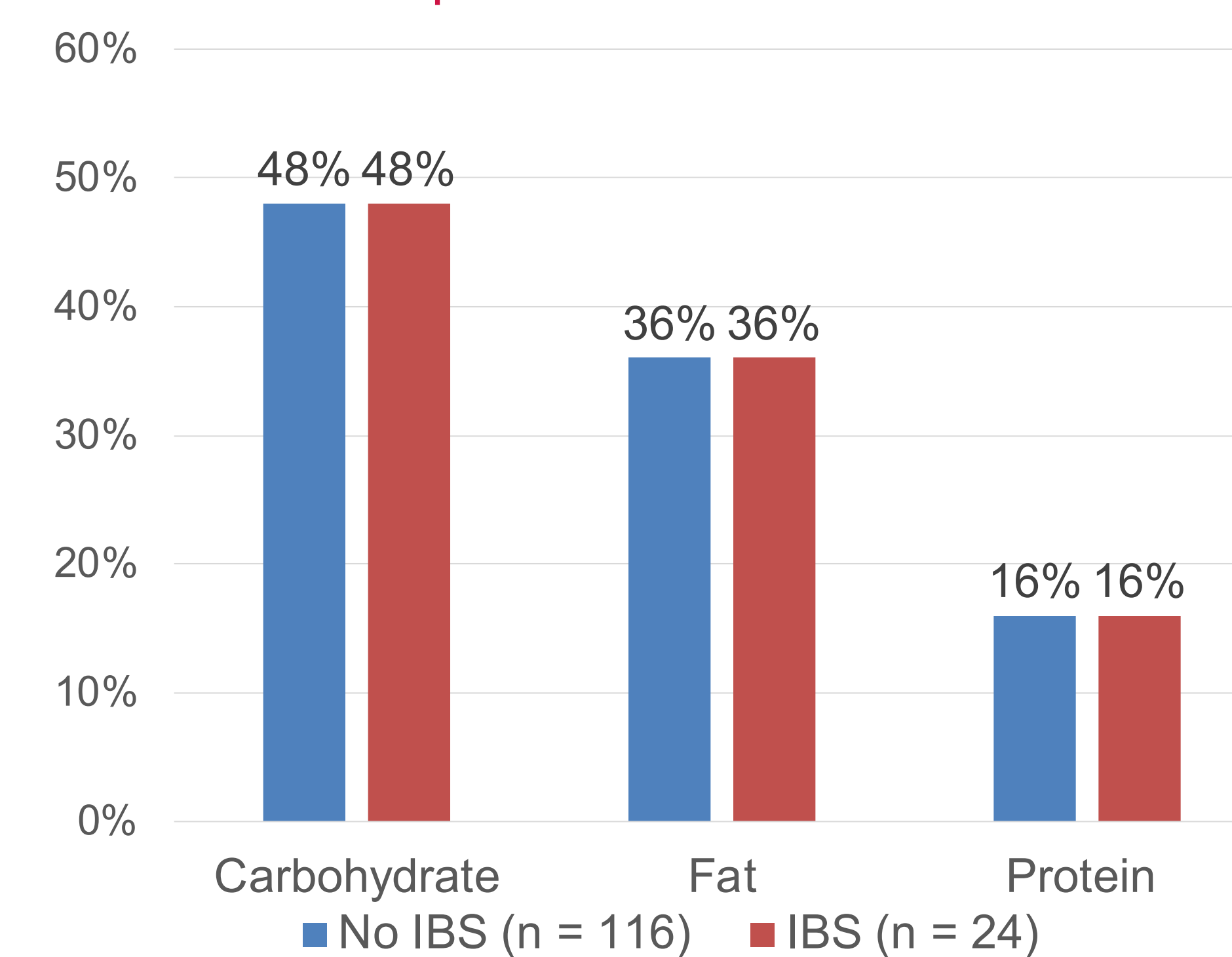
Photo Credit: <https://vioscreen.com/questionnaire.aspx?SessionId=4174fd7ddb44a2886e2626089adf66e>

RESULTS

Table 2. Demographics Characteristics

Characteristic	N=140	
IBS	Yes, n (%)	24 (17.1%)
	No, n (%)	116 (82.9%)
Anthropometrics	Age in years, median (range);	43.0 (27.5 - 58.5)
	Weight in kg, median (range);	80.2 (57.3 - 103.1)
	BMI in kg/m ² , median (range)	28.2 (20.8 - 35.6)
Activity Level	Sedentary, n (%)	16 (11.4%)
	Low active, n (%)	64 (45.7%)
	Active, n (%)	48 (34.3%)
	Very Active, n (%)	12 (8.6%)
Multivitamin Intake	Yes, n (%)	54 (38.6%)
	No, n (%)	86 (61.4%)

Figure 2. Comparison of Macronutrients Intake Between Participants with IBS and without IBS



No significant difference found in average energy intake between participants with IBS (n = 24) and participants without IBS (n = 116) (1774.8 kcal vs 2065.6 kcal, respectively)

Figure 3. Mean Fiber Intake per Day

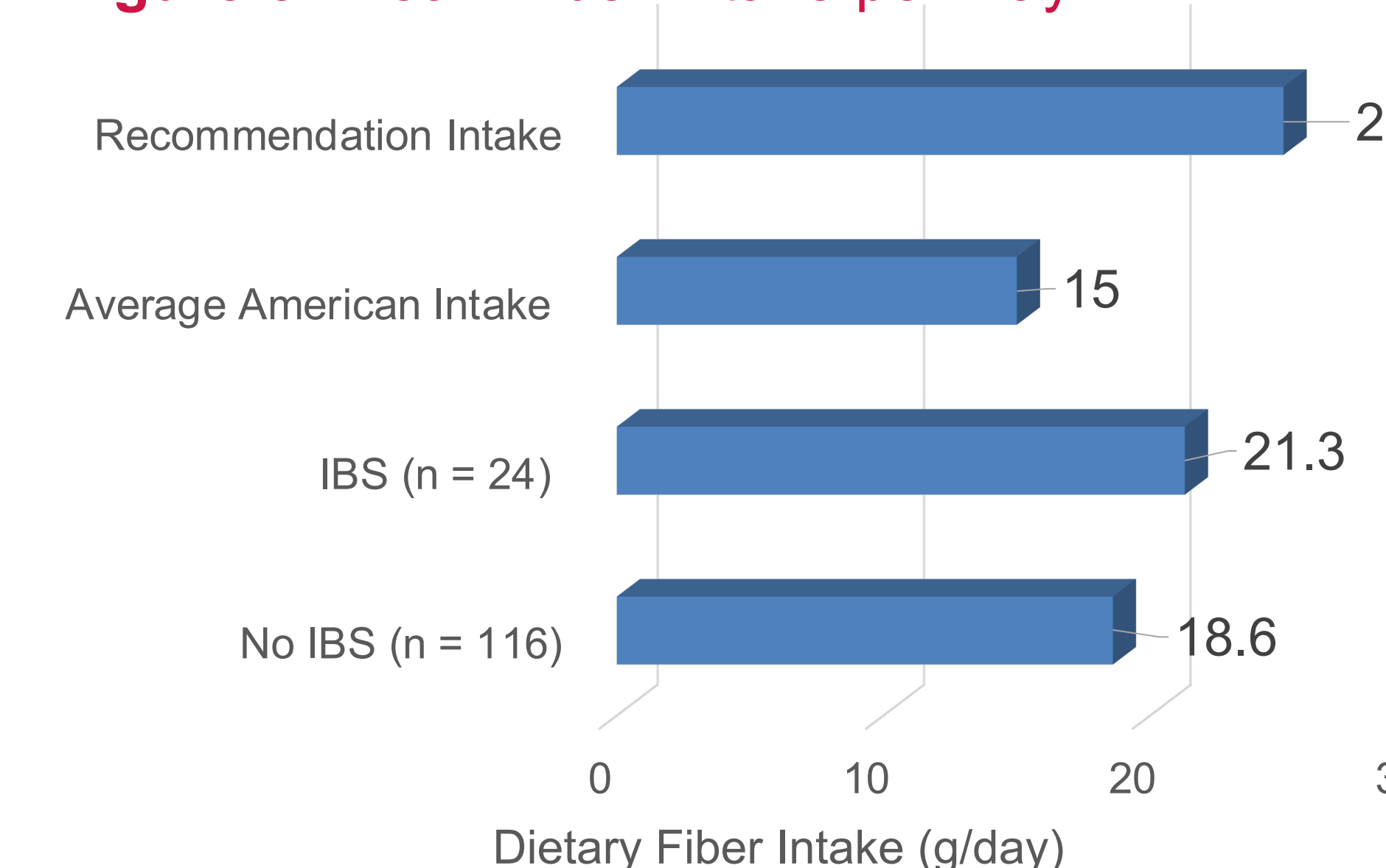
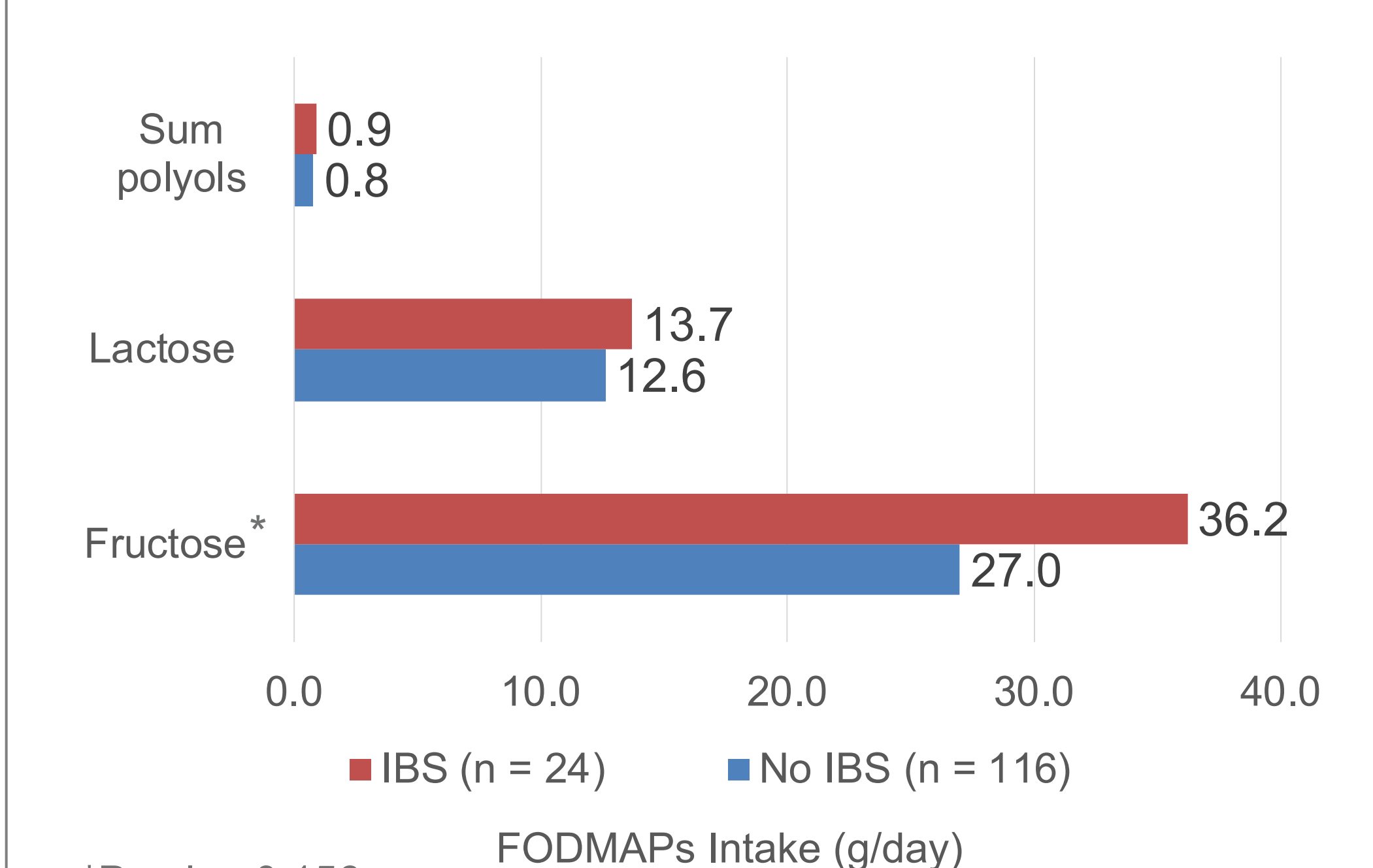


Figure 4. Mean FODMAPs Intake in Participants with IBS and without IBS



*P-value 0.156

DISCUSSION & CONCLUSIONS

- This is the first study to estimate FODMAP exposure using an FFQ in those with and without IBS to gain an understanding of usual dietary intake from a large sample size of 140 participants.
- In analyzing the dietary patterns of patients with and without IBS, this study found that patients with IBS do not consume significantly less fructose, lactose, fructans & galactans, and polyols compared to patients without IBS.
- RDNs should evaluate the dietary patterns before the education of low-FODMAPs to ensure the education is targeting patient-specific high FODMAPs foods or potential trigger foods.
- In the future, a study for analysis of food sources for where these FODMAPs are coming from is essential for RDNs to generate high-quality nutrition interventions.

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