

2015-04-29

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Repository Citation

Barnard, Anne; Olendzki, Barbara C.; Post, Kathryn; Erdil, Rachel; Olendzki, Gin-Fei; Foley, Anne; and Cave, David R., "Anti-Inflammatory Diet for Inflammatory Bowel Disease (IBD-AID)" (2015). University of Massachusetts Medical School. *Senior Scholars Program*. Paper 194.
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Anti-Inflammatory Diet for Inflammatory Bowel Disease (IBD-AID)

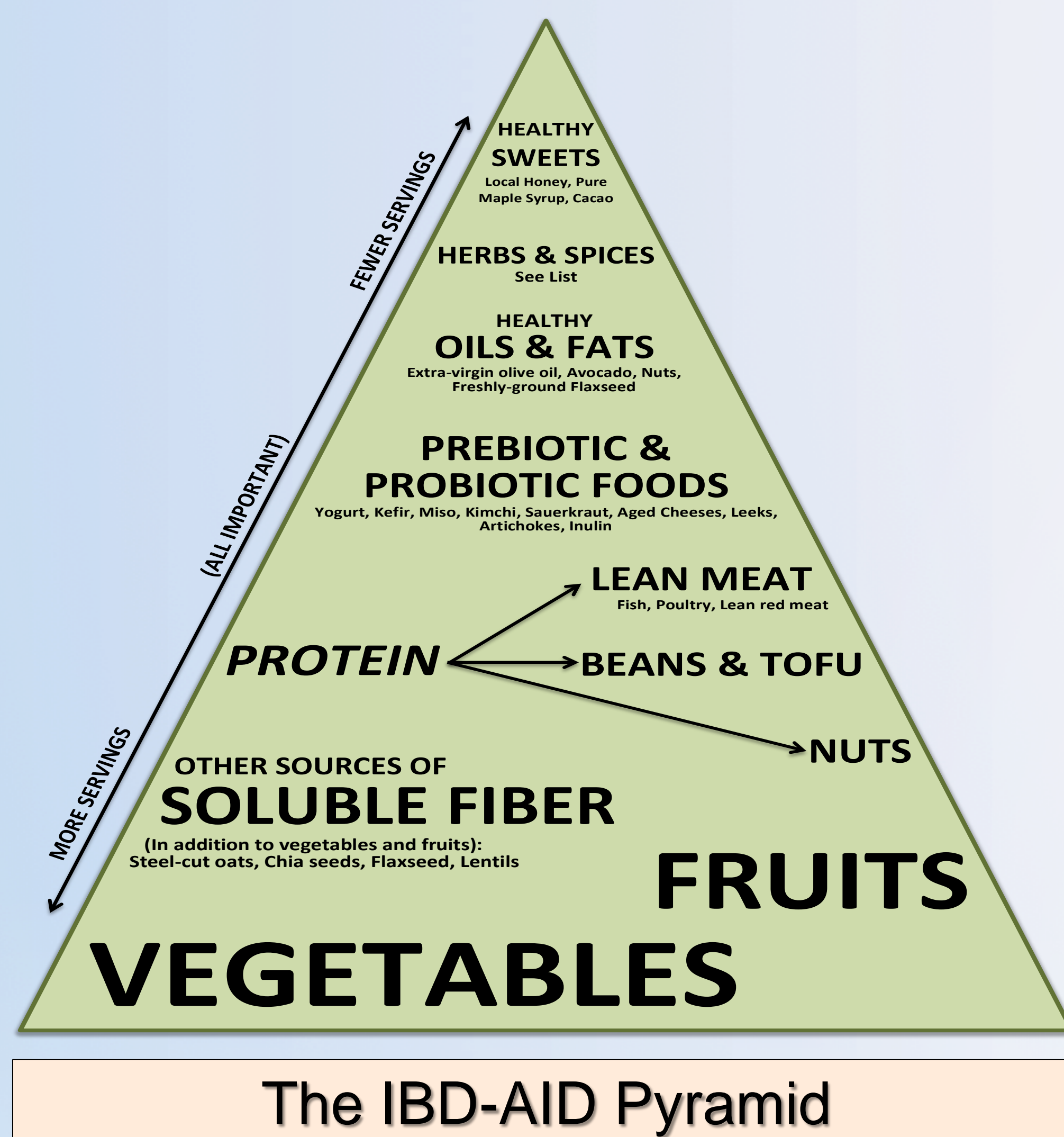
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BACKGROUND

- Inflammatory Bowel Disease (IBD), including Crohn's disease (CD) and ulcerative colitis (UC): Chronic, immune-mediated inflammatory conditions of the GI tract
- Increasingly linked to dysbiosis, an imbalance in the gut microbiome
- Pharmacological standard of care is not curative, thus driving the need and demand for IBD nutritional guidelines
- The Anti-Inflammatory Diet for IBD (IBD-AID) emphasizes anti-inflammatory foods (prebiotic and probiotic) while limiting the intake of pro-inflammatory carbohydrates (refined sugar, lactose, and most grains)
- Previous case series - 11 IBD patients showed symptomatic improvement and downscaling of medication regimens in all 11 patients after 4 weeks on the IBD-AID (Olendzki, et al. 2014)



OBJECTIVES

The purpose of this small prospective study was to further assess the efficacy and feasibility of the IBD-AID intervention for the treatment of CD, and to provide pilot data for a larger application.

MATERIALS AND METHODS

- Participants:** 17 patients with biopsy-confirmed Crohn's disease offered the treatment diet or standard medical care alone
- Intervention (n=12):** One individual nutrition counseling session and three IBD-AID-specific cooking classes in addition to usual care
- Control (n=5):** Usual care
- Study duration:** 2 months after 70% adherence to the diet for IBD-AID participants, and 2 months after baseline for control participants

OUTCOME MEASURES

- Reduction in symptomatology, as measured by the validated Harvey Bradshaw Index (HBI)
- Reduction in the need of immunomodulatory and anti-inflammatory medications
- Normalizing trend in circulating inflammatory markers (i.e., CRP and ESR), albumin, and hematocrit

FEASIBILITY MEASURES

- Participant retention
- Dietary compliance
- Participants' self-assessments of difficulty in maintaining the diet

RESULTS

- A total of 15 enrolled patients with confirmed diagnosis of Crohn's Disease, 5 in observation arm, 10 in intervention arm. -Average Age: 51 years
- Harvey-Bradshaw Index (HBI) scores dropped an average of 2.2 and 1.3 points for the Intervention group and Control group, respectively.

ID	Baseline					Follow-up				
	Prebiotics	Probiotics	good foods	Adverse Foods	Total	Prebiotics	Probiotics	good foods	Adverse Foods	Total
D101	25%	50%	63%	30%	42%	100%	75%	63%	35%	68%
D102	0%	0%	33%	10%	11%	0%	0%	58%	40%	25%
D104	50%	100%	67%	80%	74%	75%	100%	79%	85%	85%
D105	25%	25%	54%	5%	27%	75%	50%	67%	65%	64%
D107	25%	25%	79%	65%	49%	25%	50%	83%	60%	55%
D108	25%	0%	46%	35%	26%					
D109	25%	0%	46%	20%	23%					
D111	75%	100%	79%	70%	81%	100%	75%	50%	55%	70%
D113	0%	0%	46%	20%	16%	50%	75%	54%	65%	61%
D114	25%	25%	67%	45%	40%					
D115	50%	75%	42%	45%	53%	100%	50%	83%	95%	82%
D116	0%	25%	42%	75%	35%	100%	50%	83%	95%	82%
D117	50%	0%	50%	10%	28%	75%	0%	71%	35%	45%
D118	0%	50%	38%	50%	34%	100%	25%	63%	100%	72%
Average	26.8%±22.92%	33.9%±36.17%	53.6%±14.88%	40%±25.5%	38.6%±20.23%	75%±33.7%	50%±30.15%	70.1%±12.91%	69.2%±25.21%	66.1%±18.01%
	Paired t-test					0.0016	0.3409	0.0344	0.0085	0.0014
	Wilcoxon signed rank sum test					0.0047	0.4034	0.0363	0.0208	0.0076
	(the non-parametric version of a paired samples t-test.)									

Table 1: Dietary Components Analysis - Significant increases in prebiotic and favorable dietary components, and decrease in adverse foods for the group as a whole (paired t-test values 0.0016, 0.0344, 0.0085, and 0.0014, respectively).

- 33% of patients** with complete follow-up and on IBD medication at baseline (5-aminosalicylates, antibiotics, glucocorticoids, immunomodulators, and biologic therapies) (n=9) decreased doses of or discontinued these medications.

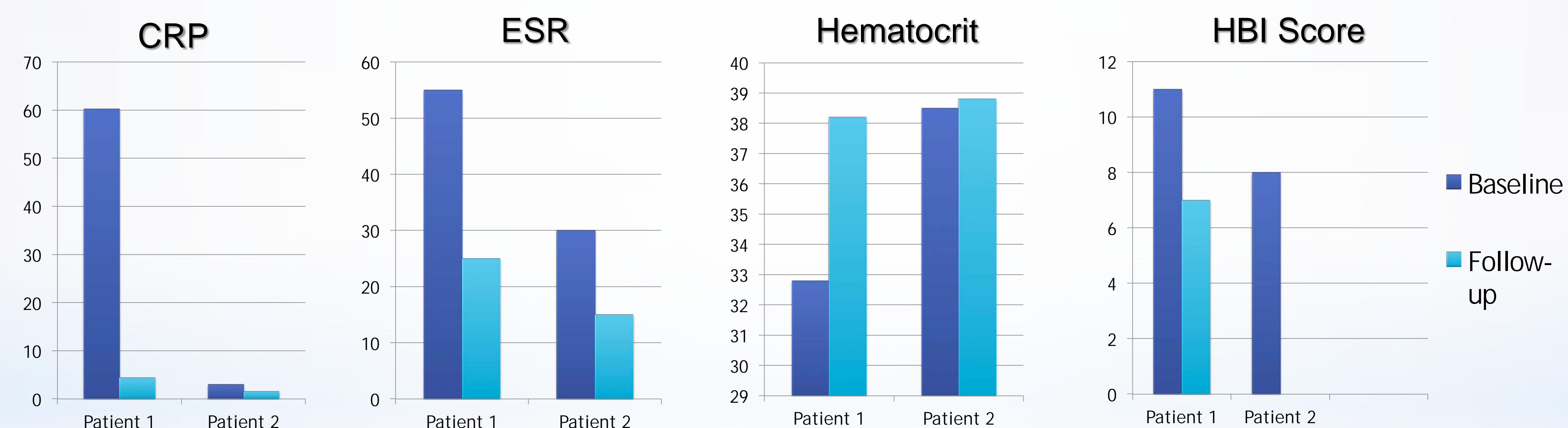


Figure 1: Lab values mirrored symptomatic improvements in two of our intervention patients, with changes in CRP, ESR, and hematocrit levels of -55.9 and -1.4, -30.0 and -15.0, and +5.4 and +0.3, respectively, with corresponding symptomatic improvements (HBI scores 11→7 and 8→0, respectively). No significance can be assigned, however, due to low sample size and loss to follow-up.

- Feasibility Measures:
 - Loss to follow-up rate of 33.3%
 - Average "difficulty score" of 3.1 (scale of 1-5, very easy to very difficult)

Vignette 1: A "Not-So-Successful Story"

"Tom" is a 38 year old with Crohn's disease and IBS, as well as clinical depression, currently on five psychoactive drugs. He is unemployed and unable to do his own shopping, relying on fast food and take out meals. But at intake, Tom is motivated to change as he is "at the end of his rope."

However at the first follow-up, he admits that his depression has worsened; he is unable to get out of the house to shop for food, and therefore cannot cook. Another patient in the study expresses willingness to help by providing him with meals, but Tom declines, as he is uncomfortable having anyone come to his home. He does not want to attend any group classes, and is increasingly unresponsive to phone calls and texts. Tom is ultimately lost to follow-up, stating he cannot get out of the house and does not want anyone coming to see him. He continues to attend usual care visits with his primary.

Vignette 2: A "Success Story"

"Sara" (Patient 1, above) is a graduate student with a history of Crohn's disease complicated by strictures, stenotia, and medication failures. She lives with her partner, who suffers from IBS. She started the study while in a flair, with an HBI score of 11, corresponding with moderate disease. She described her health as "Poor." She and her partner do not cook regularly, and their diet consists mostly of simple starches and sugar.

At follow-up, after two months on the IBD-AID, Sara feels much improved and has considerably more energy. She is now sharing cooking duties with her spouse. She reports having no difficulty avoiding adverse foods, but adding probiotic foods is more difficult. Sara's lab values reflect her symptomatic improvement, and interestingly, her perception of support from her family/spouse increased from 3 to 5, 5 indicating the most support. She has also gained insight into how stress and lack of sleep impede her healing.

DISCUSSION

- Eliminating problem foods from the diet is often manageable for patients, but adding unfamiliar foods (particularly probiotics, such as plain yogurt, kimchi, miso, sauerkraut, etc.), is a huge barrier to maintaining compliance.
 - May be a partial reflection of the Western food and dieting culture
- Despite lack of statistical significance, the two patients who exhibited normalizing lab values, in combination with their improved HBI scores, suggest the possibility of a real and meaningful benefit from IBD-AID for those able to comply with the dietary and lifestyle changes.
- Feasibility: The considerable loss to follow-up in this study may reflect a variety of issues:
 - The diet itself, which should be re-examined to simplify or reframe in order to maximize generalizability and access for a greater percentage of IBD patients
 - The medical and psychosocial complexity of IBD patients
 - These limitations highlight the need for additional support and close follow-up when it comes to facilitating lifestyle change in this population.

CONCLUSION

Overall, this small study highlights the need for larger-scale clinical trials in order to draft nutritional guidelines for IBD patients and further legitimize the utility of preventive clinical nutrition in Western medicine.



This research was supported by the UMMS Center for Applied Nutrition