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The Efficacy of Fecal Microbiota Transplantation (FMT) on Symptom Reduction in Patients with Irritable Bowel Syndrome (IBS)

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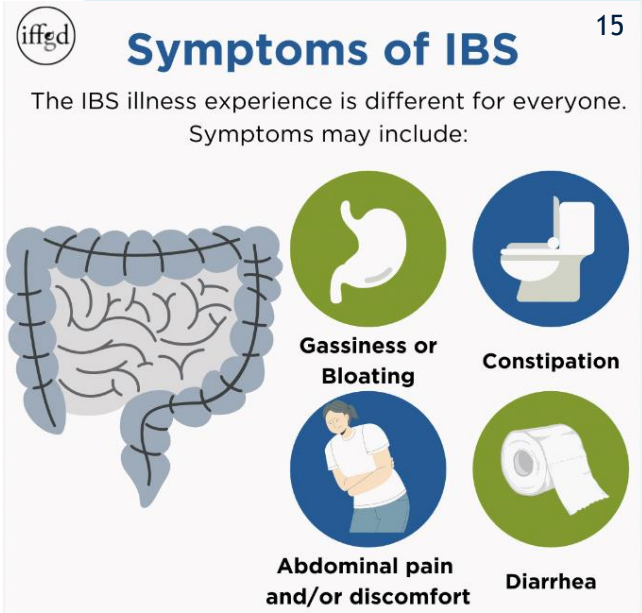
Background

- IBS is a functional gastrointestinal tract disorder that affects 5-10% of the population.[1]
- Symptom severity ranges from mild to severe interference with daily life.[1]
- Current treatments are highly ineffective and focus on relieving symptoms rather than solving the root problem, gut dysbiosis.[5, 6]
- **Aim**: To determine if FMT significantly reduces symptom severity in IBS patients.



Methods

- A literature search conducted through PubMed and Google Scholar using the terms “fecal microbiota transplantation,” “FMT,” “irritable bowel syndrome,” and “IBS.”
- Inclusion criteria comprised of all ranges of IBS severity, all subtypes of IBS, any route of administration, any dosing of fecal transplant, and any form of donor sample.
- Exclusion criteria comprised studies not using placebo, not blinding participants, studies observing IBS in combination with other comorbidities such as anxiety and depression, and studies published before 2018.
- Search results utilized the timeline of 2018-2023.
- Final selection included 6 randomized control trials.

Results

- FMT significantly reduced symptom severity in 3 studies.[6, 7, 9] The remaining 3 studies did not show significant symptom reduction from FMT compared to placebo.[3, 8, 11]
- See Table 1.

Discussion

- Limitations include inconsistencies in donor selection, participant selection, administration route, and sample storage.[3, 6, 7, 8, 9, 11]
- Direct administration appears to be superior to oral capsules.[3, 6, 7, 9]
- There is insufficient evidence to support use of fresh over frozen stool samples.[10]
- Data on the gut microbiome is lacking.[11, 13]

Conclusion

- Poor diet, stress, and rising cases of anxiety, depression, and other mental health disorders will likely increase IBS prevalence.
- There is not enough clear evidence to establish FMT as an approved treatment for IBS patients at this time as current data is mixed.
- PAs working in primary care and gastrointestinal specialties among other fields will encounter patients with IBS.
- PAs will have the opportunity to educate their patients on the latest research which will not only strengthen the patient-provider relationship but will also create additional opportunities to utilize a nonconventional, emerging therapeutic option.

References

1. International Foundation for Gastrointestinal Disorders. IBS Facts and Statistics. Available at: https://aboutibs.org/what-is-ibs/facts-about-ibs/. Accessed March 8, 2023.
2. Rome Foundation. Rome IV Criteria. Available at: https://theromefoundation.org/rome-iv/rome-iv-criteria/. Accessed April 7, 2023.
3. Lahtinen P, Jalanka J, Hartikainen A, et al. Randomised clinical trial: Faecal microbiota transplantation versus autologous placebo administered via colonoscopy in irritable bowel syndrome. *Aliment Pharmacol Ther* 2020; 51: 1321-1331. doi: 10.1111/apt.15740.
4. El-Salhy M, Hausken T, Hatlebakk JG. Current status of fecal microbiota transplantation for irritable bowel syndrome. *Neurogastroenterol Motil* 2021; 33: e14157. doi: 10.1111/nmo.14157.
5. Mayo Clinic. Irritable bowel syndrome. Available at: https://www.mayoclinic.org/diseases-conditions/irritable-bowel-syndrome/diagnosis-treatment/drc-20360064/. Accessed April 7, 2023.
6. Holvoet T, Joossens M, Vazquez-Castellanos JF, et al. Fecal microbiota transplantation reduces symptoms in some patients with irritable bowel syndrome with predominant abdominal bloating: Short- and long-term results from a placebo-controlled randomized trial. *Gastroenterology* 2021; 160: 145-157. doi: 10.1053/j.gastro/20202/07.013.
7. El-Salhy M, Hatlebakk JG, Glija OH, Kristoffersen AB, Hausken T. Efficacy of faecal microbiota transplantation for patients with irritable bowel syndrome in a randomised, double-blind, placebo-controlled study. *Gut* 2020; 69: 859-867. doi: 10.1136/gutjnl-2019-319630.
8. Halkjaer SI, Christensen AH, Lo BZS, et al. Faecal microbiota transplantation alters gut microbiota in patients with irritable bowel syndrome: Results from a randomised, double-blind placebo-controlled study. *Gut* 2018; 67: 2107-2115. doi: 10.1136/gutjnl-2018-316434.
9. Johnsen PH, Hilpusch F, Cavanagh JP, et al. Faecal microbiota transplantation versus placebo for moderate-to-severe irritable bowel syndrome: A double-blind, randomised, placebo-controlled, parallel-group, single-centre trial. *Lancet Gastroenterol Hepatol* 2018; 3: 17-24. doi: 10.1016/S2468-1253(17)30338.
10. Wu J, Lv, L, Wang C. Efficacy of fecal microbiota transplantation in irritable bowel syndrome: A meta-analysis of randomized controlled trials. *Front Cell Infect Microbiol* 2022; 12: 827395. doi: 10.3389/fcimb.2022.827395.
11. Aroniadis OC, Brandt LJ, Oneto C, et al. Faecal microbiota transplantation for diarrhoea-predominant irritable bowel syndrome: A double-blind, randomised, placebo controlled trial. *Lancet Gastroenterol Hepatol* 2019; 4: 675-685. doi: 10.1016/S2468-1253(19)30198-0.
12. Ramai D, et al. Fecal microbiota transplantation: donor relation, fresh or frozen, delivery methods, cost-effectiveness. *Annals of Gastroenterology*. 2019; 32: 30-38. doi:10.20524/aog.2018.0328.
13. Bibbo, S et al. Fecal microbiota transplantation: screening and selection to choose the optimal donor. *Journal of Clinical Medicine*. 2020; 9: 1757. doi: 10.3390/jcm9061757.
14. Corsetti, M and Whorwell, P. The global impact of IBS: time to think about IBS-specific models of care? *Therap Adv Gastroenterol*. 2017; 10: 727-736. doi: 10.1177/1756283X17718677.
15. Symptoms of IBS. About IBS. https://aboutibs.org/signs-and-symptoms/ibs-symptoms/. 2023. Accessed August 9, 2023.

Table 1. Results and Study Characteristics of Selected RCTs

Author	Criteria	IBS Type	Study Size (n)	Follow-up Period	Donor	Route	Outcome
Aroniadis et al.[11]	ROME III IBS-SSS	IBS-D	n=48	12 weeks	4 donors separated; unspecified	Oral capsules	FMT did not create symptom relief at 12 weeks when compared with placebo (p=0.65).
El-Salhy et al.[7]	ROME IV IBS-SSS	IBS-C IBS-D IBS-M	n=165	12 weeks	1 donor; frozen	Distal duodenum via gastroscope	FMT was effective in improving symptoms and quality of life regardless of IBS subtype (p<0.001).
Halkjaer et al.[8]	ROME III IBS-SSS	IBS-C IBS-D IBS-M	n=52	6 months	4 donors mixed; frozen	Oral capsules	Placebo made with saline, glycerol, and food coloring showed significant symptom reduction compared to the FMT group (p=0.012).
Holvoet et al.[6]	ROME III Personal subjective symptom assessment	Refractory (failure of 3+ convention al therapies)	n=62	12 weeks	2 donors separated; fresh	Distal duodenum/ proximal jejunum via nasojejunal probe	FMT demonstrated significant symptom relief compared to placebo (p=0.03).
Johnsen et al.[9]	ROME III IBS-SSS	IBS-D IBS-M	n=83	12 weeks	Multiple; fresh and frozen	Cecum via colonoscope	FMT showed significantly higher response than placebo (p=0.049) at 12 weeks but not at 12 months.
Lahtinen et al.[3]	ROME III IBS-SSS	IBS-D IBS-M Unsubtyped Other	n=49	12 weeks	1 donor; frozen	Cecum via colonoscope	FMT demonstrated significant reduction in IBS symptom severity (p=0.01) but was not significantly different from the placebo group.