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Holistic Care in IBD: Role of Diet, Well Being

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IBD: Diet and Nutrition

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Why Talk About Diet?

- Diet has been shown to be a vital component to overall health and specifically IBD management.
- Unfortunately, a majority of patients receive little to no information and guidance regarding diet and nutrition.
Objectives

- Review importance of proper nutrition
- Describe impact of inflammatory bowel diseases (IBD) on digestion and nutrition
- Discuss healthy eating principles
- Describe impact of diet on IBD: onset, symptoms, and therapy through previous and current research
Importance of Nutrition
What’s the Difference Between Diet and Nutrition?

**Diet**: The foods you eat on a daily basis

**Nutrition**: How your body uses the nutrients from the foods you eat for health.
Impact of IBD on Digestion and Nutrition
Gastrointestinal Tract

Small intestine
- Absorbs vitamins, minerals, and nutrients from the foods/drinks we consume

Large Intestine (Colon and Rectum)
- Absorbs water from the fluids we drink
How Can IBD Affect Digestion?

Crohn’s Disease

- Inflamed small intestine = does not fully digest food or absorb nutrients.
- Incompletely digested foods travel through intestines (may cause diarrhea).

Ulcerative Colitis

- Small intestine works normally.
- Inflamed large intestine = does not absorb water, which causes watery stool (diarrhea) and the urgent need to go to the bathroom. Also, causes ulcers and blood loss.
Patients With IBD at Risk of Malnutrition

<table>
<thead>
<tr>
<th>IBD Symptoms</th>
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</thead>
<tbody>
<tr>
<td><strong>Diarrhea</strong>: Robs body of water, nutrients, electrolytes</td>
</tr>
<tr>
<td><strong>Frequency/numerous bowel movements</strong>: Can cause a person to shy away from eating</td>
</tr>
<tr>
<td><strong>Nausea/abdominal pain</strong>: Can reduce appetite</td>
</tr>
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<table>
<thead>
<tr>
<th>IBD Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inflammation</strong> in and <strong>surgical removal</strong> of parts of the small intestine (Crohn’s disease) can interfere with nutrient absorption</td>
</tr>
<tr>
<td>Generally, ulcerative colitis patients have fewer nutrient deficiencies; however, <strong>weight loss and anemia</strong> can be prominent due to diarrhea and blood loss</td>
</tr>
<tr>
<td>Patients with <strong>ileostomies</strong> may experience <strong>nutrient losses</strong> and dehydration if daily outputs exceed 1 liter</td>
</tr>
</tbody>
</table>
## Common Nutrient Deficiencies in IBD

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Risk for deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin B$_{12}$</td>
<td>Inflammation or removal of the ileum</td>
</tr>
<tr>
<td>Folate</td>
<td>Sulfasalazine and methotrexate use; inflammation or removal of the duodenum</td>
</tr>
<tr>
<td>Vitamin A, D, E, K</td>
<td>Fat malabsorption; small bowel inflammation or resection can lead to malabsorption</td>
</tr>
<tr>
<td>Magnesium</td>
<td>Inflammation or removal of large portions of the jejunum and ileum, fistula losses, chronic diarrhea</td>
</tr>
<tr>
<td>Zinc</td>
<td>Inflammation or removal of distal duodenum or proximal jejunum, diarrhea, fistula losses, prednisone use</td>
</tr>
<tr>
<td>Calcium</td>
<td>Avoidance of dairy foods, fat malabsorption, prednisone use, inflammation throughout the small intestine</td>
</tr>
<tr>
<td>Potassium/Sodium</td>
<td>Chronic diarrhea, vomiting, and prednisone use</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>Prednisone use</td>
</tr>
<tr>
<td>Iron</td>
<td>Gastrointestinal bleeding</td>
</tr>
</tbody>
</table>
Curcumin

Found in turmeric (member of the ginger family)

Anti-inflammatory and antioxidant

Has been shown to facilitate clinical remission in UC patients when given with mesalamine

Promising in maintenance of remission in UC patients

3gm/day

2gm/day
Dietary Supplements

Before taking any vitamin or dietary supplements, discuss it with your doctor and/or dietitian

Consider taking:

- Daily multivitamin/mineral supplement
- Calcium and vitamin D supplement
  - 1000 to 1500 mg daily (higher dose for patients on steroids)
  - 1000 to 2000 IU vitamin D daily

You may also need:

- Monthly B$_{12}$ injections or sublingual (if disease of the ileum or surgical resections)
- Folate (with sulfasalazine or methotrexate use)
- Zinc (limited course of 220 mg zinc – 2 to 4 weeks)
- Elemental iron at dose of 65 mg or liquid iron
Diet and Healthy Eating
Challenges With Food Choices

Everyone’s IBD is different… no one single diet or eating plan will work for everyone with IBD.

Dietary recommendations must be tailored to the individual patient.

Certain foods for individual patients may make symptoms worse.
1. Promoting the beneficial, *anti-inflammatory* intestinal bacteria with:

- Vegetables & Fruit
- Soluble Fiber (steel-cut oats, ground flax seed, lentils, beans)
- Good protein & fats (beans, nuts, olive oil, avocado, ground flaxseed, fish, soy)
- Probiotics (yogurt, kefir, miso, kimchi, sauerkraut, local honey)
- Prebiotics (artichokes, leeks, asparagus)

2. And decreasing the *pro-inflammatory* intestinal bacteria by eliminating certain carbohydrates, such as:

- Refined sugars and certain starches
- Grains (steel-cut and rolled oats are allowed)
- Lactose (anything containing milk or cream)

*These carbohydrates are thought to provide a food for pro-inflammatory bacteria.*
CASE #1

UC Flare
33 yo female with diagnosis of pancolitis 5 years earlier well controlled on 5asa therapy presents with increase in bowel frequency and stools are now mixed with blood and mucous. She is having 5-7 urgent stools per day with night waking. She is bloated and uncomfortable.
# The IBD-Anti-Inflammatory Diet or IBD-AID

<table>
<thead>
<tr>
<th></th>
<th>IBD-AID</th>
<th>Mediterranean</th>
<th>SCD</th>
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<tbody>
<tr>
<td><strong>Prebiotic Foods</strong></td>
<td>- Daily consumption</td>
<td>Not considered</td>
<td>Not considered</td>
</tr>
<tr>
<td></td>
<td>- Oats</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- High soluble fiber foods</td>
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</tr>
<tr>
<td></td>
<td>- Beans, lentils, peas</td>
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<td></td>
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<tr>
<td></td>
<td>- Mango, banana, orange, papaya</td>
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<tr>
<td></td>
<td>- Squash, sweet potato, asparagus</td>
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<tr>
<td></td>
<td>- Inulin containing foods</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Spinach, onions, leeks, other greens</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Probiotic/Fermented Foods</strong></td>
<td>- Included daily</td>
<td>Not considered</td>
<td>Yogurt (homemade)</td>
</tr>
<tr>
<td></td>
<td>- Yogurt, Kefir, miso, sauerkraut</td>
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<td></td>
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<tr>
<td><strong>Foods Avoided</strong></td>
<td>- Sucrose</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- Wheat, corn, potatoes, rice</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>- Lactose</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- Tran-fatty acids</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Limits saturated fats</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Foods Emphasized</strong></td>
<td>- Mono-saturated fats</td>
<td></td>
<td>Monosaturated fats</td>
</tr>
<tr>
<td></td>
<td>- Omega-3 fats</td>
<td></td>
<td>Omega-3 fats</td>
</tr>
<tr>
<td></td>
<td>- Nutrients and components balanced for patient needs</td>
<td></td>
<td>Not considered</td>
</tr>
<tr>
<td><strong>Digestive ability</strong></td>
<td>- Food textures staged according to symptomology</td>
<td>Not considered</td>
<td>Patients start with bone broths</td>
</tr>
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<td></td>
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</tbody>
</table>
# Recommendations During a Flare

## Avoid Potential Problem Foods
- Foods high in insoluble fiber
- Foods with sugar, artificial sweetener, and sugar alcohols
- Lactose rich foods
- Gassy vegetables and uncooked vegetables/fruit
- High fat/greasy/fried foods
- Caffeine
- Alcoholic and carbonated beverages

## Eating Recommendations
- Eat smaller, more frequent meals
- Stick with bland, soft foods (no spicy food)
- May need to eat more protein during this time
- If necessary, add oral nutrition supplement, such as Boost or Ensure
Sugar

Consuming too much sugar can cause imbalance of gut bacteria and can contribute to digestive upset.

“Added sugar” includes sugars and syrups added to foods during processing, preparation, or at the table. Added sugars are found in foods low in other nutrients, such as: dairy desserts, baked desserts, sweetened beverages, and candy.

Too much added sugar can worsen gastrointestinal symptoms during both active and inactive IBD and can further dehydrate the body.

Try alternatives to hydrate yourself. Examples:

- Fruit-infused water
- Fruits
Potential Foods to Include During/After Flare (If Well Tolerated)

- Diluted juices
- Fruit/vegetable smoothies
- Pureed vegetable soups
- Applesauce
- Canned fruit without added sugar
- Banana
- Pumpkin
- Oatmeal, cream of wheat
- Plain chicken, turkey, or fish
- Cooked eggs or egg substitute
- Mashed potatoes, rice, or noodles
- White bread
- Oral nutrition supplements
Drink Plenty of Fluids

- In general:
  - Drink at least 64 ounces of water per day = eight 8-ounce glasses
  - Drink beverages slowly
  - Avoid using a straw
  - Alcohol and caffeinated drinks do not count = they dehydrate the body
- When experiencing diarrhea, you may be at risk of dehydration

Beverages to try:

- Water
- Low-sugar sports drinks without artificial sweeteners
- Fruit juices diluted with water
- During severe diarrhea = rehydration drinks (eg, electrolyt)
- Oral Rehydration Solutions (ORS) – homemade recipes are available
Recommendations for Healthy Diet

**Calories**
- Eat to maintain weight, or
- Increase calories by 250 to 500 calories per day for weight gain

**Protein**
- Divide weight (in pounds) in half. Aim for that amount of protein (grams/day).
  Example: If you weigh 100 pounds, aim to eat 50 grams of protein/day.
Note: Protein needs increase with active inflammation, steroid use, surgery, etc. so, always check with your provider first.

**Fluid and Electrolytes**
- Divide weight (in pounds) in half. Aim for this amount of fluid (ounces/day).
- Increased need with diarrhea or after exercise
- Fluids with electrolytes (sodium, potassium) may be required as well
Fruits & Vegetables

- A diet rich in fruits and vegetables is associated with positive health outcomes
- Sources of many nutrients: potassium, magnesium, folate, vitamins A and C
- Aim for 5 to 9 servings of fruits and vegetables per day
- 1 serving = ½ cup cooked vegetables or 1 cup raw vegetables

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Recommended Foods</th>
<th>Foods to Avoid</th>
</tr>
</thead>
</table>
| Vegetables | • Cooked, pureed, or peeled vegetables  
|            | • Vegetable stock added to rice or pasta for additional nutrients                 | • Vegetables that are gas producing (eg, broccoli, Brussels sprouts)           |
|            |                                                                                  | • Vegetables that have a tough skin                                           |
| Fruit      | • Cooked, pureed, canned, or peeled fruits  
|            | • Smoothies                                                                       | • Fruits with added sugar                                                     |
Calcium

- Calcium is important for bone health, reducing the risk of osteoporosis and proper muscle functioning
- Foods that contain calcium are also sources of vitamin D, phosphorus, potassium, and protein
- Choose 3 servings per day
  - 1 serving = 1 cup of milk or yogurt

Foods high in calcium include:

- Dark, leafy greens
- Sardines with bones
- Skim or 1% milk (lactose free if intolerant)
- Other low lactose options include most hard cheeses, yogurt, and kefir
- Alternate milk options: soy milk, almond milk, rice milk
Protein

- Protein is an important nutrient for healing after surgery and building components of the immune system
- One egg, an ounce of meat, 1 cup of milk = 7 grams of protein

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Recommended Foods</th>
<th>Foods to Avoid</th>
</tr>
</thead>
</table>
| Protein   | • Lean sources (eg, fish, skinless chicken, eggs, tofu)  
           | • Smooth nut butters (eg, peanut, almond, cashew)  
           | • Low fat dairy  
           | • Vegetarian meat alternatives | • Processed meats or high fat meats like sausages, hot dogs, bologna, fried meats, or fatty meats |
Unsaturated Fats

**Omega 3 Fatty Acids**
- Salmon
- Tuna
- Walnuts
- Flaxseed oil
- Fortified foods

**Omega 3 Fatty Acids Supplement**
- EPA, DHA (1 to 3 grams)

**Monounsaturated Fats**
- Olive oil
- Canola oil
- Nut butters
- Avocados
Specific Diets – What to Consider

Important Note about Diets

- Most diets have not been scientifically proven to prevent or control IBD
- There is a lot of debate in the medical community regarding the benefits of these diets
- Some diets may be complicated to follow
- Some diets may be risky
- A diet should not replace medical therapy
- **ALWAYS** speak with your doctor or dietitian first before starting a particular diet

- The best diet is one that meets **YOUR** nutritional needs, while helping you better manage your IBD symptoms.
- Work with your doctor or dietitian to create a diet that is right for you.
# Examples of Popular Diets

<table>
<thead>
<tr>
<th>Diet</th>
<th>Concerns/Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specific Carbohydrate Diet™</strong></td>
<td>• Restrictive – can lead to malnutrition if not followed appropriately</td>
</tr>
<tr>
<td></td>
<td>• Can eliminate dietary sources of short chain fatty acids, preferred source of colon cells.</td>
</tr>
<tr>
<td></td>
<td>• Grain free, soy free, sugar free</td>
</tr>
<tr>
<td><strong>Low Fermentable Oligosaccharides, Disaccharides, Monosaccharides, and Polyols (FODMAP)</strong></td>
<td>• Requires careful label reading.</td>
</tr>
<tr>
<td></td>
<td>• Usually short term (4 to 6 weeks)</td>
</tr>
<tr>
<td></td>
<td>• Talk to a dietician for complete nutritional needs.</td>
</tr>
<tr>
<td></td>
<td>• Reduce/limit certain sugars</td>
</tr>
<tr>
<td><strong>Gluten Free</strong></td>
<td>• Some people with IBD may be sensitive to gluten and have gluten intolerance</td>
</tr>
<tr>
<td></td>
<td>• Food diary can help determine the effect of gluten containing food products.</td>
</tr>
<tr>
<td></td>
<td>• Eliminate protein found in grains including wheat, rye, and barley products</td>
</tr>
</tbody>
</table>
## Examples of Popular Diets

<table>
<thead>
<tr>
<th>Diet</th>
<th>Concerns/Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paleo Diet</strong></td>
<td>• Eliminates refined sugar, dairy, legumes, and grains</td>
</tr>
<tr>
<td></td>
<td>• Emphasizes intake of lean, non-domesticated (game) meats and non-cereal plant based</td>
</tr>
<tr>
<td></td>
<td>foods, such as fruits and nuts</td>
</tr>
<tr>
<td></td>
<td>• Limits nutrient dense foods</td>
</tr>
<tr>
<td></td>
<td>• No formal studies on this diet and IBD</td>
</tr>
<tr>
<td><strong>Mediterranean Diet</strong></td>
<td>• Eat poultry, eggs, cheese, and yogurt in moderation</td>
</tr>
<tr>
<td></td>
<td>• Eat red meat only rarely</td>
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</tbody>
</table>
Vitamin Deficiency and Elimination Diets

- Diets that eliminate dairy or lactose may contribute to vitamin D deficiency. Vitamin D levels should be carefully followed.

- Additional bloodwork to check:
  - Vitamin B$_{12}$
  - Iron stores, ferritin
  - Zinc

- Consider multivitamins

- Before starting any elimination diet, consult with your healthcare team.
Several studies asked patients to recall (remember) the type of diet that they were eating before their diagnosis. In addition, there have also been large dietary studies followed over time in which some patients developed IBD and others did not.

**Increased risk of ulcerative colitis** associated with:

- High intake of sugar and soft drinks.
- Low intake of vegetables.
- High intake of animal protein and processed meats.
- High intake of omega-6 polyunsaturated fatty acids.
  - Red meat (beef, pork), cooking oil (corn, sunflower)

**Lower risk of Crohn’s disease** associated with:

- High intake of fiber (fruits and vegetables).
- Food additives (sweeteners, emulsifiers, thickeners, preservatives, food colorings) warrant further evaluation
Diet and Risk of Ulcerative Colitis (UC) Relapses

• Several studies have shown association between intake of animal protein and risk of UC relapses.
• In 1 study, 191 patients with ulcerative colitis in remission were followed for 1 year.
• Fifty-two percent of patients relapsed during the study period.
• Consumption of meat (particularly red meat) and processed meat increased likelihood of relapse.

By Jon Sullivan [Public domain], via Wikimedia Commons

Diet and IBD Symptoms

- Patients with IBD report that certain diets increased symptoms.
- Up to 75% of patients with IBD say they follow a restricted diet due to food intolerances or perceived worsening of symptoms.

Foods reported to worsen IBD symptoms:

- Spicy food: 164
- Fatty food: 116
- Alcohol: 84
- Raw vegetables/fruits: 77
- Milk/milk products: 64
- Carbonated beverages: 46
- Coffee/tea: 43
- Sugary food: 41

Number of respondents = 238

Diet and IBD Symptoms

- IBD Partners Study: Survey 7000 patients with Crohn's disease or ulcerative colitis
- Patients were much more likely to identify foods that worsened rather than improved their symptoms
- Yogurt, rice, and bananas most often reported to improve symptoms

<table>
<thead>
<tr>
<th>Foods most frequently reported to worsen symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
</tr>
<tr>
<td>Fruit</td>
</tr>
<tr>
<td>Spicy foods</td>
</tr>
<tr>
<td>Fried foods</td>
</tr>
<tr>
<td>Milk</td>
</tr>
<tr>
<td>Red meat</td>
</tr>
<tr>
<td>Soda</td>
</tr>
</tbody>
</table>

Fiber and IBD Symptoms: Helpful or Harmful?

• Patients with IBD are often advised to reduce the amount of fiber that they eat when they have active disease.

• Growing evidence suggests that fiber may not need to be restricted:
  – In 2014: One study reviewed 23 trials (1296 patients)\(^1\)
    • 12 studies in Crohn’s disease showed no effect of dietary fiber
    • 3 out of 10 studies showed fiber supplementation to benefit disease outcomes
  – In 2015: the Foundation conducted a survey of 1619 patients and found that fiber was associated with reduced disease flares in Crohn’s disease but not ulcerative colitis.\(^2\)

• Therefore, recommendations to limit dietary fiber may need to be re-evaluated.

Diet and IBD Symptoms: Low FODMAP Diet

FODMAPS: Fermentable, Oligo-, Di-, Monosaccharides And Polyols).

• Fructo-oligosaccharides (wheat, onions, legumes)
• Lactose (milk, ice cream)
• Fructose (apples, honey)
• Galactans (legumes)
• Sorbitol (stone fruits, artificial sweetener)

• Poorly absorbed carbohydrates increase small intestine water and colonic gas production due to fermentation by intestinal bacteria.
  – Can cause abdominal pain, bloating, increased gas, diarrhea, or constipation.

• In a small study of patients with IBD in remission who followed a low FODMAP diet, there was a reduction in abdominal pain, bloating, and gas.

• With re-challenge with fructans (wheat, onions, garlic) was associated with increased symptoms.

Diet as Therapy for IBD
Diet as Therapy for IBD: Nutritional Support Therapy

• **Enteral nutritional therapy** is the only dietary therapy that has been rigorously tested and proven to reduce inflammation in children with Crohn’s disease.

**Enteral Nutrition (EN):**
- Tube Feeding OR By Mouth
  - Exclusive Enteral Nutrition (EEN) – 100% exclusive formula
  - Partial Enteral Nutrition – 30 to 50% of calories from formula, remainder is from solid food or regular diet

**Parenteral Nutrition:**
- Intravenous (IV) Feeding
  - May supplement oral or tube feeding
  - May be sole source of nutrients (total parental nutrition) – rare
Partial Enteral Nutrition (PEN) Study in Crohn’s Disease

- Randomized Controlled Trial evaluated use of PEN versus regular diet in maintaining remission in Crohn’s disease.
- Study was stopped early due to benefit in treatment group.

Relapse rate in PEN was 35% versus 64% in regular diet group

Nutritional Supplements: Probiotics

- Live micro-organisms that may improve the balance of good versus bad bacteria
  - *E. Coli* strain Nissle 1917
  - *Lactobacillus*
  - *Bifidobacterium longum*
  - VSL#3

Based on current research:

- Some evidence that VSL#3 may improve active ulcerative colitis and pouchitis.
- No evidence that probiotics improve Crohn’s disease activity.

Diet as Therapy for IBD: Elimination Diets

Several diets have been described including:

- Specific Carbohydrate Diet (SCD)
- Crohn’s Disease Exclusion Diet (CDED)
- Anti-inflammatory Diet (IBD-AID)
- Allergen Elimination Diet
- Semivegetarian Diet
- Low Fermentable Oligosaccharides, Disaccharides, Monosaccharides and Polyols Diet (Low FODMAP Diet)
- Mediterranean Diet

Only the **SCD** and **CDED** diets have shown improvement in clinical remission *and* reduction in markers of inflammation.

Importance of GI/Dietitian Team

Work together to identify factors for nutrient loss and recommended replacement

Optimized nutrition can improve healing, particularly after surgery

Make healthy nutritional changes to complement medical therapies
IBD Management: Overall Picture

IBD treated through a variety of treatment approaches

Good nutrition does not replace conventional medical and surgical therapies for IBD

Complementary approaches can help with symptom relief, but talk to your doctor before taking any alternative therapies
QUESTIONS