

## **Nutrition Therapy for Bloating**

### **Types of bloating and causes**

- Bloating is the sensation of abdominal fullness, gassiness or distention, without any visible change in appearance.
- Distention is when the abdominal area visibly changes along with the sense of bloating and fullness.
- Bloating and distention are very common and often occur together; they are reported by about 15-30% of the general population (affecting more women than men), and that number increases to 67-90% for people with an IBS diagnosis. While bloating rarely is a red flag for significant systemic diseases, it often has a profound impact on overall quality of life.
- Bloating may be due to gut-brain interactions or organic conditions. Symptoms may affect the upper abdomen, lower or both and the distinction is subjective. Although the etiology is currently incompletely understood, here are some common causes:

#### **Upper GI bloating**

- Aerophagia: A condition involving the swallowing of excess air. This may be exacerbated by chewing/eating too quickly, talking while eating, chewing gum.
- GERD: Bloating occurs in up to 50% of people with gastroesophageal reflux disease or GERD, and is often accompanied by belching.
- H pylori: In some people, H. pylori infection can be the cause of dyspepsia symptoms, including bloating, and may resolve post treatment.
- Functional dyspepsia: Persistent upper GI pain of unknown cause. Symptoms include bloating, early satiety, nausea and belching, with discomfort usually worse after the meal. Sometimes mistaken for gastroparesis
- IBS: There are different subtypes of Irritable Bowel Syndrome. People with constipation-predominant IBS (IBS-C) or IBS-mixed are most likely to experience bloating.
- Gastroparesis: Delayed gastric emptying without any type of notable obstruction. Slower motility can lead to bloating.

- SIBO, or small intestinal bacterial overgrowth: Generally, the majority of our gut microbiome resides in the large intestine. With SIBO, there is an increased number of bacteria in the small intestine. Like all bacteria, they cause gas, but the small intestine is not designed to stretch like the large intestine, so this can lead to bloating. SIBO is particularly prevalent in conditions such as cystic fibrosis, Parkinson's disease, scleroderma, diabetes, and connective tissue diseases, and is also found in higher rates in patients with IBD or those with bowel or abdominal surgeries.
  - IMO, or intestinal methane overgrowth, is associated with slowed motility, and is associated with bloating as well.
- Carbohydrate malabsorption: Complex carbohydrates are broken down through amylase and pancreatic enzymes. The brush border enzymes in the small intestine also break down disaccharides, such as lactose, sucrose and maltose. Any deficiencies in these enzymes can cause bloating and other GI symptoms.
  - Many people with digestive disorders also may be sensitive to fermentable carbohydrates, or FODMAPs, which may also contribute to bloating. This will be discussed on page (ADD PAGE NUMBER)
- Celiac disease: An autoimmune reaction to gluten, a protein found in wheat, barley, and rye. Malabsorbed gluten can cause bloating.
- Pancreatic insufficiency, or exocrine pancreatic insufficiency: The pancreas has many roles, including producing digestive enzymes. If there are inadequate pancreatic enzymes, such as amylase, lipase, protease and elastase, a range of nutrients may be malabsorbed, which can cause bloating. While anyone can develop EPI, this is common among people with Celiac, Cystic fibrosis, IBD, pancreatic cancer, chronic pancreatitis and diabetes.
- Postural Orthostatic Tachycardia Syndrome (POTS): A condition involving a rapid increase in heart rate when going from a lying down to a standing position. ~90% of people with POTS have digestive symptoms; bloating is common.
- Abdominophrenic dyssynergia (APD): A condition of lack of coordination between the diaphragm and abdominal wall, leading to bloating immediately after a meal, even a very small one.
- Inflammatory bowel disease (IBD): Includes Crohn's and Colitis. While often this isn't the symptom that gets the most attention, 80% of people with IBD have bloating.

### **Lower GI bloating**

- Endometriosis: A chronic, inflammatory condition with lesions around the uterus. Many patients both experience bloating, and visceral hypersensitivity to the sensation of bloating.
- Constipation: 90% of people with constipation report bloating; relieving constipation may help decrease bloating.
- Pelvic floor dysfunction or dyssynergia: The muscles of the pelvic floor are responsible for coordinating the movement of stool and gas through the GI tract; any weakness or discoordination can contribute to bloating and constipation.

### **Dietary approaches to address bloating**

- First line approach is intake of a whole food, Mediterranean-style diet that is high in soluble fiber, and reducing or eliminating nutrient poor, ultra-processed foods. A review of healthy eating should be provided to the patient as general foundational support.
- Identify any first-line patient specific triggers like caffeine, alcohol, added sugar alcohols and substitutes that could exacerbate symptoms.

### **Elimination Diets**

- As a second line approach, elimination diets like the low FODMAP (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols) diet require close monitoring as they can quickly result in nutrient deficiencies or inadequacies (see the DIGID handout on FODMAPs).
  - o The mechanism of action of this diet consists of restricting intake of these short chain carbohydrates, reducing their fermentation in the colon, potentially affecting the bacterial composition of the microbiome, and ultimately reducing symptoms of gas and bloating.
  - o If there is a suspected intolerance to FODMAPs; consider eliminating high FODMAP foods for at least 2-6 weeks, and then slowly reintroduce eliminated and closely monitor symptoms. Reintroduction of foods is highly personalized based on the patient's symptoms, with no set rules for which FODMAPs to reintroduce first.
  - o Due to the restrictive nature of this diet, it is highly recommended to consult with a dietitian to support the patient with diet initiation and rationale, and to monitor for any nutritional deficiencies. Additionally, this diet may be contraindicated in patients with a history of disordered eating.

### **Identify or rule out any additional food intolerances, sensitivities or allergies.**

- Food sensitivities to casein in dairy or gluten-containing products like wheat could exacerbate symptoms of bloating in susceptible individuals. The composition of wheat, including proteins like gluten (namely glutenin and gliadin), lipopolysaccharides, amylase/trypsin inhibitors, and wheat germ

agglutinins could trigger an IgE or non- IgE mediated inflammatory cascade if they reach the gut undigested. This can lead to impairment of overall GI function and alterations in gut barrier function and absorptive capabilities, causing increased symptoms of gas, bloating and distention, among others.

- Gluten-containing foods like wheat tend to contain fructans, which are high FODMAP. Therefore, it is difficult to assess if gluten alone can trigger bloating or if the combination of gluten and its related proteins as well as the fructan content in gluten-containing foods are the trigger. The same is true for dairy products containing the milk protein casein as well as the FODMAP, lactose.
- It is critical that patients be assessed on a case-by-case basis to determine if dairy or gluten-containing grains should be eliminated from the diet for a period of time, or if follow up diagnostic work is warranted to rule out celiac disease, non-celiac gluten or wheat sensitivity, or dairy/lactose intolerance or allergy in patients experiencing symptoms of bloating.

### **Identify fiber presence in diet**

- Assess the effects of insoluble vs. soluble fiber intake on your patient's symptomatology. Some patients can tolerate some insoluble fiber intake with minimal bloating, while others display increased symptomatology.
- Encourage patients to continue to eat a diet high in easily digestible, soluble fiber containing fruit and vegetables; a diet low in fiber could lead to constipation and further exacerbation of symptoms.
  - Lightly steaming or cooking produce can help increase digestibility. Adding a smoothie to the daily routine also increases intake of soluble fiber at one sitting.
- Provide the patient with resources outlining soluble vs. insoluble fiber containing foods (see the DIGID handout on Fiber Basics) and ask them to maintain a food diary (if appropriate) with a specific duration target to assess any associated symptoms after consumption to further identify triggers.

### **Foundational factors**

- Incorporate small frequent meals during the day to reduce abdominal distention.
- Eliminate carbonated beverages during mealtimes, which could add to feelings of fullness and increase the production of gas or belching.
- Ensure meals are taken while seated, in a non-stressful, distraction-free environment.
- Avoid eating 2 hours before bedtime.

## **Lifestyle approaches to address bloating**

- **Motility**
  - Avoiding constipation and achieving complete evacuations can help to prevent "back up bloat" and keep digested contents moving appropriately.

- o Guidance:
  - Avoidance of straining and proper toileting positioning (leaning forward slightly and using a stool or footrest under the feet so that knees are above hips)
  - Adequate fiber through diet. Educate on texture modifications if appropriate (soft vs hard/roughage)
  - Adequate hydration (see below)
  - Regular exercise: Helps by stimulating digestion, releasing trapped gas, and promoting bowel movements, ultimately reducing discomfort. It also helps to manage stress, a common factor in exacerbating bloating
  - Notify medical team for work up and medication review if unable to improve through diet/lifestyle modifications or symptoms seem severe
- **Hydration**
  - o Inadequate hydration can cause or worsen constipation, leading to increased abdominal distention and bloating
  - o Drinking large volumes (gulping) while eating can cause sensation of excessive fullness
  - o General guidance is for 64 oz/day
- **Behavioral modifications**
  - o Discontinuation of gum chewing, smoking, drinking carbonated beverages, and gulping foods and liquids
  - o In patients with underlying depression or anxiety, appropriate interventions should be initiated by medical/mental health providers
  - o Pelvic floor therapy / abdominal massage
  - o Regular physical activity
    - Exercise helps prevent water retention and keeps bowels moving
    - For some patients, higher intensity work outs such as HIIT/circuit training/sprinting may worsen bloating due to rapid movements and breathing pace
  - o Sleep: Bi-directional relationship
    - Not only does research support GI symptoms causing changes in sleep, but several studies have shown that poor sleep affects underlying symptoms or causes functional dyspepsia symptoms.
- **Gut-brain connection**
  - o A biopsychosocial history should be assessed to determine psychosocial triggering factors, including anxiety, life events, and conditioned responses to stressors of physical symptoms.

- o The AGA recommends psychological therapies, such as hypnotherapy, cognitive behavioral therapy, and other brain–gut behavior therapies may be used to treat patients with bloating and distention.
  - Deep-breathing exercises (diaphragmatic breathing), low intensity movement (stretching/walking/yoga), meditation
  - Gut-directed hypnotherapy
  - May benefit from GI psych consult

## Supplements

- OTC medications
  - o Simethicone: Used on its own or in some antacid products, helps to break up gas bubbles, making them easier to pass.
  - o Activated charcoal: May help with occasional bloating, but evidence remains anecdotal, making it uncommon to recommend.
    - Concern: May inhibit nutrient and medication absorption due to its strong binding properties, so should be taken on an empty stomach and spaced at least 1 hour from meals, supplements, and medications.
- Herbal remedies
  - o Peppermint: Has an antispasmodic effect. It calms the muscles of the stomach and improves the flow of bile, which the body uses to digest fats. As a result, food passes through the stomach more quickly. In the United States, peppermint oil is the most studied herbal remedy for IBS symptoms including bloating. Although it is commonly used because of minimal adverse effects, further studies are needed to document its benefit in bloating and distention.
    - Ex: Peppermint oil capsules or drops / peppermint tea
    - Enteric-coated capsules keep peppermint oil from being released in the stomach, which can cause heartburn and indigestion. This form would be more appropriate for patients who also suffer from reflux symptoms.
  - o Ginger: Has been reported to accelerate GI motility, which may alleviate constipation, further reducing bloating and intestinal gas.
    - Ex: Ginger tea / ginger capsules / ginger root or powder in meals
  - o Anise/Fennel: Have carminative and antispasmodic properties, helping with digestion and to relieve nausea. In some studies, when compared with placebo groups, anise significantly reduced digestive symptoms including bloating.
    - Ex: Aniseed or fennel oil / teas / in cooking
- Probiotics

- o Live microorganisms that confer a benefit to the host. The mechanism of action for reducing bloating is not clear, but some data suggest that it may be related to reduction of intestinal gas production.
- o Although probiotics have been associated with an improvement in symptoms in patients with IBS, the magnitude of benefit and the most effective species and strains remain uncertain.
  - Some studies have seen benefit with Bifidobacterium species, or the multi-strain VSL#3
- o It is the practice recommendation of the AGA that probiotics should not be used to treat abdominal bloating and distention.
- Digestive enzymes
  - o Naturally occurring digestive enzymes are proteins that your body makes to break down food and aid in digestion. These include amylase, protease, and lipase.
    - Although some small studies suggest that digestive enzymes may help reduce bloating and other GI symptoms, there is not enough clinical evidence to support this recommendation.
  - o Products containing specific targeted enzymes such as lactase, sucrase, and alphagalactosidase, may help to break down difficult to digest carbohydrates such as lactose, sucrose, and galactooligosaccharides, respectively.
    - Ex: Lactaid, Sucraid, Bean-O, FODZYME

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