

Gluten-Free Diets: Topic of the Month

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Gluten

Gluten is a protein composite found naturally in wheat, barley, and rye. It can also be found in some other lesser-known grains and may be added to many processed foods.⁵ Gluten acts as a binding agent to add texture and structure to foods, like giving bread its chewiness. It is also used as a meat substitute, in breakfast cereals, and in some commonly used condiments.

A gluten-free diet

Eating a gluten-free diet can be achieved as a part of a normal daily routine of eating foods like:

- Fruits and vegetables, eggs, lean, unprocessed meats, fish, and poultry, beans, seeds, legumes, unprocessed nuts, and most dairy products.

Grains, starches, or flours that are gluten-free include:

- Amaranth, arrowroot, buckwheat, cassava, chia, corn, flax, millet, nut flours, oats, quinoa, white or brown rice, wild rice, sorghum, speltz, teff, and tapioca.

Note: Grains, and other foods, that are naturally gluten-free may become contaminated with gluten when manufactured, processed, or stored in facilities that also handle wheat, barley, or rye.

Gluten concerns

In certain individuals, the ingestion of gluten-containing products may cause a variety of negative responses in the body, especially if they have one of the following conditions:

- Celiac disease (an autoimmune response)
- Wheat allergy (an allergic reaction)

- Non-celiac gluten sensitivity (NCGS) (an immune-mediated reaction)

Each of these reactions are very different medically but may cause similar symptoms to the individual consuming the wheat or gluten. Let's take a deeper look at the difference between each response.

Celiac disease

In celiac disease, gluten sets off an immune response in the small intestine that can cause inflammation that damages the lining over time and prevents absorption of certain nutrients.

Typical symptoms of celiac disease are chronic diarrhea, weight loss, anorexia, abdominal distension, anemia, and perhaps even vomiting or constipation.¹ In small children, symptoms may include poor weight gain along with other symptoms.²

To determine if these symptoms are caused by celiac disease, a blood test for the presence of celiac disease antibodies, along with a biopsy of the small bowel, is required. There is no cure for celiac disease; therefore, following a life-long gluten-free diet is necessary to prevent damages to the small intestine lining. Approximately 1% of the United States population has Celiac Disease, although the true number is unknown since many people go undiagnosed.

Wheat allergy

Wheat allergy causes classic food allergy symptoms, affecting the skin, the gastrointestinal or respiratory tract, and possibly resulting in anaphylaxis for certain people. Wheat allergy is most common in children, and they are at greater risk if both parents also have an allergy.

Wheat allergy symptoms include hives or skin rash, sneezing, stuffy or runny nose, nausea, cramps, indigestion, diarrhea, vomiting, and headaches.²

A skin prick test or a blood test for the presence of IgE antibodies to wheat proteins (not just gluten) is used to diagnose a wheat allergy. Management includes a strict avoidance of wheat in food and non-food products. People with a wheat allergy are often not allergic to other grains such as barley and rye. For those people, a wheat-free diet requires fewer restrictions than a gluten-free diet since only wheat must be avoided.

It is important for parents to share with other caregivers that their child has a wheat allergy to avoid a life-threatening reaction if consumed. About 65% of children with a wheat allergy will outgrow it by age 12.²

Gluten sensitivity

Non-celiac gluten sensitivity (NCGS) refers to those who experience symptoms when consuming gluten-containing products yet have tested negative for celiac disease or wheat allergy. Gluten sensitivity has similar symptoms to celiac disease, but there are no diagnostic biomarkers, and the small intestine is unharmed.

Symptoms of gluten sensitivity may appear as fatigue, headache, brain fog, joint pain, depression, neuropathy, bloating/gas, abdominal pain, constipation or diarrhea.³

Once celiac disease and wheat allergy have been ruled out, and a gluten-free diet significantly improves symptoms, then one may have gluten sensitivity. The gluten sensitivity diagnosis remains controversial since it is based on perceived improvement of symptoms after the elimination of gluten in the diet. Studies have not shown significant differences in symptoms in individuals with a gluten sensitivity diagnosis when challenged with diets with and without gluten. It is estimated that 6-7 % of the US population meet the criterion for a gluten sensitivity diagnosis.⁴

Other considerations about gluten-free

Two popular health claims of gluten-free diets are weight loss and health benefits. These claims have increased due to media hype, celebrity endorsements, and marketing advertisements from food manufacturers.

There is no scientific evidence to show that eliminating gluten will promote weight loss or improve health.¹

Many gluten-free products may have the same, if not more, calories and fat than products with gluten. Some people may experience weight loss once initiating the gluten-free diet, probably due to reducing the amount of processed or other high calorie foods they consume.

Another important aspect of a gluten-free diet is cost. Gluten-free products that are made to mimic gluten-containing products are usually much more expensive; for example, gluten-free breads or gluten-free flours.

Potential nutrition risks of eating gluten-free

Following a gluten-free diet may mean that one is eating fewer grain products, such as bread and pasta, that are enriched with nutrients, which may lead to deficiencies in iron, zinc, calcium, thiamine, B12, riboflavin, niacin, and folate. Whole grain breads and cereals are also a good source of dietary fiber. Limiting fiber can lead to constipation. Consumption of whole grains has been found to lead to lower rates of heart disease, stroke, and type 2 diabetes.⁶ Gluten may also act as a prebiotic, acting as a “good” bacterium to protect our gastrointestinal system.⁶

For some people it may be healthier to eat gluten-free, especially if they have been diagnosed with an allergy. Others may find that a gluten-free diet is right for them, depending on their diet before and what food choices they make while eating gluten-free. Excluding whole food groups from one’s diet should be discussed with a healthcare provider to ensure the right balance of all nutrients are being consumed.

Gluten-free diet and neurodevelopmental disorders

It is a common myth that a gluten-free diet improves the behavior of children with attention deficit hyperactivity disorder (ADHD) or autism, similar to the myth that sugar causes hyperactivity. There is no scientific evidence showing an improvement in ADHD symptoms with following a gluten-free diet in healthy children.⁷

Some children following an exclusion diet have been found to have macro and micronutrient deficiencies. Guidance from a health care provider is encouraged when excluding whole food groups from a child's diet.⁷

Studies with children with autism spectrum disorder have not shown that a diet free of gluten and casein resulted in any significant benefits in behavior or language development. Children who are diagnosed with celiac disease and then adopt a gluten-free diet may see improvement with ADHD symptoms.

Things to consider when working with participants

Explore reasons for following a gluten-free diet:

Begin the conversation with asking their permission to share what it was that lead them to removing gluten from their diet. Use open-ended questions to encourage them to share more information. Examples include:

- What symptoms, if any, were you or your child(ren) experiencing?
- Share with me what you and your healthcare provider discussed about your symptoms.
- What diagnosis, if any, were you given?
- What diet instructions were you given?
- How have symptoms improved on the gluten-free diet? Stayed the same?
- What other health benefits are you experiencing since removing gluten?

If participants are experiencing severe intestinal issues and they haven't already spoken to their health care provider, encourage them to make an appointment for an initial assessment. Their health care provider may want to test them for celiac disease or explore other reasons for their symptoms. If they are pregnant, they should discuss following a gluten-free diet with their health care provider and Registered Dietitian Nutritionist. If they are restricting gluten in their child's diet, a discussion with the child's doctor may also be warranted.

Assess for diet adequacy:

During the nutrition assessment, explore with the participant the types of foods that are being eliminated from the diet. Questions to consider:

- Is the diet actually gluten-free?
- Are they eating gluten-free grains such as brown rice or quinoa?

- Are they purchasing gluten-free substitutes to replace foods they previously ate?
- Is the diet low in all grain products due to the gluten-free diet regimen?

Encourage healthy eating habits:

After a complete assessment, affirm the participant for wanting to eat a healthy diet. Ask permission to share some information about gluten-free diets. If they have been following a gluten-free diet and have noticed improvement in symptoms (even if it's a placebo effect), they may be motivated to continue following the diet. In this case, provide guidance to help ensure their diet is meeting their nutritional needs.

Key points that you may want to share, depending on participant interest and the diet assessment:

- Provide guidance to meet Dietary Recommendations.
- Label reading is key.
 - Look for “gluten free” labeling on packages since naturally gluten free foods may have gluten-containing additives or be cross contaminated during processing.
 - Check the ingredients list for gluten-containing foods.
 - Continue to check labels as manufacturers may change ingredients over time.
- Assess understanding of “gluten-free” foods. Provide education on label reading if helpful.
 - Wheat-related products include bulgur, durum, semolina, farina, graham flour, triticale, and spelt. Malt often originates from barley. “Wheat free” does not necessarily mean gluten free.
 - Check that oat products specifically state “gluten-free” because they are often cross contaminated during processing.
 - Processed foods such as some hot dogs, lunch meats, rice mixes, vegetables in sauces, soups, French fries, salad dressings, ice cream, and candy may contain gluten (it is often used as a food thickener).
- Discuss whole or enriched/fortified gluten free grains such as oats, brown rice, quinoa, buckwheat, amaranth, teff, sorghum and millet that are labeled gluten free. Gluten free flours and cornmeal are also options, but contain less fiber and nutrients.
- Encourage fruits and vegetables as snacks instead of purchasing gluten-free snack foods.
- Use the Shopping Guide to point out WIC foods in the grains category that are gluten-free.
 - WIC gluten-free cereals include: Corn Chex, Rice Chex, Crispy Rice, Cream of Rice, Cheerios, and Multi-grain Cheerios. The latter two are also whole grain.
 - WIC gluten-free whole grain choices include brown rice and corn tortillas.

- If appropriate, and there is no celiac diagnosis, encourage them to work with their health care provider on when and how to retest their *sensitivity to gluten* by introducing a whole grain, such as whole wheat bread, after a period of gluten-free to see if symptoms change.

Support motivation for change:

If the reason for following a gluten-free diet is for some other health reason, such as weight loss, use this as an opportunity to support the motivation for positive change. Focus on the “change talk”.

- Encourage the participants to share the changes they have made in the diet due to going gluten-free.
- Point out the positive things that may be resulting in the desired change.
- Guide them towards healthy gluten-free substitutions if they don’t have adequate grain intake. Encourage retesting gluten sensitivity if open to this possibility.
- Help participants focus on the positive changes and set goals to continue with improving their health.

Documentation and follow-up:

Be sure to document in your notes that a gluten-free diet is being followed. (See [Section 6.8: Nutrition Education Documentation](#)). If there are concerns that the diet is limited in nutrients due to excluding certain food groups, assign the appropriate risk code.

- If severe dietary restrictions are being followed for a pregnant or lactating participant, document risk code 427B “Consuming a diet very low in calories and/or essential nutrients; or impaired caloric intake or absorption of essential nutrients following bariatric surgery.”. (See [Justification for 427B](#)).
- If severe dietary restrictions are being followed for a child, document risk code 425F “Routinely feeding a diet very low in calories and/or essential nutrients”. (See [Justification for 425F](#)).

To ensure continuity of care, an assessment of dietary adequacy and a follow up discussion can occur at the next education contact as appropriate.

Resources

1. [Nutrition & Health Info Sheet for Consumers- Gluten](#) (UCDavis Department of Nutrition)
2. [Wheat](#) (American College of Allergy, Asthma, and Immunology (ACAAI))
3. [Non-Celiac Gluten Sensitivity](#) (Beyond Celiac)
4. [Non-celiac gluten sensitivity: All wheat attack is not celiac](#) (World Journal of Gastroenterology)

5. [Gluten-Free Foods](#) (Celiac Disease Foundation)
6. [Gluten: A Benefit or Harm to the Body?](#) (Harvard T.H. Chan School of Public Health)
7. [Truths, Myths and Needs of Special Diets: Attention-Deficit/Hyperactivity Disorder, Autism, Non-Celiac Gluten Sensitivity, and Vegetarianism](#) (Annals of Nutrition and Metabolism)

References- complete listing of hyperlinks:

Section 6.8: Nutrition Education Documentation

(www.health.state.mn.us/docs/people/wic/localagency/program/mom/chsctns/ch6/sctn6_8.pdf)

Justification for 427B

(www.health.state.mn.us/people/wic/localagency/riskcodes/427.html#justificationb1)

Justification for 425F

(www.health.state.mn.us/people/wic/localagency/riskcodes/425.html#justificationf1)

Nutrition & Health Info Sheet for Consumers- Gluten (nutrition.ucdavis.edu/outreach/nutrition-health-info-sheets/consumer-gluten)

Wheat (acaai.org/allergies/allergic-conditions/food/wheat-gluten/)

Non-Celiac Gluten Sensitivity (www.beyondceliac.org/celiac-disease/non-celiac-gluten-sensitivity/)

Non-celiac gluten sensitivity: All wheat attack is not celiac

(www.ncbi.nlm.nih.gov/pmc/articles/PMC5677194/)

Gluten-Free Foods (celiac.org/gluten-free-living/gluten-free-foods/)

Gluten: A Benefit or Harm to the Body? (www.hsph.harvard.edu/nutritionsource/gluten/)

Truths, Myths and Needs of Special Diets: Attention-Deficit/Hyperactivity Disorder, Autism, Non-Celiac Gluten Sensitivity, and Vegetarianism

(karger.com/anm/article/68/Suppl.%201/42/42349/Truths-Myths-and-Needs-of-Special-Diets-Attention)

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