



# Food Trends and Gluten

## Know the Facts

NUTRITION CONNECTION



## FOOD TRENDS IN 2018 INCLUDE THE GROWING USE OF GLUTEN-FREE FOODS AND BEVERAGES

According to popular food and culinary journals, 2018 will be a year of new and continuing trends that include expansion of Middle Eastern cuisine, product transparency, edible flowers, food powders, new methods to process and combine ingredients, and increased use of sparkling drinks.

Growth in use of gluten-free foods and beverages is also projected as the general public considers foods without gluten as options for healthier eating. This is accompanied with the increased diagnosis of celiac disease and gluten sensitivities.

Over the past decade, gluten avoidance has become the most popular dietary trend in the United States, with over

100 million Americans consuming gluten-free products, most of whom do not have celiac disease. Interestingly, this continued trend is projected to result in the gluten-free products market reaching \$6.2 billion by 2018. The United States has about 59 percent share in the global market.

Our understanding of these 2018 projected trends helps each of us to also embrace the cultural and ethnic significance of food which goes beyond daily sustenance. As healthcare providers, we must get to know our clients and be able to assess the nutritional impact of some of these trends with the possibility of new foods and beverages. This article will address specifically the growing



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use of gluten-free foods as we strive to promote nutritional improved outcomes.

## CELIAC DISEASE AND GLUTEN SENSITIVITY

As we discuss the meaning of gluten-free, we first need to understand how gluten plays a role in celiac disease and non-celiac gluten sensitivity (sometimes referred to as gluten intolerance).

### Celiac Disease

Celiac disease (CD) is a hereditary autoimmune intestinal disorder that affects both children and adults. When an individual with this disorder consumes gluten, an immune reaction is triggered in the small intestine resulting in an inflammatory response.

Tiny finger-like projections or villi in the small intestine become inflamed and eventually damaged from continued exposure to gluten. As a result, the body is unable to adequately absorb nutrients, especially iron, calcium, vitamin D, and folic acid. Also, malabsorption of carbohydrates (e.g., lactose, which is the carbohydrate in milk), protein, and other nutrients may occur.

Untreated celiac disease can lead to increased risk

for autoimmune conditions such as type 1 diabetes, rheumatoid arthritis, or thyroid problems. It can also increase the risk of some gastrointestinal cancers.

Originally thought to be a rare disorder, celiac disease is now recognized as one of the most common inherited diseases. Celiac disease is common in people of North American and European ancestry, as well as in the populations of South America, North Africa, India, Pakistan, and the Middle East.

Symptoms and presentations of celiac disease (CD) may include the following:

- Vitamin and mineral deficiencies (A, D, E, K, calcium), iron, folic acid, and/or vitamin B12 deficiencies
- Chronic fatigue and weakness
- Abdominal pain, bloating, and gas
- Indigestion/reflux (heartburn)
- Nausea and vomiting
- Ongoing or intermittent diarrhea and/or constipation
- Lactose intolerance
- Weight loss (note that CD also can occur in overweight or obese individuals)

- Bone/joint pain
- Muscle cramps
- Easy bruising of the skin
- Itchy, blistering rash
- Tingling or numbness in hands and feet (peripheral neuropathy)
- Swelling (edema) of hands and feet
- Migraine headaches
- Mood swings/depression
- Mouth ulcers (canker sores)

Additional symptoms in children may include:

- Failure to thrive (delayed growth and short stature)
- Irritability and behavioral changes
- Concentration and learning difficulties
- Delayed puberty
- Dental enamel abnormalities (discoloration, loss of tooth enamel)

Diagnosis of celiac disease is often very difficult because of its diverse range of symptoms, some of which overlap with other conditions. Many individuals with celiac disease are misdiagnosed as having other disorders such as irritable bowel syndrome (IBS), lactose intolerance, ulcers, and/or chronic fatigue syndrome. It has been shown that individuals

*Continued on page 14*

## ADDITIONAL RESOURCES

- Shelley Case. *Gluten Free: The Definitive Resource Guide*. Case Nutrition Consulting, Inc. Regina, Saskatchewan, Canada. 2016.
- Gluten Free Watchdog: [www.glutenfreewatchdog.org](http://www.glutenfreewatchdog.org)
- Academy of Nutrition and Dietetics. *Nutrition Care Manual*. <http://www.nutritioncaremanual.org>. Accessed December 6, 2017.
- "Gluten Free" Claims in the Marketplace: *Expected Market Trends*. Agriculture and Agri-Food Canada: [www.agr.gc.ca](http://www.agr.gc.ca). Accessed December 12, 2017.
- American Celiac Disease Alliance: <https://americanceliac.org/>
- Celiac Disease Foundation: [www.celiac.org](http://www.celiac.org)
- National Celiac Association: <http://www.csaceliacs.org/>
- National Foundation for Celiac Awareness: [www.celiaccentral.org](http://www.celiaccentral.org)

with celiac disease see multiple physicians over an average of 11 years before receiving a definitive diagnosis.

Currently, the only treatment for celiac disease is a strict gluten-free diet for life. Following the diet will result in improved health and well-being, as well as greatly reduce the risk of celiac-related complications. In some cases complete healing may not occur, especially if the villous atrophy is severe.

### Non-Celiac Gluten Sensitivity

The phenomenon of gluten sensitivity in the absence of celiac disease is not new; it was first described in medical literature in the late 1970s. Since then, adverse reactions to gluten continue, despite testing negative for celiac disease. This has led to further research and increased publication on the subject.

Non-celiac gluten sensitivity (sometimes referred to as gluten intolerance or gluten sensitivity) continues to be widely debated. Still unclear is whether individuals are reacting to gluten or to some other component in foods. On the other hand, individuals with so-called non-celiac gluten sensitivity actually may have undiagnosed celiac disease.

Gluten sensitivity is characterized by a wide variety of both intestinal and extra-intestinal symptoms including abdominal pain, bloating, gas, diarrhea or constipation, unexplained anemia, headaches, “foggy mind,” depression, chronic fatigue, skin rash, leg numbness, and joint pain.

Due to limited understanding of the pathophysiology, the only way to determine if someone may have non-celiac gluten sensitivity is to first rule out celiac disease and wheat allergy, and then observe the response to a gluten-free diet and a gluten challenge.

Treatment for individuals with non-celiac gluten sensitivity is to follow a gluten-free diet to alleviate symptoms; however, whether gluten must be strictly avoided for life (as is necessary with celiac disease) is at present unknown.

Recently there has also been research on the role of fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAP) carbohydrates in the digestive symptoms seen in non-celiac sensitivity. FODMAPS are the fermentable, poorly

digested, short-chain carbohydrates that can cause bloating, gas, and other digestive symptoms. Currently the dietary approach of FODMAP as a treatment for non-celiac gluten sensitivity is controversial and additional research is needed.

### WHAT IS GLUTEN?

To a baker, *gluten* is the substance in flour that, when combined with a liquid, is responsible for creating the sticky, elastic texture of raw dough. But what exactly is gluten?

In simple terms, gluten is the general name for specific protein fractions (prolamins and glutelins) in wheat, barley, and rye. And while other grains contain prolamins (e.g., zein in corn, sometimes referred to as “corn gluten;” orzenin in rice), these proteins are not harmful to persons with celiac disease or non-celiac gluten sensitivity.

### What Items Contain Gluten?

All types of wheat including spelt, kamut, einkorn, emmer, farro and durum, as well as barley, rye, and triticale contain gluten. In addition to baked products, cereals, and pastas made from these grains, here are some examples of gluten-containing items that must be avoided:

### GLUTEN SENSITIVITY IS CHARACTERIZED

by a wide variety of both intestinal and extra-intestinal symptoms including abdominal pain, bloating, gas, diarrhea or constipation, unexplained anemia, headaches, “foggy mind,” depression, chronic fatigue, skin rash, leg numbness, and joint pain.



- Bulgur
- Couscous
- Freekeh
- Wheat bran
- Wheat flour
- Wheat germ
- Wheat gluten
- Wheat-based semolina
- Fu (dried gluten product sold in thin sheets or thick round cakes)
- Seitan
- Orzo
- Udon
- Barley malt
- Barley malt extract/barley malt syrup
- Barley malt flavoring
- Malt vinegar
- Brewer's yeast
- Beer made from barley, wheat, or rye

In addition, gluten-containing ingredients often are present in many other foods and beverages such as:

- Broths, bouillons, soups
- Sauces
- Soy sauce
- Marinades
- Salad dressings
- Gravy
- Prepared meats (e.g., burgers, hot dogs, sausages)
- Meat substitutes (e.g., vegetarian burgers, sausages)
- Imitation crab or lobster
- Snack foods
- Candy (e.g., licorice, chocolates, chocolate bars)
- Flavored coffees and teas

Product labels and ingredient lists are important to read in helping select safe gluten-free options.

### What About Oats?

Historically, oats were restricted from the gluten-free diet because it was thought that their avenin prolamin caused intestinal damage similar to that caused by the proteins

in wheat, rye, and barley. However, the main reason for reactions to oats is that they frequently are contaminated with gluten-containing grains during seeding, growing, harvest, storage, transportation, and milling. Thus, consumption of regular commercial oats is not safe for individuals with celiac disease. Fortunately, there are companies around the world that produce gluten-free oats, although the methods used vary among growers and millers.

Based on clinical studies over the past 20 years, research has revealed that consumption of pure, uncontaminated oats is safe for the majority of individuals with celiac disease.

### What Can Be Served on a Gluten-Free Diet?

A wide variety of naturally gluten-free foods such as fruits, vegetables, nuts, seeds, legumes (dried beans, lentils, peas, soybeans), eggs, plain meat, poultry, fish, seafood, yogurt, and cheese can be included in a gluten-free diet. In addition, there are many gluten-free flours, cereals, and starches that can be substituted for wheat, rye, and barley (see below). Distilled alcoholic beverages and wines are also allowed; however, beer derived from barley must be avoided. All vinegars are gluten-free except for malt vinegar (made from barley and is not distilled) and some rice vinegars (if derived from wheat or barley and not distilled).

Gluten-free flours, cereals, and starches that can be substituted for wheat, rye, and barley include:

- Amaranth
- Arrowroot
- Buckwheat
- Corn
- Flax
- Pulse flours (bean, lentil, pea)
- Mesquite flour
- Millet
- Nut flours (almond, chestnut, hazelnut, pecan)
- Potato flour
- Potato starch
- Quinoa
- Rice (black, brown, glutinous/sweet, purple, red, white, wild)
- Rice bran

*Continued on page 16*

- Rice polish
- Sago
- Sorghum
- Soy
- Sweet potato flour
- Tapioca (cassava/manioc)
- Teff
- Gluten-free specialty products

Fortunately, the gluten-free marketplace has expanded rapidly, especially over the past few years. Whereas historically only a handful of small specialty companies made gluten-free products, today many manufacturers of all sizes offer a wide range of options.

## CONCLUSION

Predictions for culinary trends in 2018 include an increase in the diverse use of gluten-free foods. Due to the complexities of the gluten-free diet, the Certified Dietary Manager and Registered Dietitian should collaboratively

work on proper diagnosis, assessment, and effective nutrition treatment, to include resident education and involvement. For the individual with sensitivity to gluten, nutritionally adequate, tasty meals and snacks are critical for positive outcomes. ■

## CE Questions



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Reading *Food Trends and Gluten: Know the Facts* and successfully completing these questions online has been approved for 1 hour of continuing education for CDM, CFPPs. CE credit is available ONLINE ONLY. To earn 1 CE hour, purchase the online CE quiz in the ANFP Marketplace. Visit [www.ANFPonline.org/market](http://www.ANFPonline.org/market), select "Publication," then select "CE article" at left, then search the title "Food Trends and Gluten: Know the Facts" and purchase the article.

- Over the past decade, gluten avoidance has become the most popular dietary trend in the United States, with over \_\_\_\_\_ million Americans consuming gluten-free products.
  - 50
  - 75
  - 100
- Celiac disease (CD) is a \_\_\_\_\_ intestinal disorder that affects both children and adults.
  - Viral
  - Hereditary autoimmune
  - Contagious
- Untreated celiac disease can lead to increased risk for autoimmune conditions such as type 1 diabetes, rheumatoid arthritis, or thyroid problems. It can also increase the risk of some \_\_\_\_\_ cancers.
  - Gastrointestinal
  - Oral
  - Skin
- Gluten sensitivity in the absence of celiac disease with adverse reactions to gluten is referred to as
  - Celiac II
  - Non-celiac sensitivity or gluten intolerance
  - Gout
- Gluten is the general name for specific \_\_\_\_\_ fractions (prolamins and glutelins) in wheat, barley, and rye.
  - Adhesive
  - Carbohydrate
  - Protein
- All types of wheat including spelt, kamut, einkorn, emmer, farro, and durum, as well as barley, rye, and triticale contain \_\_\_\_\_.
  - Gluten
  - Fat
  - Neoplasms
- In addition to baked products, cereals and pastas made from these grains, gluten-containing ingredients often are present in many other foods and beverages making it important to carefully read
  - Food labels
  - Ingredient lists
  - Both A and B