

Food allergies have become a major concern with parents, health practitioners and school administrators. However, the estimates of prevalence of allergies varies widely.

A commonly accepted definition is an “adverse immune response that occurs reproducibly on exposure to a given food and is distinct from other adverse responses to food, such as food intolerance, pharmacologic reactions, and toxin-mediated reactions.”[1]

However, most people are not going to make such a fine distinction between food allergy and food intolerance. Non-celiac gluten-sensitivity (NCGS) does not cause an IgE response so with this definition, it not classed as a food allergy.[2]

Dairy, in particular, cow’s milk and gluten, wheat and grains are commonly avoided as a result of concerns about food allergies.

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Below are some methods for determining the presence of an allergic reaction.

- Perception: Participants are asked if they or family members are allergic to certain food items.
- Skin Prick Test (SPT): A small amount of suspected allergens is introduced to a small break in the skin made with an implement that has been dipped in a solution containing possible allergens. The size of the wheal is noted after 15 minutes.
- Food challenge testing: A procedure where small amounts of a suspected food are fed to a participant. This food is increased and the person is monitored to determine if an allergic reaction occurs.
- ImmunoCAP Tests: When our bodies recognise a foreign substance (the allergen), IgE antibodies bind to the allergen. This causes the mast cell to release histamine resulting in inflammation. IgE antibodies are commonly associated with allergic reactions. ImmunoCAP tests can measure the amount of IgE antibodies for a particular substance. Some allergies can occur without the presence of IgE antibodies. There are four other classes of antibodies: IgA, IgD, IgG and IgM.

The table below is compiled mainly from three sources.[\[3\]](#) [\[4\]](#) [\[5\]](#)

Each of these papers reviewed many studies to reach their conclusions. The table is listed in the order in which issues are likely to occur.

Cow's milk	The highest self-reported perception rate was 14% in one study. Based on SPT or IgE results, the prevalence is most likely less than 2.5%.
Egg	The maximum self-reported perception rate was 6%. IgE and SPT tests show prevalence rates of approximately 1%-2%.
Shellfish	The average perception rate was approximately 1% with the average IgE and SPT rates showing an average of 0.6%.
Peanuts	Based on perception rates, SPT and IgE testing, the prevalence was approximately 1%.
Fish	The average perception rate is approximately 0.7%. There is a wide range of results with children under 4 being much more susceptible. The average of IgE and SPT rates show an average of 0.2%.
Tree nuts	Tree nuts include hazelnut, walnut, almond, cashew, pecan and Brazil nuts. The nuts are listed according to the estimated prevalence of food allergy. Estimates of prevalence ranges from 0.1% to 4%, depending on type of nut.
Fruits	Apple, tomato and potato (and presumably other Solanaceae or nightshade plants), kiwi fruit and pineapple are the most likely to cause problems. Perception of a problem with tomatoes ranged from 0.2% to 14%.

Wheat	SPT and challenge tests show prevalence of less than 1%. Perception testing reveals a slightly higher rate - less than 1.5%.  Testing for IgE antibodies show a prevalence of 3.0% to 3.6%.
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Results can vary greatly depending upon the method or the manner in which the survey is conducted. Prevalence rates based on perception are usually higher than those based on other means.

The article, *What is the Problem with Wheat and Gluten?*, discusses the issue of *Irritable Bowel Syndrome* (IBS). This issue is not well understood and can be associated with multiple food allergies and food intolerances.

An example where perception and expectation can be misleading is demonstrated by an Australian trial<sup>[6]</sup> <sup>[7]</sup> consisting of 34 patients that was performed over a six week period. The trial was a double-blind placebo controlled study—the patients or researchers did not know if they were receiving a gluten-free diet or gluten in the diet. The gluten foods were free of FODMAP components.

32% of the patients reported an improvement in symptoms, even when they were unknowingly consuming a gluten diet.

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Below are some points to consider.

- A 2017 study, reported that fructans was a more significant source of discomfort than gluten. Fructans and gluten are both found in wheat. <sup>[8]</sup>
- The placebo effect is an important factor in IBS and food allergies. That is not to dismiss the very real problem of these conditions. It reinforces the power of the placebo effect.
- Not all food related or intestinal problems can be diagnosed by the results of pathology tests or are the result of food allergies.

- Many intestinal problems have multiple causes. Embarking on a gluten-free, dairy-free diet may have a positive effect a number of reasons, such as reducing the amount of fat and highly processed foods and flour.
- Dairy appears to be a much bigger issue than problems with wheat or gluten.
- Tomato and eggs have been shown to be implicated in IBS.[9]
- The role of intestinal flora in determining our health is vitally important.[10]
- It is claimed that FODMAP (Fermentable Oligo-, Di-, Mono-saccharides And Polyols) foods can have a significant impact. The program avoids healthy foods such as onion, garlic, beans, bananas, artichoke, wheat, rye, apples, pears, pineapples, and many fruits and berries. It includes fish, eggs, meat, poultry and dairy which should be avoided,

## Footnotes

1. Shekelle, P. et al. (2010) *Food allergy: evidence report*.
2. Sapone, A. et al. (2015) Non-Celiac Gluten Sensitivity Where are We Now in 2015? *Practical Gastroenterology*. 43.
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5. Rona, R. J. et al. (2007) The prevalence of food allergy: A meta-analysis. *Journal of Allergy and Clinical Immunology*. 120 (3), 638-646.
6. Biesiekierski, J. R. et al. (2011) Gluten Causes Gastrointestinal Symptoms in Subjects Without Celiac Disease: A Double-Blind Randomized Placebo-Controlled Trial. *The American Journal of Gastroenterology*. 106 (3), 508-515.
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8. Skodje, G. I. et al. (2017) Fructan, Rather Than Gluten, Induces Symptoms in Patients With Self-reported Non-celiac Gluten Sensitivity. *Gastroenterology*.
9. Carroccio, A. et al. (2013) Non-Celiac Wheat Sensitivity as an Allergic Condition: Personal Experience and Narrative Review. *American Journal of Gastroenterology*. 108

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10. Wu, G. D. et al. (2011) Linking long-term dietary patterns with gut microbial enterotypes. *Science*. 334 (6052), 105-108.