

Food Allergy

Epidemiology and Natural History



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KEYWORDS

• Food allergy • Epidemiology • Natural history • Peanut • Milk • Egg

KEY POINTS

- Food allergy prevalence is between 5% and 10% throughout the developed world, and is rising at an alarming rate, for unclear reasons.
- The natural history of childhood food allergy varies by food, and can guide the clinician in determining when it may be safe to introduce a food that was previously not tolerated.
- Further research is needed on the optimum time to introduce complimentary allergenic foods, and methods for prevention and treatment of food allergy.

INTRODUCTION

This article reviews the epidemiology and natural history of immunoglobulin (Ig)E-mediated food allergy with emphasis on recent advances in these areas. For several years, it has been suggested that the prevalence of food allergy is rising, and we review the most recent literature to provide supportive evidence including trends by race/ethnicity and geography. The natural history of food allergy refers to both the acquisition of clinical allergy and its resolution or persistence. The timing of the onset of allergy and likelihood and timing of tolerance development varies depending on the food in question and, therefore, the natural history section is organized by specific food allergen (**Table 1**). We review the development of food allergy and the natural history of food allergy with an emphasis on when it is appropriate to assess for resolution of the allergy with a physician-supervised oral food challenge (OFC),^{1,2} the gold standard for diagnosis of food allergy.

The majority of studies of the epidemiology and natural history of food allergy have inherent limitations in their design. Precise evaluation of the prevalence and natural

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Food	Age of Onset	Age of Resolution
Egg	Infant/toddler	Early to late childhood
Milk	Infant/toddler	Early to late childhood
Peanut	Infant/toddler	Early to late childhood—uncommon
	Adulthood	Unknown
Tree nuts	Toddler/early childhood	Early to late childhood—uncommon
	Adulthood	Unknown
Soy	Infant/toddler	Early to late childhood
	Adulthood (rare)	Unknown
Wheat	Infant/toddler	Early to late childhood

history of food allergy on a population level requires prospective ascertainment with confirmatory OFCs of a representative sample of infants and young children at predetermined intervals over time. Studies such as this are rarely performed in the United States owing to feasibility and ethical issues. However, recent efforts in Australia have begun to meet this need. Generally speaking, however, it is important to recognize that much of the currently available data on the epidemiology and natural course of food allergy are necessarily imprecise. Furthermore, published studies typically come from selected populations, such as from a particular clinic or referral population, and may not be representative of the general population with food allergies. These limitations are highlighted in this article.

EPIDEMIOLOGY

Prevalence

Estimates of food allergy prevalence vary widely, likely because of differences in study methodology, including use of different definitions of food allergy, and different geographic area studied. In the United States, prevalence estimates range from 1% to 2% to 10%, and most are derived from self-report or parent report of allergy.³ A recent study reporting on a nationally representative, population-based survey (the National Health and Nutrition Examination Survey [NHANES]), found the prevalence of self-reported food allergy in children to be 6.53%⁴ from 2007 to 2010. The most common childhood food allergies reported were to milk (1.94% of children surveyed), peanut (1.16%), and shellfish (0.87%). Another United States, population-based study reported a slightly higher estimate of childhood food allergy prevalence (8%).⁵ This survey was internet based, which may have resulted in selection bias, contributing to the higher prevalence estimate. Nonetheless, the most commonly reported food allergies were similar.⁵ The importance of the method of ascertaining food allergy in generating prevalence estimates was highlighted by a recent meta-regression using only US survey data from 1988 to 2011. Roughly one half of between-study variability was explained by method of identifying food allergy alone, and because of this and other sources of heterogeneity, the authors were unable to provide a point estimate for current food allergy prevalence in the United States.⁶

In other developed countries, overall prevalence estimates are in general within the range of US estimates. The overall rate of food allergy was estimated at 6.7% in Canada (7.1% for children and 6.6% for adults) in a population-based self-report study using random digit telephone sampling and adjusting for nonresponse, with cow's milk, peanut, and tree nut allergy being the most common allergens among children.⁷ A

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