

Prevention of Food Allergies

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KEYWORDS

- Food allergy • Prevention • Peanut allergy • Egg allergy • Eczema • Vitamin D
- Infant feeding • Probiotics

KEY POINTS

- There is now good evidence that timely introduction of peanut into the infant diet reduces the risk of peanut allergy in high-risk infants.
- There is also some evidence that timely introduction of egg might reduce the risk of egg allergy, whereas the role of timing of introduction of other allergenic foods has not yet been established.
- Additional food allergy prevention strategies currently under investigation include optimizing infant vitamin D levels, modulating the gut microbiota through use of probiotics, and preventing eczema to reduce the risk of food sensitization through a damaged skin barrier.

INTRODUCTION

A population-level approach to food allergy prevention moved one step closer in 2015 to 2016, with a successful trial of early peanut introduction for preventing peanut allergy. This widely lauded landmark study resulted in definitive changes to infant feeding guidelines around the world. As a result of this successful trial and subsequent development and dissemination of new infant feeding recommendations, there is a very real possibility that new generations of infants born in countries with high food

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allergy prevalence, such as the United Kingdom, the United States, and Australia, will have less food allergy than the generation before. However, further targeted research is still required to bridge some important knowledge gaps. This research includes the following:

- Monitoring the impact on prevalence of changed guidelines
- Developing prevention strategies for foods other than peanut
- Developing strategies to prevent cases of peanut allergy that do not respond to earlier allergen introduction

In this review, the authors discuss the current state of food allergy prevention. They highlight topics of ongoing research as well as areas where prevention strategies may continue to evolve as new research findings emerge.

THE CURRENT BURDEN OF IMMUNOGLOBULIN E-MEDIATED FOOD ALLERGIES AROUND THE WORLD

Food allergy is estimated to affect around 5% to 10% of infants and young children in developed countries. Data show that the incidence of food-induced anaphylaxis increased between the 1990s and 2010, particularly in children,^{1–3} although it remains unclear to what extent this is due to an increase in food allergy prevalence, an increase in severe reactions among allergic individuals, or an increased number of reactions in the same pool of allergic people. A recent acceleration in rates of adolescent anaphylaxis supports the concept of a cohort effect with children born in the early stages of the increase in food allergy prevalence in the early 2000s now reaching adolescence.¹

There are increasing published reports on food allergy prevalence from around the world, which reveal emerging significant differences in the prevalence between countries, although the reasons for these differences are not yet established. The Europrevall birth cohort study was designed to compare food allergy prevalence between countries by using a standardized study protocol in multiple European centers. Around 12,000 infants from 9 countries were recruited into a series of birth cohorts in 2005 to 2010, with approximately 9000 infants followed up to 2 years of age. The prevalence of egg allergy was reported to range from 0.07% in Greece to more than 2% in Germany and the United Kingdom,⁴ whereas cow's milk allergy ranged from 0% in Greece to 1.3% in Lithuania.⁵ Outside of Europe, the HealthNuts study in Australia recruited 12-month-old infants around the same time as Europrevall (2007–2011). Of the 5300 participating infants, 3.0% were peanut allergic, 9.0% egg allergic, and 0.8% sesame allergic.⁶

Recently, there have been new publications reporting the prevalence of food allergy in infants in South Africa and China, both countries where food allergy was previously considered to be rare. The South African Food Sensitization and Food Allergy study (SAFFA) used a population-based sampling frame to recruit an unselected cohort of infants aged 12 to 36 months.⁷ In an interim analysis of the first 544 participants, the prevalence of challenge-proven immunoglobulin E (IgE)-mediated allergy was 2.5% (95% confidence interval [CI] 1.2–3.9), with a 1.8% prevalence of allergy to egg, 1.2% to peanut, and 0.2% to cow's milk. A study in Chongqing, China recruited 497 infants from 9 districts of Chongqing attending the Children's Hospital of Chongqing Medical University for routine health checks, with a participation rate of 96% (477 of 497). The prevalence of challenge-proven food allergy was 3.8% (95% CI 2.5–5.9), with a 2.5% prevalence of egg allergy and 1.3% to cow's milk. Only 2 infants (0.4%) were sensitized to peanut and 1 to fish and shrimp; there were no positive challenges to peanut, fish, or shrimp.⁸

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