

Tree Nut Allergy Prevalence in Dutch Children: A Review

Written by The Life Science Feed Editorial Team · Published 27 May 2026 · Edited by Mara Voss

The accurate assessment of food allergy prevalence is critical for public health planning and clinical management. Tree nut allergies, in particular, represent a persistent challenge due to their potential for severe reactions and the need for strict allergen avoidance. Understanding the prevalence in specific populations, such as Dutch children, informs both diagnostic approaches and educational initiatives for families and healthcare providers.

KEY TAKEAWAYS

- **The Pivot:** Established data underscores the need for consistent diagnostic criteria to accurately determine tree nut allergy prevalence.
- **The Data:** While specific Dutch pediatric prevalence data is not provided, global estimates indicate tree nut allergies affect approximately 0.5% to 1% of the general population, with higher rates in children.
- **The Action:** Clinicians should maintain a high index of suspicion for tree nut allergies in children presenting with allergic symptoms and ensure access to appropriate diagnostic testing and management plans.

Food allergies, including those to tree nuts, are a growing public health concern globally. The clinical dilemma for general practitioners and specialists involves distinguishing true IgE-mediated allergy from food intolerance or sensitization without clinical relevance. Accurate prevalence data is essential for informing diagnostic algorithms, developing public health interventions, and guiding dietary recommendations. Tree nut allergies are a common cause of anaphylaxis and can persist throughout life.¹

Prevalence and Diagnostic Considerations

The prevalence of tree nut allergies varies by geographical region and the methodology used for assessment. Studies often rely on self-report, which can overestimate true prevalence, or on oral food challenges, which provide definitive diagnoses but are resource-intensive.² For the Dutch pediatric population, specific large-scale epidemiological studies focusing solely on tree nut allergy prevalence are not consistently available in the provided context. However, general epidemiological data on food allergies indicates that peanut and tree nut allergies are among the most common IgE-mediated food allergies in children.³

Globally, the prevalence of tree nut allergy is estimated to be approximately 0.5% to 1% of the general population, with rates often higher in pediatric populations.⁴ This figure encompasses various tree nuts, including walnuts, pecans, almonds, cashews, pistachios, and hazelnuts, among others. Cross-reactivity between different tree nuts is common, further complicating diagnosis and management.⁵ For instance, individuals allergic to one tree nut may also react to

others due to shared protein structures.⁵

Diagnostic approaches typically involve a combination of patient history, skin prick tests (SPT), and specific IgE blood tests. A positive SPT or specific IgE level indicates sensitization, but not necessarily a clinical allergy.⁶ The gold standard for diagnosis remains the double-blind, placebo-controlled oral food challenge (DBPCFC).⁶ However, due to the risk of severe reactions, these challenges are often performed in a supervised clinical setting. The absence of specific, large-scale, recent prevalence data for tree nut allergies exclusively in Dutch children using DBPCFC as the primary diagnostic tool means that precise figures for this specific demographic are not readily available in the provided context. Therefore, clinicians in the Netherlands must extrapolate from broader European and international data, while considering local dietary habits and genetic predispositions.⁷

The immune mechanism underlying IgE-mediated tree nut allergy involves the sensitization phase, where the immune system produces specific IgE antibodies upon initial exposure to tree nut proteins. Upon subsequent exposure, these IgE antibodies bind to mast cells and basophils, triggering the release of inflammatory mediators such as histamine, leading to allergic symptoms. These symptoms can range from mild oral itching, hives, and gastrointestinal upset to severe, life-threatening anaphylaxis, characterized by respiratory distress, cardiovascular collapse, and angioedema. The severity of reactions can vary widely among individuals and even within the same individual over time. This variability underscores the importance of accurate diagnosis and patient education regarding allergen avoidance and emergency management.¹

Patient populations for tree nut allergy studies typically include children and adolescents, as food allergies often manifest in early childhood. Genetic factors play a role in the predisposition to allergic diseases, including tree nut allergies. Family history of atopy, such as asthma, eczema, or other food allergies, increases an individual's risk. Environmental factors, including early allergen exposure, dietary patterns, and gut microbiome composition, also influence the development and persistence of food allergies. Understanding these contributing factors helps in identifying at-risk populations and developing targeted prevention strategies.³

Limitations in current data include reliance on self-reported allergies, which can inflate prevalence figures, and the heterogeneity of diagnostic criteria across studies. Many studies also do not differentiate between specific types of tree nuts, reporting a combined prevalence figure. This lack of granularity can hinder precise clinical management, as cross-reactivity patterns and individual nut allergies can differ significantly. Furthermore, the logistical and ethical challenges associated with performing oral food challenges in large pediatric cohorts often lead to their underutilization in epidemiological studies, contributing to the reliance on less definitive diagnostic methods. Future research should aim for standardized diagnostic protocols, including oral food challenges, to provide more accurate prevalence estimates for specific allergens in defined pediatric populations, such as Dutch children. This would allow for more targeted public health interventions and clinical guidelines.

CLINICAL IMPLICATIONS

The persistent lack of precise, gold-standard prevalence data for specific food allergies in defined pediatric populations, such as tree nut allergies in Dutch children, presents a tangible challenge for clinicians. Relying on broad international estimates, while necessary, means that local public health strategies and primary care education may not be optimally tailored. This situation underscores a broader issue in allergy research:

the need for more rigorous, population-specific epidemiological studies that move beyond self-report or sensitization markers to definitive oral food challenges.

For general practitioners, this translates into a continued reliance on careful clinical history and judicious use of IgE testing, understanding its limitations. The onus remains on the clinician to differentiate sensitization from true clinical allergy, often without the benefit of highly localized prevalence benchmarks. This diagnostic ambiguity can lead to unnecessary dietary restrictions for patients or, conversely, a delayed diagnosis of a potentially life-threatening allergy. Pharmaceutical companies developing diagnostics or therapeutics for food allergies would benefit from investing in these granular epidemiological studies, as precise market sizing and unmet need identification depend on accurate prevalence figures.

Patients and their families are ultimately impacted by this data gap. Without clear, localized prevalence information, public awareness campaigns and school-based allergy management plans might not reflect the true burden of disease in their community. This can lead to either undue anxiety or a false sense of security. The medical community, including guideline bodies like the European Academy of Allergy and Clinical Immunology (EAACI), should advocate for and support initiatives that generate high-quality, region-specific prevalence data using standardized, definitive diagnostic methods. Only then can clinical practice and public health policy truly align with the reality of allergic disease.

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