

## EDITORIAL

# Clinical and Experimental Allergy

## The challenge of assessing food allergy and its prevalence

This editorial discusses the findings of the paper in this issue by Gelincik et al. [8]

T. Keil

*Institute for Social Medicine, Epidemiology and Health Economics, Charite – Universitätsmedizin Berlin, Luisenstrasse 57, D-10017 Berlin, Germany*

In recent decades the prevalence of asthma, allergic rhinitis, and eczema has increased in many countries worldwide, particularly in children [1]. Whether this is also the case for allergic reactions to food is unclear. A rising prevalence of self-reported allergy and allergic sensitization to peanuts in children has been reported [2, 3], however, we are lacking studies examining time trends of the occurrence of food allergies. Indeed, even the point prevalence of these chronic and potentially life-threatening conditions remains uncertain at present.

Many population-based studies have tried to assess the prevalence of allergies to food, most commonly to cow's milk, hen's egg, peanuts, tree nuts, fish, shellfish, wheat, and soy. However, these studies have rarely based their estimates on food provocation tests, which are the diagnostic 'gold standard', ideally performed as a double-blind placebo-controlled food challenge test. A recent comprehensive systematic review of prevalence studies showed that the vast majority of authors determined food allergies based on self- or parent-reported symptoms, sensitization to food allergens using specific serum Immunoglobulin E (IgE) or skin prick tests (SPT), or any combination of these methods [4, 5]. The few studies that did use provocation tests were all conducted in North-Western Europe. Although concerns about food allergies have been growing worldwide among consumers, schools, government departments, food producers, and retailers [6, 7], prevalence estimates determined in population-based studies using the diagnostic 'gold standard' are currently unavailable in most countries.

A group from Turkey (Gelincik et al., in this issue) has now started to close this gap for the Mediterranean region by conducting a large study with over 11 000 adults in the city

of Istanbul [8]. Based on two screening questions in the first of two telephone interviews, and a more thorough assessment in the second interview with participants who indicated food-related complaints the authors invited each participant with symptoms suggestive of food allergies for clinical investigations including food challenge tests. Like the investigations from North-Western Europe, this well performed study at the fringe of South-Eastern Europe showed a great discrepancy between the prevalence of perceived food allergies and confirmed allergic reactions. In total, almost 10% of the study participants reported adverse reactions to food, most commonly to tomato and hen's egg (2% each), followed by chocolate, strawberry, spices, eggplant, and sea food (between 1% and 0.5%). After clinical investigations including provocation tests the prevalence of adverse reactions to any food was estimated to be only 0.3%, and < 0.1% for specific food items; the highest for hen's egg (confirmed in eight study participants) and tomato (confirmed in seven).

The overall prevalence of perceived food allergies in this Turkish study population seems to be in line with other estimates from Southern Europe which were also < 10%, e.g. in studies from Italy, Spain, and Portugal [9, 10], as compared with prevalences in Central and Northern European countries which were generally between 10% and 20% [4, 5, 9]. However, the proportion of cases confirmed by provocation tests was similar to that seen in the North-Western European studies. To date, the Turkish study is the largest population-based study to use the diagnostic 'gold standard' to assess the prevalence of food allergies. Notably, the authors also examined a subgroup of study participants who had not reported suffering from allergic reactions to food, showing that none of the double-blind placebo-controlled challenge tests were positive in this subgroup [8].

Unless a specific food item can be clearly identified as the cause of a severe reaction in a patient's history, the laborious and time consuming food provocation tests in clinical settings under the supervision of allergologists are

### Correspondence:

Dr. Thomas Keil, Institute for Social Medicine, Epidemiology and Health Economics, Charite – Universitätsmedizin Berlin, Luisenstrasse 57, D-10017 Berlin, Germany.

E-mail: thomas.keil@charite.de

necessary to confirm the diagnosis of food allergy. This is relevant both for individuals and for public health. Living with a potentially lethal chronic condition related to food has psychosocial and economic implications with regard to lifestyle and quality-of-life. Among the large number of individuals who assume to have food allergy, many are afraid of adverse reactions to specific foods when eating out or attending social events. Parents who believe their child is allergic to milk may not consider the possible lack of calcium by a milk-free diet. Only a negative provocation test will convince patients (and parents) that the food in question is not causing the presumed allergic reaction. However, in some patients, further diagnostic workup is necessary to rule out other immunologic or gastrointestinal causes for their complaints. From a public health perspective, we need population-based estimates of the prevalence of food allergies based on objective diagnostic criteria rather than subjective questionnaire or interview data which may overestimate the prevalence and contribute to further uncertainty among health professionals, health policy makers, food producers, and retailers. Only by incorporating double-blind placebo-controlled food challenge tests in future studies will it be possible to discover if the prevalence of food allergy is truly increasing, and which food items are the greatest cause of concern.

The European Commission-funded integrated project EuroPrevall with over 60 partners ([www.euoprevall.org](http://www.euoprevall.org)) is currently conducting population-based studies in infants, older children, and adults to determine precise and comparable prevalence estimates for many regions across Northern, Central, and Southern Europe. In addition, the project will examine risk factors, mechanisms, psychosocial, and economic impact of food allergies. Diagnostic assessments in the EuroPrevall project are based on thoroughly developed protocols for standardized double-blind placebo-controlled food challenge tests [11]. The findings of these large collaborative cross-sectional and

longitudinal studies will help resolve current uncertainties on the prevalence of food allergies.

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