

Food Allergy: Global Burden, Diagnosis, Management

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Abstract

This collection of reviews and systematic analyses highlights the multifaceted nature of food allergy, covering its global and regional prevalence, diagnostic challenges, and diverse management strategies. It addresses both IgE-mediated and non-IgE-mediated forms, including Food Protein-Induced *Enterocolitis Syndrome* (FPIES), and explores the diagnostic accuracy of specific IgE levels. Key areas include primary prevention methods, the impact on patients' quality of life, and the evolving landscape of therapeutic interventions like oral immunotherapy (OIT). The importance of standardized diagnostic criteria and personalized dietary management, particularly for conditions like lactose intolerance, is also underscored.

Keywords

Food allergy; Prevalence; Diagnosis; Management; Lactose Intolerance; Food Protein-Induced Enterocolitis Syndrome (FPIES); Oral Immunotherapy (OIT); Non-IgE-mediated allergies; Quality of Life; Prevention

Introduction

Recent systematic reviews comprehensively compile data on food allergy prevalence across Europe, revealing significant regional and allergen-specific variations. This body of work underscores a critical need for standardized diagnostic criteria and improved reporting mechanisms to strengthen public health strategies pertaining to food allergies[1].

Expanding beyond regional perspectives, extensive systematic reviews and meta-analyses offer a global perspective on food allergy prevalence. These studies meticulously identify worldwide regional differences and the most common allergens, clearly demonstrating the increasing global burden of food allergy. Such

analyses are vital for understanding the widespread impact of this condition[4].

A broad understanding of food allergy necessitates summarizing its current state, which includes acknowledging its continuous increase in prevalence, the inherent complexities in its diagnosis, and the dynamic evolution of management strategies. This comprehensive view encompasses both novel therapeutic approaches and innovative prevention methods, painting a full picture of ongoing efforts in the field[2].

A key aspect of diagnosing food allergies involves assessing the diagnostic accuracy of specific IgE levels for frequently encountered allergens such as cow's milk, egg, wheat, and soy. Systematic reviews provide invaluable insights into both the practical utility and the inherent limitations of employing these specific IgE markers in routine clinical practice, ultimately guiding clinicians in confirming allergic reactions more reliably[6].

Furthermore, the medical literature extensively differentiates non-IgE-mediated food allergies from their IgE-mediated counterparts. This area of research clarifies their distinct immunological

mechanisms, diverse clinical manifestations, and the unique diagnostic challenges they present. It critically emphasizes that these conditions require entirely different management approaches compared to the more commonly understood IgE-mediated allergies, highlighting the importance of precise categorization for effective treatment[10].

Within the spectrum of non-IgE-mediated food allergies, Food Protein-Induced Enterocolitis Syndrome (FPIES) stands out as a particularly challenging condition. Dedicated reviews offer an in-depth examination of FPIES, detailing its varied clinical presentations, the complex underlying pathophysiological mechanisms, and the current, often nuanced, management strategies developed to address this specific disorder effectively[8].

The primary prevention of food allergy is an area of intense research, with reviews synthesizing the latest available evidence and providing updated recommendations. These studies frequently focus on the efficacy of early dietary interventions, exploring their significant impact on reducing the development of allergies in at-risk infant populations, thereby offering pathways for proactive health measures[5].

Therapeutic advancements are also a major focus, particularly with the evolving landscape of oral immunotherapy (OIT) for food allergy. Articles in this domain explore its current clinical status, delineate the significant challenges encountered during its application, and project future directions for research and development, including innovative strategies aimed at enhancing both its efficacy and safety in practical clinical settings[9].

Beyond the clinical and immunological aspects, the profound impact of food allergy on the health-related quality of life for affected children and their families cannot be overstated. Systematic reviews consistently highlight the substantial psychological, social, and economic burdens that are intrinsically associated with the ongoing management of this chronic condition, pointing to a need for holistic support systems[7].

Finally, while not an allergy in the immunological sense, lactose intolerance presents a related challenge in dietary management. Systematic reviews delve into its pathophysiology, outlining genetic and acquired forms, and detailing diagnostic approaches alongside therapeutic strategies. Emphasis is often placed on personalized dietary management as a cornerstone for effective symptom alleviation, thereby improving patient well-being[3].

Description

Food allergy continues to be a growing global health concern, necessitating comprehensive understanding and strategic public health responses from various stakeholders. Recent systematic reviews provide crucial insights by compiling extensive data on food allergy prevalence across European regions. These studies reveal significant variations not only by geographical area but also specific to particular allergens, thereby strongly emphasizing the urgent need for standardized diagnostic criteria and improved reporting mechanisms. Such improvements are vital for enhancing overall public health strategies pertaining to food allergies and ensuring consistent patient care [1]. Expanding this perspective further, comprehensive systematic reviews and meta-analyses offer a vital global outlook on food allergy prevalence. These extensive studies meticulously identify distinct regional differences and pinpoint the most common allergens worldwide, unequivocally underscoring the increasing global burden that food allergy imposes on healthcare systems and affected individuals. This foundational, overarching understanding derived from such analyses is absolutely crucial for developing any effective and comprehensive approach to addressing the complexity of this condition at both local and international levels [4, 2].

Achieving accurate diagnosis in food allergy is paramount for effective patient management, yet it often presents inherent complexities due to the varied clinical presentations and underlying immunological mechanisms. For instance, in cases of IgE-mediated food allergies, the diagnostic accuracy of specific IgE levels for frequently encountered allergens—such as cow's milk, egg, wheat, and soy—is continuously assessed. Systematic reviews in this area provide invaluable insights into both the practical utility and the inherent limitations of employing these specific IgE markers in routine clinical practice, ultimately guiding clinicians toward more reliable confirmation of allergic reactions and appropriate subsequent treatment plans [6]. However, it is important to recognize that not all adverse reactions to food are mediated by IgE antibodies. Non-IgE-mediated food allergies represent a distinct category, characterized by their unique immunological mechanisms, diverse clinical manifestations, and particular diagnostic challenges, which critically necessitate different management approaches compared to the more commonly recognized IgE-mediated allergies [10]. A notable and clinically significant example within the realm of non-IgE mediated conditions is Food Protein-Induced Enterocolitis Syndrome (FPIES). Dedicated reviews offer an in-depth examination of FPIES, meticulously detailing its varied clinical presentations, elucidating its specific pathophysiological mechanisms, and outlining

the current, often nuanced, management strategies that have been developed to effectively address this challenging and often severe disorder [8]. Therefore, proficient and accurate diagnosis across this entire spectrum of food sensitivities is absolutely critical for optimizing patient care and improving outcomes.

Beyond diagnostic efforts, addressing the pervasive challenge of food allergy also involves proactive measures and the continuous development of evolving therapeutic treatments. Primary prevention strategies constitute a key area of intense research and clinical focus. Numerous reviews meticulously synthesize the latest available evidence and provide updated recommendations tailored to preventing the onset of food allergies. These comprehensive efforts frequently center on evaluating the efficacy of early dietary interventions, specifically exploring their significant impact on reducing the development of allergies in at-risk infant populations. Such research thus offers promising pathways for implementing proactive public health measures and improving long-term health outcomes for vulnerable children [5]. On the therapeutic front, oral immunotherapy (OIT) represents an actively evolving and promising approach for managing established food allergies. Academic articles in this domain thoroughly explore OIT's current clinical status, delineate the significant practical and safety challenges encountered during its application in real-world settings, and project future directions for ongoing research and development. This includes innovative strategies specifically aimed at enhancing both OIT's efficacy and its overall safety profile in practical clinical settings, thereby moving towards more widespread and effective application [9]. Collectively, these preventative and therapeutic interventions signify substantial strides in effectively managing and potentially mitigating the profound impact of food allergies on individuals and families globally.

Beyond the direct clinical and immunological considerations, the profound impact of food allergy on the health-related quality of life for affected children and their families cannot be overstated, requiring significant attention from healthcare providers and support systems. Systematic reviews consistently highlight the substantial psychological, social, and economic burdens that are intrinsically associated with the ongoing, day-to-day management of this chronic condition. These burdens frequently manifest as stress, anxiety, social isolation, and financial strain, all pointing to an undeniable need for comprehensive holistic support systems and accessible resources to alleviate these difficulties [7]. In a related but distinct area of dietary challenges, lactose intolerance presents its own unique set of issues for individuals worldwide. Systematic reviews specifically dedicated to lactose intolerance delve deeply into its pathophysiology, meticulously outlining both its genetic and ac-

quired forms. They also detail the various diagnostic approaches employed and the therapeutic strategies available for managing this condition. A strong emphasis is consistently placed on personalized dietary management as a cornerstone for effective symptom alleviation, which ultimately plays a crucial role in significantly improving patient well-being and their daily quality of life [3]. Taken together, these various studies collectively illuminate the broad and far-reaching impact of dietary sensitivities on individual and family well-being, stressing the critical importance of comprehensive care, targeted interventions, and empathetic support for all those affected by these conditions.

Conclusion

Food allergy is a significant public health concern, with systematic reviews detailing its varying prevalence across Europe and globally. These studies emphasize regional differences, common allergens, and the increasing burden of the condition worldwide. Understanding food allergy involves recognizing its complex diagnostic challenges and evolving management strategies, which encompass novel therapeutic approaches and prevention methods. Diagnosis often relies on assessing specific IgE levels for common allergens like cow's milk, egg, wheat, and soy, though their utility and limitations in clinical practice are important considerations. Beyond IgE-mediated reactions, attention is also given to non-IgE-mediated food allergies, such as Food Protein-Induced Enterocolitis Syndrome (FPIES), which present distinct clinical features, pathophysiological mechanisms, and require specialized management. The impact of food allergy extends to the health-related quality of life for affected children and their families, involving significant psychological, social, and economic burdens. Efforts in prevention include synthesizing evidence and recommendations for primary prevention, particularly focusing on early dietary interventions for at-risk infants. In terms of therapy, oral immunotherapy (OIT) is an evolving area, with ongoing discussions about its current status, challenges, and future directions for improving efficacy and safety. The data also touches on specific conditions like lactose intolerance, reviewing its pathophysiology, diagnostic approaches, and therapeutic strategies, which often involve personalized dietary management. Overall, the research highlights the necessity for standardized diagnostic criteria and reporting to enhance public health strategies and improve patient outcomes across the spectrum of food-related sensitivities.

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