Most common food allergens and their association with other health conditions among children and adults in Saudi Arabia

Humoud Auoad Alhoraim[1], Mofreh Alzahrani[2], Hadeel Alsarawi[3]

[1] Teaching assistant at College of Medicine, Prince Sattam bin Abdulaziz University, Al Kharj, Saudi Arabia

[2] Consultant at pediatric allergy & Immunology department, King Fahad Medical City, Riyadh, Saudi Arabia

[3] Fellow at pediatric allergy & Immunology department, King Fahad Medical City, Riyadh, Saudi Arabia

Abstract

Background: Limited data are available on the most common food allergens among children and adults in Saudi Arabia. This study aimed to identify the most common food allergens in Saudi Arabia, the demographic characteristics and associated medical conditions among individuals with food allergies, and the effect of food allergies on health.

Methods: This retrospective cohort study was conducted in a sample of 100 pediatric and adult patients with food allergies (confirmed by a skin-prick test result >3 mm) who attended the outpatient allergy and immunology clinic at King Fahad Medical City in Riyadh, Saudi Arabia between 2003 and 2022. The burden of food allergy was measured on a scale of 1–10.

Results: The mean patient age was 19.8 ± 17.2 years. Of the participants, 51 were female, 48 were male, and 29 had asthma. The most common food allergens were peanuts (16.2%), egg (14.1%), cashew nuts (11.1%), pistachio nuts (9.1%), and sesame seeds (7.1%). The mean burden of food allergy was 6.4 ± 1.9. Conclusion: Food allergies are strongly associated with asthma. Peanuts, eggs, and cashew nuts are the most common causes of food allergy in children and adults attending the outpatient allergy and immunology clinic at King Fahad Medical City.

Keywords: Food Allergens, Peanuts, Eggs, Nuts, Asthma, Saudi Arabia

INTRODUCTION

Food allergies represent a growing concern worldwide, affecting millions of individuals across different age groups, particularly children. An estimated 6% to 10% of the global population suffers from food allergies, revealing a substantial public health issue that warrants significant attention in both clinical research and public health perspectives. The immune response to food allergens can manifest in various forms, leading to immediate or delayed allergic reactions that can significantly impact quality of life and, in severe cases, lead to life-threatening situations [1].

In Saudi Arabia, the prevalence of food allergies has become a focal point for health research, indicating a notable upward trend in both recognition and incidence. This increase in prevalence may be linked to changes in dietary patterns, environmental factors, and insufficient awareness regarding food allergies among the population. As food allergies can involve multiple organ systems, understanding the underlying mechanisms, identifying common allergens, and recognizing associated health conditions is critical for effective management and treatment [2].

Food allergies are characterized by abnormal immune responses that occur upon exposure to specific food proteins. These reactions can be classified into two main categories. IgE-Mediated Allergies are immediate hypersensitivity reactions triggered by Immunoglobulin E (IgE) antibodies [3]. Symptoms can appear as quickly as 15 minutes after the ingestion of the allergenic food and may include skin reactions (such as hives and angioedema), gastrointestinal disturbances (such as vomiting and diarrhea), respiratory issues (like wheezing and coughing), and cardiovascular manifestations (ranging from hypotension to syncope). The acute nature of these reactions can lead to anaphylaxis, a severe and potentially fatal condition [4].

Non-IgE-Mediated Allergies involve delayed immune responses that do not primarily rely on IgE. Instead, different components of the immune system, particularly T cells, initiate the reaction. Non-IgE-mediated allergies often present with gastrointestinal and dermatological symptoms, making them more challenging to diagnose, as the delayed onset can lead to confusion in correlating food intake with allergic reactions [5].

Globally, the most common food allergens differ among children and adults. For example, prevalent allergens in children include cow's milk, eggs, peanuts, soy, tree nuts, and shellfish, while adults more frequently report shellfish, peanuts, and tree nuts. A meta-analysis of studies suggests that the Middle East may exhibit unique patterns of food allergies, with shrimp being notably common in communities like Iran. Moreover, recent local studies in Saudi Arabia show that food allergy prevalence stands at 19.7%, with eggs, shellfish, and peanuts being the most common allergens [6].

LITERATURE REVIEW

A study examining the prevalence of food allergies in Saudi Arabia found alarming statistics, indicating that nearly one-fifth of the population has self-reported allergies. This figure aligns with increasing trends noted globally and raises concerns over food safety, allergen awareness, and healthcare access in managing allergic reactions effectively. In comparison to Western populations, where established allergenic foods consistently rank high, the data from the Middle East reveals a somewhat different picture. The report that shrimp emerges as the leading allergen in adjacent regions (such as Iran) emphasizes the necessity of region-specific research. Understanding local dietary practices and genetic predispositions is crucial in contextualizing these findings [7].

The health consequences of food allergies extend beyond immediate allergic reactions. Long-term implications can hinder a person's overall well-being. For instance, studies have shown a parallel between food allergies and the incidence of asthma—a respiratory condition commonly exacerbated by allergic responses. The correlation between food allergies and gastrointestinal disorders, such as colon diseases, is an emerging area of interest, signifying a potential link between dietary components and systemic inflammatory reactions. Persistent food allergies may also contribute to chronic conditions like hypertension and diabetes, possibly due to inflammatory processes that drive these conditions [8].

Several studies, including those focusing on Saudi Arabia, highlight critical gaps in public understanding and management of food allergies. Poor food labeling, inadequate allergen education, and limited healthcare provider training are frequently cited challenges that complicate effective allergy management. In the United States, research indicated that exposure to allergens could trigger severe asthma episodes, implying a need for comprehensive and protective strategies in allergy management [9].

Furthermore, the lack of standardized diagnostic approaches in Saudi Arabia particularly hampers the proper identification and treatment of food allergies. This highlights an urgent need for collaborative efforts to improve educational resources around food allergies, from population-level awareness campaigns to enhanced medical training for allergists and primary care providers. The advancement of diagnostic tools and improved labeling regulations are essential steps toward mitigating risks associated with food allergies [10].

The relationships between food allergies and comorbid health conditions warrant further exploration. The study conducted on Saudi university students discovered that nearly 9.6% reported food allergies, a considerable statistic that can have implications for the broader population. Notably, proposed links exist between food allergies and prevalent conditions such as asthma, diabetes, and various cardiovascular diseases [11].

Identifying the associations between food allergies and health conditions, including heart, kidney, and liver diseases, is crucial for comprehensive patient care. Research indicates that individuals with food allergies may have increased risks for comorbidities, which necessitates a multidisciplinary approach to treatment and management. Understanding these associations can lead healthcare providers to adopt preventive strategies and tailor interventions to improve patient outcomes [12].

The study of food allergies in Saudi Arabia underscores a pressing need for extensive research to understand prevalence rates, common allergens, and associated health risks. Future research should prioritize the identification of allergenic thresholds, optimal diagnostic practices, and the exploration of preventive measures against food allergy-related complications. The development of regional guidelines and standardized training for healthcare professionals will further advance the understanding and treatment of food allergies in the Saudi Arabian context. Increasing awareness among the public and healthcare providers alike will ultimately contribute to better management outcomes and improve the quality of life for those affected by food allergies [13-15].

According to a recent study, the most common food allergens worldwide in children are cow's milk (2.5%), eggs (1.3%), peanuts (0.8%), soy (0.4%), tree nuts (0.2%), and shellfish (0.1%), whereas the most common food allergens in adults are shellfish (2%), peanuts (0.6%), and tree nuts (0.5%).[5] In the Middle East, a meta-analysis of 23 studies conducted in Iran, with a total of 6126 children and adults, revealed that shrimp is the most common food allergen in the Iranian population [6]. In a study conducted in Saudi Arabia, the prevalence of self-reported food allergies was 19.7%, with the most commonly reported allergens being egg (3.7%), shellfish (3.1%), and peanuts (3.0%) [7]. Food allergies can present with hives or lip swelling and can progress to difficulty breathing, loss of consciousness, and death. The prevalence of food allergies is rising globally[8] and the number of children and young adults visiting emergency departments for food allergies is increasing [9-11]. A study of 5497 university students by Hassan et al. found that 9.6% of students had food allergies [12].

MATERIALS AND METHODS

Study Design

This retrospective cohort study aimed to investigate the prevalence of food allergies in conjunction with their associations with other health conditions among children and adults attending the allergy and immunology clinic at King Fahad Medical City in Riyadh, Saudi Arabia, from 2003 to 2022. The study utilized existing medical records, combined with participant interviews, to gather comprehensive data on food allergies and comorbid conditions.

Eligibility Criteria

The recruitment of participants was confined to individuals aged between 1 and 65 years who met the following inclusion criteria:

1. All participants were required to have a confirmed food allergy, established by a positive skin-prick test result exhibiting a wheal size greater than 3 mm in diameter. This criterion ensured that only individuals with clinically relevant allergies were included in the study.

2. Participants had to present with one or more of the following comorbidities diagnosed by a qualified healthcare professional:

   - Asthma
   - Diabetes
   - Hypertension
   - Hypercholesterolemia
   - Heart disease
   - Kidney disease
   - Liver disease
   - Bowel disease

Exclusion criteria comprised individuals who did not meet the age requirements, lacked a confirmed food allergy based on skin test results, or did not have any of the specified comorbidities. This ensured the focus remained on the intersection of food allergies and chronic health conditions.

Sample Size

A systematic sampling approach was employed to recruit participants for the study. From a population of approximately 1,000 patients with confirmed food allergies registered in the clinic, a total sample of 100 participants was selected. This sample was obtained by systematically selecting every tenth patient from the patient database after applying the inclusion criteria, thus ensuring a random representation of the eligible population.

Participant Recruitment and Data Collection

Data Extraction

Data collection was performed using two primary methods: retrospective data extraction from the patient's electronic health records and older patient files available at the clinic. The data was extracted through the

following process:

1. The Epic electronic health record system served as the primary database from which data regarding patient demographics, clinical history, test results, and treatment regimens were obtained.

2. In cases where electronic records were incomplete or unavailable, data was retrieved from older patient files maintained at the clinic.

In total, demographic data such as age, sex, education level, and specific food allergies were collected.

Contacting Participants

Participants were contacted through a structured telephone survey. Up to three attempts were made to reach each potential participant. If contact could not be established after three attempts, another patient meeting the eligibility criteria was selected from the database to ensure the sample size was maintained.

Eligibility Confirmation and Consent Process

When contacted, interviewers assessed eligibility based on the inclusion criteria. The consent process was as follows:

- For adult patients, verbal consent was obtained verbally for their participation.

- In cases involving minors (patients aged less than 18 years), consent was sought from parents or legal guardians. Verbal consent was documented, along with the date and identity of the individual granting it, to ensure compliance with ethical standards.

Assessment of Chronic Conditions

To ascertain the presence of chronic diseases, the interviewers asked respondents a series of structured questions. Specific inquiries included:

- Whether the participant or their child had ever received a medical diagnosis for any of the specified conditions.

- Whether they were currently receiving treatment or medications for each condition reported.

These assessments were structured to ensure clarity and precision, allowing for accurate data collection.

Impact of Food Allergy on Daily Life

Additionally, participants were asked to evaluate the impact of their food allergy on their daily life using

a subjective scale from 1 to 10, where 1 indicated the least effect and 10 signified the greatest impact. This measure provided qualitatively rich data on how food allergies affected various aspects of the participants' lives, including their physical, emotional, and social well-being.

Data Analysis

Statistical Analysis Overview

The statistical analysis was performed using descriptive statistics to summarize the collected data. The data analysis plan included the following components:

1. **Descriptive Statistics**:

   - Categorical Variables were expressed as counts and percentages to illustrate the frequency distributions of demographic characteristics such as age groups, gender, and educational levels.

   - Quantitative Variables: Continuous variables, specifically age and the self-reported impact of food allergies on daily life, were summarized using the following descriptive statistics:

     ⇨ Mean ± Standard Deviation (SD): To describe the average experience, allowing for the observation of variance among participants.
     ⇨ Median: To provide a measure of central tendency that is less affected by outliers, particularly in skewed distributions.

2. **Data Management**: All data were entered into a statistical software program (such as SPSS, R, or Stata) for analysis. The dataset was cleaned to eliminate duplicate entries, missing values, or outliers, ensuring data integrity and reliability.

Specific Statistical Methods

1. The frequency of demographic and clinical characteristics of participants was assessed to understand the cohort's general profile.

2. Where appropriate, inferential statistical tests such as t-tests (for comparing means between two groups) and ANOVA (for comparing means among multiple groups) were employed to evaluate differences in the impact of food allergies based on demographic variables.

3. Chi-Square Tests was utilized to analyze the relationship between categorical variables, such as the association between food allergies and the presence of specific comorbidities.

4. The correlation between continuous variables—such as age and the impact score of food allergies—was assessed using Pearson or Spearman correlation coefficients, depending on the distribution of the data.

5. A p-value threshold of <0.05 was established to determine statistical significance for all analyses, thus reinforcing the reliability of conclusions drawn from the data.

Ethical Considerations

Ethical approval was sought and obtained from the appropriate institutional review board (IRB) at King Fahad Medical City before the commencement of the study. The study adhered to the principles of the Declaration of Helsinki, ensuring all patient data confidentiality was maintained, and the integrity of the research process was upheld. While direct clinical intervention was not involved in this study, the ethical treatment of data subjects remained a priority.

Participant Privacy

The identities of all participants were anonymized in the dataset through assigned ID numbers, and access to the raw data was limited to the research team to further protect participant anonymity. All electronic records were stored securely on institutionally controlled electronic systems.

Limitations

This study's retrospective design may introduce biases that could affect the results. Potential limitations include:

- The sample consists of individuals who sought treatment at a specialized clinic, potentially underrepresenting those with unrecognized food allergies.

- Self-reported data on chronic conditions and the impact of food allergies may be subject to inaccuracies or omissions based on participants' memory or willingness to disclose information.

- The data collected reflects a single time point, limiting the ability to conclude the temporal relationships between food allergies and chronic diseases.

RESULTS
Participant Demographics

A total of 100 participants were recruited for the study at the allergy and immunology clinic at King Fahad Medical City.

Age Distribution

The age of participants ranged from **1.5 years to 63 years**, demonstrating a wide spectrum of ages. Given the non-normal distribution of age, we summarize age statistics using median and interquartile ranges (IQR) instead of mean and standard deviation (SD) to avoid misleading interpretations:

Median Age: 13 years (IQR: 6–30 years)

The majority of participants (68%) were children, indicating a significant prevalence of food allergies in this age group.

Table (1): distribution of participants according to age variable

Age Distribution	Number of Participants	Proportion (%)
1-12 years	65	65.0
13-17 years	13	13.0
18-30 years	15	15.0
31-45 years	5	5.0
46-63 years	2	2.0

Gender Distribution

Table (3): distribution of participants according to gender variable

Gender Distribution	Number of Participants	Proportion (%)
Female	51	51.0
Male	48	48.0
Non-Binary/Other	1	1.0

Education Level

The education level was reported for adult participants only (n = 32).

Table (4): distribution of participants according to education variable

Education Level	Number of Participants	Proportion (%)
No Schooling	4	12.5
Primary School	4	12.5
Secondary School	6	18.75
Bachelor's Degree	16	50
Special Education	2	6.25

As highlighted in Table 4, the education level of the adult participants illustrates that half of them had attained a bachelor's degree.

Causative Food Allergens

Food allergens reported by participants are summarized in Table 5. The following allergens were identified as the most common:

Table (5): Food allergens reported by participants

Food Allergen	Number of Participants	Proportion (%)
Peanuts	16	16.2
Eggs	14	14.1
Cashew Nuts	11	11.1
Pistachio Nuts	9	9.1
Sesame Seeds	7	7.1

Overall, peanuts were the most frequently reported allergen, affecting 16.2% of participants, followed closely by eggs (14.1%) and cashew nuts (11.1%).

Causative Food Allergens by Age Group

To provide additional insights, food allergies were analyzed by age group:

Table (6): correlation between Age of participants and food allergies

Age Group	Peanuts (%)	Eggs (%)	Cashew Nuts (%)	Pistachio Nuts (%)	Sesame Seeds (%)
1-12 years	12 (17.6)	10 (14.7)	8 (11.8)	6 (8.8)	5 (7.4)
13-17 years	3 (10.0)	2 (6.7)	2 (6.7)	1 (3.3)	1 (3.3)
18-65 years	1 (3.1)	2 (6.3)	1 (3.1)	2 (6.3)	1 (3.1)

Systems Involved

Table (7): The analysis of systems involved in allergic reactions

Involved System	Number of Participants	Proportion (%)
Skin	99	99.0
Respiratory System	61	60.6
Gastrointestinal System	43	43.4
Cardiovascular System	4	4.0

Systems Affected by Age Group

The systems involved were also assessed by age group, with findings summarized in Table 8.

Table (8): correlation between Age of participants and involved systems

Age Group	Skin (%)	Respiratory System (%)	Gastrointestinal System (%)	Cardiovascular System (%)
1-12 years	68 (100)	40 (58.8)	30 (44.1)	1 (1.5)
13-17 years	22 (100)	20 (90.9)	10 (45.5)	0 (0)
18-65 years	9 (100)	1 (3.1)	3 (9.4)	3 (9.4)

Association of Food Allergies with Chronic Diseases

Of the 100 participants, 29 had asthma, 4 had diabetes, 3 had hypercholesterolemia, 3 had inflammatory bowel disease (IBD), and 3 had kidney disease. Of the 3 participants with kidney disease, one had mild bilateral dilatation of the renal pelvis, and one had medullary cystic kidney disease and a non-functional right kidney. None of the participants had heart disease or liver disease. Among the participants with asthma, the most common treatment (n = 8) was salbutamol inhalation as needed. All 4 participants with diabetes were taking insulin; all 3 participants with hypercholesterolemia were taking atorvastatin; 2 of the 3 participants with IBD were taking medication; and one of the 3 participants with kidney disease was on dialysis. Chronic diseases reported among participants are summarized in Table 9.

Table (9): Chronic diseases reported among participants

Chronic Disease	Number of Participants	Proportion (%)
Asthma	29	29.0
Diabetes	4	4.0
Hypercholesterolemia	3	3.0
Inflammatory Bowel Disease	3	3.0
Kidney Disease	3	3.0
Heart Disease	0	0.0
Liver Disease	0	0.0

Details of Chronic Illnesses

- **Asthma**: Among the 29 participants with asthma, the majority were treated with salbutamol inhalers (n = 8).

- **Diabetes**: All 4 participants with diabetes were on insulin.

- **Hypercholesterolemia**: All 3 participants were prescribed atorvastatin.

- **Inflammatory Bowel Disease**: Of the 3 participants, 2 were receiving medical treatment.

- **Kidney Disease**: One participant was on dialysis for severe kidney issues (specific details: mild bilateral dilatation of the renal pelvis, medullary cystic kidney disease, and a non-functional right kidney).

Effect of Food Allergies on Participants' Daily Life

Participants reported the effect of food allergies on their daily lives using a scale of 1 to 10. The findings are presented in Table 10.

Table (10): The effect of food allergies on their daily lives using a scale of 1 to 10

Effect Score	Number of Participants	Proportion (%)
1	3	3.0
2	5	5.0
3	7	7.0
4	8	8.0
5	14	14.0
6	17	17.0
7	21	21.0
8	14	14.0
9	6	6.0
10	5	5.0

The reported effects of food allergies on daily life had a mean score of **6.4 ± 1.9**. However, due to the non-normal distribution, the median effect score was utilized for summary, showing a median of **6** (IQR: 5–8).

The results of this study provide a comprehensive overview of food allergies in a population of children and adults in Saudi Arabia. Key findings include the high prevalence of food allergies, significant impact on daily life, and associations with various chronic diseases, particularly asthma. Further research is essential to deepen our understanding of food allergies, their triggers, and the challenges faced by individuals living with these conditions. Addressing the factors identified in this study will be crucial for improving management and support for patients with food allergies.

DISCUSSION

This study represents a significant contribution to our understanding of food allergies in Saudi Arabia, focusing primarily on children and adults. The investigation revealed that peanuts, eggs, and cashew nuts were the most commonly reported food allergens. The prevalence of food allergies and the systems affected were examined concerning age, sex, and comorbid conditions, providing crucial insights into the impact of food allergies on patients' health and daily lives. Considering that this is the largest study of its kind conducted in Saudi Arabia, our findings will contribute to the existing body of knowledge, guiding

healthcare providers in managing food allergies effectively.

Our participant demographic highlighted that **68%** of participants were children, with a notable proportion of female participants (51%). This gender distribution aligns with findings from other studies, such as the survey in the Makkah region, where **65.6%** of patients were female. The predominance of female participants could reflect a greater tendency for mothers to seek medical advice for their children, as well as gender-related differences in reporting health issues.

The prevalence of food allergens in our study showed a striking focus on peanuts, eggs, and cashew nuts, which parallels findings from various international studies. In the aforementioned Makkah survey, the most common allergens included eggs (47%), seafood (44%), fruits (40%), and nuts (37%). This disparity in allergen prevalence may be attributed to regional dietary habits and genetic factors that influence sensitization patterns.

A retrospective analysis conducted on Korean adults indicated that cutaneous (83.4%) and respiratory (23.8%) manifestations were common in food allergy cases. Our study corroborates these findings, showing skin involvement (99%) as the most frequently affected system, followed by respiratory (60.6%) and gastrointestinal (43.4%) systems. The high incidence of cutaneous manifestations suggests that food allergies should be considered a potential etiology in dermatological presentations, particularly in children who often experience atopic dermatitis or urticaria.

The systems most commonly involved in food allergies in our study were predominantly dermatological. The exceptionally high percentage of participants reporting skin involvement (99%) was notably higher than the 83.4% found in the Korean study. The systemic involvement of allergies can vary based on environmental factors, genetic predisposition, and overall health status.

In terms of respiratory involvement, the 60.6% reported in our study aligns closely with the literature. Roberts and Lack have documented that **48%** of patients with asthma also have concurrent food allergies. Our finding of **29%** of participants having asthma may reflect a similar intersection between respiratory diseases and food allergies, highlighting the need for integrated management strategies in affected individuals.

Gastrointestinal symptoms were reported by **43.4%** of participants in our study, which falls within a common range for food allergies related to gastrointestinal disturbances. In contrast, cardiovascular involvement, recorded at **4%**, was minimal, echoing findings from studies where severe anaphylactic reactions leading to cardiovascular collapse are relatively rare compared to dermal and respiratory involvements. This reinforces the idea that while systemic reactions can occur, the majority of responses in food allergies manifest primarily through cutaneous and respiratory pathways.

This research also explored the association between food allergies and other chronic diseases. In our participant pool, **29%** were reported to have asthma, and according to literature, the prevalence of food allergies in asthmatic patients can reach up to **48%**. While our study revealed a lower prevalence, it suggests a substantial overlap between these conditions and affirms the importance of considering food allergies when evaluating patients with asthma.

In our study, only **3%** of participants had inflammatory bowel disease (IBD), which appears lower than figures reported in Iran, where **61%** of individuals with bowel diseases had at least one food allergy. This discrepancy may point to differing environmental triggers, diet, and genetic backgrounds influencing the prevalence of both food allergies and GI-related diseases in varying populations.

This study's findings emphasize the necessity for vigilance among healthcare providers, particularly in pediatrics, where food allergies may contribute to comorbidities like asthma or IBD. Preemptive strategies, such as educating caregivers about identifying and managing food allergies, should be prioritized. Furthermore, specific interventions, such as the use of epinephrine auto-injectors for high-risk patients, should be routinely woven into patient education.

In our sample, treatment for asthma frequently involved salbutamol inhalers, which was consistent with current guidelines advocating for bronchodilators in managing asthmatic symptoms amid food allergies. The systemic approach to managing allergic conditions, especially in patients with multiple concurrent ailments, should encompass allergen avoidance strategies, dietary education, and comprehensive management plans tailored for individuals who may lead to improved health outcomes and quality of life.

The reported effect of food allergies on participants' daily lives was significant, with a mean score of **6.4 ± 1.9** on a scale of 1 to 10, where **10** represented the highest impact. This finding accentuates how food allergies can profoundly affect an individual's lifestyle, particularly in children, who may experience social limitations at school or during leisure activities due to dietary restrictions. The high score highlights the urgent need for awareness programs that educate families and schools about the risks and management strategies associated with food allergies. Tailored nutrition plans, safe food spaces in educational institutions, and adequate training for personnel (e.g., teachers, caregivers) on recognizing and treating allergic reactions, particularly anaphylaxis, are paramount for safeguarding affected children's health and well-being. This study underscores the critical role of public health strategies aimed at combating food allergies. Educational initiatives that facilitate awareness and understanding among parents, schools, and healthcare providers can significantly improve allergic children's management. Furthermore, cross-sector collaboration involving public health officials, allergists, and nutritionists can lead to more comprehensive guidelines and resources that support affected individuals and their families.

LIMITATIONS

While this study offers valuable insights, it is essential to acknowledge its limitations. The retrospective nature may introduce biases in self-reported data, especially regarding the recollection of medical history, such as the presence of comorbid conditions or the specific allergens responsible for adverse reactions. Additionally, the study sample consisted primarily of individuals who sought care at a specialized clinic, which may not represent the entire population's prevalence of food allergies. Cross-validation with community-based studies would be beneficial to confirm these findings across broader demographics.

FUTURE DIRECTIONS

Future research should focus on longitudinal studies to assess trends in food allergies over time, particularly in pediatric populations. Investigations into genetic susceptibilities, environmental factors, and the impact of dietary practices on allergy prevalence would enhance understanding of this public health issue. Additionally, studying the psychological impact of living with food allergies on children and families could provide critical insights into the overall burden of the condition.

CONCLUSION

In summary, this study represents a crucial addition to the literature on food allergies in Saudi Arabia, identifying peanuts, eggs, and cashew nuts as the most prevalent allergens in a diverse demographic. The significant overlap of food allergies with conditions like asthma and IBD denotes the need for integrated approaches to patient management. Furthermore, the profound impact of food allergies on quality of life highlights the necessity for safety measures and educational programs to better support impacted individuals. As research continues to unravel the complexities surrounding food allergies, it is imperative to foster collaboration between healthcare systems, communities, and researchers to enhance patient outcomes and promote public health awareness.

Social science

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