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A Community-Based Pilot Survey of Pediatric Food Allergies in a Maryland Orthodox Jewish Community

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Introduction

The prevalence of food allergies in children is known to be on the rise in the United States.^{1,2} The Jewish population has been of specific interest in the area of food allergy due to numerous investigations in Jewish populations in both England and Israel.^{1,3,4} Specifically, it was found that rates of food allergy in Jewish populations in Israel were markedly lower than Jewish populations in England.⁴ There has not been any investigation of the epidemiology of food allergy in Jewish populations in the United States. The purpose of this pilot study was to investigate and describe the prevalence of and experiences with food allergy in a Jewish population in the United States.

Methods

A survey regarding pediatric allergies, other atopic conditions, and lifestyle was sent electronically to nonspecific membership email listservs of Orthodox synagogues in an area with primarily a Jewish population in Pikesville, Maryland. Parents responded on behalf of their children. Data were organized and extracted from survey responses using Tableau

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Authors' Note

The content is solely the responsibility of the authors and does not necessarily represent the official views of Harvard Catalyst, Harvard University and its affiliated academic health care centers, or the National Institutes of Health, the funding agencies.

Author Contributions

PAK, WJS, and WP conceived of and planned the research strategy. PAK, WJS, and WP developed the survey and collected the data. All authors analyzed the collected data, discussed the findings, prepared the manuscript, and assisted in submission and revisions of manuscript.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

version 8.3 and transferred into STATA 13.1 for statistical analysis. The study was approved by the institutional review board at Boston Children's Hospital.

Results

A total of 65 surveys were voluntarily completed and returned. The mean age of the children was 4.1 years (median = 3 years, range = 0–17). Within this sample, 24 (37%) children were reported as having at least one food allergy with milk ($n = 12$, 18%), peanut ($n = 10$, 15%), and egg ($n = 9$, 14%) being the most common. Of the children with a report of food allergy, only 71% of them reported having formal allergy testing in the past. A history of an anaphylactic reaction to foods was reported in 21% ($n = 5$) of the children reporting food allergies. All respondents except for one had mothers and fathers with a high school degree or higher; however, 30% ($n = 7$) of food allergic children had parents reporting “no knowledge” of epinephrine autoinjector. A summary of the demographics is shown in Table 1.

This study also evaluated the following factors as predictive variables: gender, heritage, parental education, household income, animal fat consumption, vita-min D supplementation, and maternal fruit and vegetable consumption during pregnancy. Households making more than US\$75, 000 a year had twice the proportion of food allergy compared with households making less than US\$75, 000 (61% vs 30%, $P = .03$). None of the other factors were associated with the presence of food allergy.

Discussion

This pilot study utilized surveys to investigate and describe food allergy epidemiology in a Jewish population in the United States. Although community-targeted research has been utilized for years,^{5,6} few studies have been conducted in a Jewish community and none in the United States. A recent estimate of childhood food allergy prevalence in the United States is approximately 8%.⁷ In contrast, our survey discovered that 37% of respondents in a Jewish population reported food allergy. Admittedly, these high rates may be due to nonresponse bias; however, these preliminary numbers indicate enough of a concern that this population should be further investigated. Higher rates of food allergy in this population could be due to different dietary practices including keeping a kosher diet or higher rates of atopy in general.

We discovered a few interesting findings when focusing only on the respondents with reported food allergy. For example, 21% of these children were reported to have an anaphylactic reaction to food in the past. Given the rate of reported anaphylaxis within this community, we were interested in the knowledge regarding proper epinephrine autoinjector usage in this population. In a US survey of 38 480 children, 38.7% of those that reported food allergy had a history of severe reactions.⁷ A previous study conducted on children noted that only 8% of parents of children who had anaphylaxis reported they had administered epinephrine autoinjector to their child.⁸ In our survey, almost one third (30%) of the families with a child with reported food allergy answered that they had “no knowledge” of how to use an epinephrine autoinjector. Other retrospective studies confirm

underuse of epinephrine, as well as inappropriate dosing or administration. While there are studies demonstrating many parents incorrectly use the autoinjector when formally evaluated,⁹ the expression of “no knowledge” in so many families raises concern. This possibly suggests an area for targeted education within this specific community. Finally, we documented that 29% of the children reported to have food allergy had never had formal allergy testing. If this finding is supported on future large-scale trials within this community, then this would indicate the need for increased community education regarding allergies and atopic conditions in general.

There are limitations to this small pilot study. Most important, all of the data were collected by survey. As a result, nonresponse bias could distort the true prevalence of food allergies within this community. Furthermore, we did not have clinical visits or formal testing to confirm the reported diagnosis of food allergy in these children. These 2 factors likely led to our discovered rate of food allergy (37%) to be higher than the true rate of food allergy within this community.

Conclusion

This pilot study is the first investigation of food allergy prevalence in a Jewish population within the United States and found a high rate of reported food allergies. Regardless of limitations, these concerning rates signal a need for future studies to investigate the true prevalence within this unique community and evaluate possibly associated societal factors. These results may warrant targeted education and specific interventions within this community.

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References

1. Lack G Update on risk factors for food allergy. *J Allergy Clin Immunol*. 2012;129:1187–1197. [PubMed: 22464642]
2. Lack G Epidemiologic risks for food allergy. *J Allergy Clin Immunol*. 2008;121:1331–1336. [PubMed: 18539191]
3. Romano-Zelekha O, Graif Y, Garty BZ, Livne I, Green MS, Shohat T. Trends in the prevalence of asthma symptoms and allergic diseases in Israeli adolescents: results from a national survey 2003 and comparison with 1997. *J Asthma*. 2007;44:365–369. [PubMed: 17613631]
4. Du Toit G, Katz Y, Sasieni P, et al. Early consumption of peanuts in infancy is associated with a low prevalence of peanut allergy. *J Allergy Clin Immunol*. 2008;122:984–991. [PubMed: 19000582]
5. Israel BA, Schulz AJ, Parker EA, Becker AB. Review of community-based research: assessing partnership approaches to improve public health. *Annu Rev Public Health*. 1998;19:173–202. [PubMed: 9611617]

6. Minkler M Community-based research partnerships: challenges and opportunities. *J Urban Health*. 2005;82(2 suppl):ii3–ii12. [PubMed: 15888635]
7. Gupta RS, Springston EE, Warriar MR, et al. The prevalence, severity, and distribution of childhood food allergy in the United States. *Pediatrics*. 2011;128:e9–e17. [PubMed: 21690110]
8. Decker WW, Campbell RL, Manivannan V, et al. The etiology and incidence of anaphylaxis in Rochester, Minnesota: a report from the Rochester Epidemiology Project. *J Allergy Clin Immunol*. 2008;122:1161–1165. [PubMed: 18992928]
9. Kim JS, Sinacore JM, Pongracic JA. Parental use of EpiPen for children with food allergies. *J Allergy Clin Immunol*. 2005;116:164–168. [PubMed: 15990790]

Table 1. Characteristics Among All Children Surveyed (n = 65) and Children With Reported Food Allergy (n = 24).

	All Respondents (n = 65)	Only Children With Reported Food Allergy (n = 24)
Age (median)	3 years	2.5 years
Male gender	38 (58%)	15 (62%)
Heritage		
Ashkenazic	57 (88%)	19 (79%)
Sefaradic	1 (2%)	0 (0%)
Both	7 (11%)	5 (21%)
Parental education		
Mother—at least high school degree	65 (100%)	24 (100%)
Father—at least high school degree	64 (98%)	24 (100%)
Report of at least one food allergy	24 (37%)	24 (100%)
Individual foods		
Milk	12 (18%)	12 (50%)
Peanut	10 (15%)	10 (42%)
Egg	9 (14%)	9 (38%)
Tree nut	7 (11%)	7 (29%)
Sesame	3 (5%)	3 (12%)
Seafood	4 (6%)	4 (17%)
Other food	6 (9%)	6 (25%)
Previous formal allergy testing		
Yes		17 (71%)
Never		7 (29%)
Previous anaphylactic reaction to food		5 (21%)
“‘No knowledge” of epinephrine autoinjector		7 (30%)