Original article

US prevalence of self-reported peanut, tree nut, and sesame allergy: 11-year follow-up

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Background: Allergy to peanuts and tree nuts (TNs) is the leading cause of fatal allergic reactions in the United States, and the prevalence appears to be increasing.

Objectives: We sought to determine the US prevalence of self-reported peanut, TN, and sesame allergy in 2008 and compare results with comparable surveys conducted in 1997 and 2002.

Methods: A nationwide, cross-sectional, random telephone survey for peanut and TN allergy was conducted with a previously used questionnaire, with additional questions about sesame.

Results: A total of 5,300 households (13,534 subjects) were surveyed (participation rate, 42% vs 52% in 2002 and 67% in 1997). Peanut allergy, TN allergy, or both was reported by 1.4% of subjects (95% CI, 1.2% to 1.6%) compared with 1.2% in 2002 and 1.4% in 1997. For adults, the prevalence was 1.3% (95% CI, 1.1% to 1.6%), which was not significantly different from prior surveys. However, the prevalence of peanut or TN allergy for children younger than 18 years was 2.1% (95% CI, 1.6% to 2.7%) compared with 1.2% in 2002 ($P = .007$) and 0.6% in 1997 ($P < .001$). The prevalence of peanut allergy in children in 2008 was 1.4% (95% CI, 1.0% to 1.9%) compared with 0.8% in 2002 (P = not significant) and 0.4% in 1997 ($P < .0001$). The prevalence of childhood TN allergy increased significantly across the survey waves (1.1% in 2008, 0.5% in 2002, and 0.2% in 1997). Sesame allergy was reported by 0.1% (95% CI, 0.0% to 0.2%).

Conclusions: Although caution is required in comparing surveys, peanut allergy, TN allergy, or both continue to be reported by more than 1% of the US population (eg, >3 million subjects) and appear to be increasingly reported among children over the past decade. Sesame allergy is reported much less commonly. (J Allergy Clin Immunol 2010;■■■:■■■-■■■.)

Key words: *Prevalence, peanut, tree nut, hypersensitivity, food allergy, anaphylaxis, telephone survey*

Food allergy significantly affects quality of life, and there is an impression that its prevalence is increasing.[1,2] However, there are few studies that have monitored the prevalence of food allergy in the general population over time while consecutively using the same methods.[3-8] We previously reported the prevalence of self-reported peanut and tree nut (TN) allergies in the United States by using a random-calling telephone survey.[3,9] Overall, in 2002 we found that 1.2% (95% CI, 1.0% to 1.4%) of the general US population reported a peanut or TN allergy.[3] We found that peanut allergy was reported by 0.8% of children younger than 18 years in 2002 compared with 0.4% in 1997 ($P = .047$). This finding of a doubling in prevalence over a short time period was similar to a report by Grundy et al,[6] who showed that among 2 separate birth cohorts, one from 1989 and another from 1994-1996, living on the Isle of Wight, the rate of peanut allergy for children 3 to 4 years of age increased from 0.5% (6/1,218) to 1% (13/1,273; $P = .2$). They also reported an increased sensitization rate to peanut from 1.1% to 3.3% ($P = .001$). Since these last 2 reports, several studies have indicated rates of peanut allergy exceeding 1% among children in Australia,[7] Canada,[5] and the United Kingdom.[10,11] Allergy to sesame, often considered an emerging allergen, has been estimated to affect 0.10 to 0.79% of children from studies outside of the United States.[11-14]

There have not been any follow-up studies to determine the prevalence of peanut or TN allergies in the United States. We therefore undertook the current study by using the same methodologies we applied in 1997 and 2002 to compare the current rates of self-reported peanut and TN allergies with those of the previous surveys. Because sesame allergy is increasingly reported and is potentially severe,[15] we added queries about this food in the current study.

METHODS

Survey methods

The survey was a nationwide, cross-sectional, computer-assisted telephone interview performed by TMR, Inc, OpinionMD Division (Broomall, Pa). The survey was administered through the same computer-assisted survey technology and the same sampling system as the 2 previous surveys; the company performing the interviews was different but specializes in the same approach as the previously used vendor. The current survey was conducted from September 27, 2008, to December 22, 2008; the first survey was conducted

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Abbreviation used
TN: Tree nut

from April 2, 1997, to June 10, 1997,[9] and the second was conducted from June 24, 2002, to August 7, 2002.[3] The Genesys Sampling System (Fort Washington, Pa) was used to generate a random sampling of telephone numbers, not including cell phones, for the 48 contiguous states. Interviews were conducted by trained telephone medical interviewers. Calling times and patterns were identical to the prior surveys. Briefly, at least 10 attempts were made to contact a resident of each household. Calling was done between the hours of 3 and 9 PM (local time) Monday through Thursday and 10 AM until 5 PM Eastern standard time on Saturday to minimize selection bias related to availability.

Questionnaire contents, selection of eligible respondents, rules for surrogates, definitions, and data processing

Federal regulations pertaining to consent procedures and subject confidentiality were strictly observed, and the study was approved by the Essex (Lebanon, NJ) and Mount Sinai School of Medicine Institutional Review Boards. Respondents were eligible if they were 18 years of age or older, were living in the household, and understood the questions without a language/mental/hearing barrier. The initial age-eligible household respondent was invited to participate in the survey. If this respondent was not allergic to peanuts, TNs, or sesame, he or she was asked to identify subjects within the household who were allergic. If the affected subject was a minor, the initial respondent acted as a surrogate and completed the interview, or if unable, another adult was sought. If the affected subject or subjects were adults and unavailable, the household was recontacted until the affected subject could be interviewed. However, unlike the previous survey, census data were collected with the initial respondent in the event the affected subject was not available despite multiple attempts. Census data were also collected for all household members if no household resident was allergic to peanuts, TNs, or sesame. In households with 1 or more persons allergic to peanuts or TNs, the entire interview was conducted with each allergic person (or surrogate for children). Details of reactions in adults were only included when the affected adult was personally interviewed. For subjects who reported peanut, TN, or sesame allergy, further specific questions were administered to determine the details of the allergic reactions. Queries regarding sesame allergy were introduced after the peanut and TN allergy queries so as not to alter the comparability of the current survey with previous ones.

Reactions were considered to be "convincing" if the organ systems affected and symptoms were typical of those involved in allergic reactions (skin with hives and angioedema; respiratory tract with trouble breathing, wheezing, or throat tightness; and gastrointestinal tract with vomiting and diarrhea) and occurred within 2 hours of ingestion. A previous study with these symptoms as criteria for a convincing acute allergic reaction to peanut or TN found that most subjects (93%) had IgE antibody to the implicated food.[16]

Because the survey used a multilevel sampling frame in which households were contacted and then subjects were assessed, potential correlation among family members was addressed by calculating the estimated proportion and its SE by using methods for 2-stage cluster sampling with unequal numbers of secondary units in the clusters. The pairwise comparison of prevalence between any 2 time periods was done with a z test for comparing 2 binomial proportions. The Cochran-Armitage trend test was used to compare prevalence across the 3 survey waves.

RESULTS

Participation rate

A total of 12,683 households were contacted: 6,578 (51.8%) refused to participate, and an additional 807 (6.4%) were ineligible (age <18 years, n = 32; language barrier, n = 775). The total of 5,300 participating households represented a census of 13,534 subjects. The overall participation rate of 5,300 (42%) from the 12,658 households contacted was lower than that for the 2002 survey (52%, $P < .001$) and the 1997 survey (67%, $P < .001$).

Demographic characteristics of participants and reported rates of peanut and TN allergy

A total of 188 households (3.6%; 95% CI, 3.1% to 4.1%) reported 1 or more subjects with peanut allergy, TN allergy, or both, a rate similar to the 1997 (3.5%) and 2002 (3.3%) studies. Rates of reported allergy to peanut, TN, or both according to age are shown in Table I. Overall, the rate of any peanut allergy, TN allergy, or both among adults (1.3%; 95% CI, 1.1% to 1.6%) was lower than among children younger than 18 years (2.1%; 95% CI, 0.2% to 2.6%; $P = .005$). The number of subjects reporting allergy to each TN was as follows: walnut, 41; cashew, 29; pecan, 26; almond, 25; pistachio, 19; Brazil nut, 19; hazel nut, 17; Macadamia nut, 17; and pine nut, 11. The distribution of reported peanut and TN allergy according to race/ethnicity and sex according to age is shown in Table II. Race/ethnicity was only determined from the responding household member, and calculations therefore assume all household members are of the same race/ethnicity presented in a manner as previously queried (eg, not differentiating race from ethnicity). There is an overall male predominance of peanut/TN allergy reported in children and female predominance in adults, but these did not reach statistical significance. There were no significant differences in rates of allergy to peanut or TNs by geographic region (data not shown).

The reported rates of allergy in the 3 survey years 1997, 2002, and 2008 are shown in Table III. There were no significant differences in the rates of reported peanut or TN allergy among adults. From 2002 to 2008, there were significant increases of children reported with peanut/TN allergy (from 1.2% to 2.1%, $P = .007$) and TN allergies (from 0.5% to 1.1%, $P = .022$), but the increase in peanut allergy in children did not reach statistical significance (from 0.8% to 1.4%, $P = .058$). There had been significant increases in self-reported total peanut/TN allergy (from 0.6% to 1.2%, $P = .023$), peanut allergy (from 0.4% to 0.8%, $P = .047$), and TN allergy (from 0.2% to 0.5%, $P = .037$) between the earlier surveys from 1997 to 2002,[3] and therefore the 1997 to 2008 increases were significantly different, with P values of less than .0001. Similarly, trend analysis of the increasing proportions of children reported with any nut, peanut, or TN allergies was significant ($P < .0001$) across the 3 surveys.

Adjusted prevalence

Information about clinical reactions was available for 146 (75%) of 194 subjects (93 adults and 53 children). Reactions were not convincing for 18 adults (nasal symptoms only, n = 3; hives after 2 hours [all also had recurrent reactions], n = 3; gastrointestinal symptoms after 2 hours, n = 6; migraine/headache, n = 3; and convincing symptoms but delayed onset [but all had recurrent reactions], n = 3) and 3 children (nasal symptoms only for 1 and multisystem recurrent reactions for 2 but delayed over 2 hours). Thus 21 (14.4%) of 146 with complete information did not have convincing reactions. If a similar rate of unconvincing reactions occurred among the 48 subjects without clinical details, a total of 27 persons would be excluded, leaving 167 with convincing symptoms for their first reaction. Reducing the total by another

TABLE I. Prevalence of peanut and TN allergy in 2008 by age

	Total sample population	Type of nut allergy									
		Any nut*		Both peanut and TN		Peanut only		TN only		Unspecified nut	
	n = 13,534	No.	Percent (± 95% CI)	No.	Percent (± 95% CI)	No.	Percent (± 95% CI)	No.	Percent (± 95% CI)	No.	Percent (± 95% CI)
Age (y)											
0-5	860	18	2.1 (1.3-3.3)	4	0.5 (0.1-1.2)	8	0.9 (0.4-1.8)	4	0.5 (0.1-1.2)	2	0.2 (0.0-0.8)
6-10	861	22	2.6 (1.6-3.8)	7	0.8 (0.3-1.7)	11	1.3 (0.6-2.3)	4	0.4 (0.1-1.2)	0	0.0 (NA)
11-17	1,151	20	1.7 (1.1-2.7)	2	0.2 (0.0-0.6)	8	0.7 (0.3-1.4)	9	0.8 (0.4-1.5)	1	0.1 (0.0-0.5)
18-20	456	8	1.8 (0.8-3.4)	0	0.0 (NA)	2	0.4 (0.1-1.6)	1	0.2 (0.0-1.2)	5	1.1 (0.4-2.5)
21-30	1,019	16	1.6 (1.0-2.5)	3	0.3 (0.1-0.9)	2	0.2 (0.0-0.7)	5	0.5 (0.2-1.1)	6	0.6 (0.2-1.3)
31-40	1,311	18	1.4 (0.8-2.2)	3	0.2 (0.1-0.7)	8	0.6 (0.3-1.2)	4	0.3 (0.1-0.8)	3	0.2 (0.1-0.7)
41-50	1,754	28	1.6 (1.1-2.3)	3	0.2 (0.0-0.5)	10	0.6 (0.3-1.1)	8	0.5 (0.2-0.9)	7	0.4 (0.2-0.8)
51-60	1,894	20	1.1 (0.7-1.6)	3	0.2 (0.0-0.5)	7	0.4 (0.2-0.8)	5	0.3 (0.1-0.6)	5	0.3 (0.1-0.6)
61-64	610	9	1.5 (0.7-2.8)	0	0.0 (NA)	2	0.3 (0.0-1.2)	5	0.8 (0.3-1.9)	2	0.3 (0.0-1.2)
≥65	2,481	32	1.3 (0.9-1.8)	1	0.0 (0.0-0.2)	18	0.7 (0.4-1.1)	11	0.4 (0.2-0.8)	2	0.1 (0.0-0.3)
Not reported (<18)	43	1	2.3 (0.1-12.3)	0	0.0 (NA)	0	0.0 (NA)	1	2.3 (0.1-12.3)	0	0.0 (NA)
Not reported (>18)	518	2	0.4 (0.1-1.4)	0	0.0 (NA)	1	0.2 (0.0-1.1)	1	0.2 (0.0-1.1)	0	0.0 (NA)
Overall	13,534	194	1.4 (1.2-1.7)	26	0.2 (0.1-0.3)	77	0.6 (0.5-0.7)	58	0.4 (0.3-0.6)	33	0.2 (0.2-0.3)

NA, Not applicable.
*"Any nut" is reported nut allergy including peanuts, TNs, or unspecified nut.

TABLE II. Prevalence of peanut and TN allergy by race, ethnicity, and sex by age

	Total population	Type of nut allergy									
		Any nut*		Both peanut and TN		Isolated peanut		Isolated TN		Unspecified nut	
		No.	Percent (± 95% CI)	No.	Percent (± 95% CI)	No.	Percent (± 95% CI)	No.	Percent (± 95% CI)	No.	Percent (± 95% CI)
Race/ethnicity											
White	10,317	145	1.4 (1.2-1.7)	143	1.4 (1.2-1.6)	2	0.0 (0.0-0.1)	1	0.0 (0.0-0.1)	17	0.2 (0.1-0.3)
African American/black	1,290	24	1.9 (1.2-2.8)	24	1.9 (1.2-2.8)	2	0.2 (0.0-0.6)	0	0.0 (NA)	5	0.4 (0.1-0.9)
Hispanic	942	12	1.3 (0.7-2.2)	11	1.2 (0.6-2.1)	0	0.0 (NA)	0	0.0 (NA)	0	0.0 (NA)
Other	527	10	1.9 (0.9-3.5)	10	1.9 (0.9-3.5)	0	0.0 (NA)	0	0.0 (NA)	0	0.0 (NA)
Not reported	458	6	1.3 (0.5-2.8)	6	1.3 (0.5-2.8)	0	0.0 (NA)	1	0.2 (0.0-1.2)	0	0.0 (NA)
Sex/age											
Male (<18 y)	1,535	37	2.4 (1.7-3.3)	9	0.6 (0.3-1.1)	16	1.0 (0.6-1.7)	9	0.6 (0.3-1.1)	3	0.2 (0.0-0.6)
Female sex (<18 y)	1,367	23	1.7 (1.1-2.5)	3	0.2 (0.1-0.6)	11	0.8 (0.4-1.4)	9	0.7 (0.3-1.2)	0	0.0 (NA)
Male sex (>18 y)	4,530	52	1.2 (0.9-1.5)	4	0.1 (0.0-0.3)	20	0.4 (0.3-0.7)	13	0.3 (0.2-0.5)	15	0.3 (0.2-0.6)
Female sex (>18 y)	5,315	81	1.5 (1.2-1.9)	9	0.2 (0.1-0.3)	30	0.6 (0.4-0.8)	27	0.5 (0.3-0.7)	15	0.3 (0.2-0.5)

NA, Not applicable.
*"Any nut" is reported nut allergy including peanuts, TNs, or unspecified.

7% to reflect the potential false-positive rate of the survey,[16] 155 persons would remain, resulting in an adjusted prevalence of 1.15% (95% CI, 1.0% to 1.3%), which is not significantly different compared with the adjusted prevalence rate in 1997 (1.1%) and 2002 (1.04%).

Sesame allergies

A total of 13 subjects reported allergy to sesame (3 children and 10 adults), 0.1% of each age group (95% CI, 0% to 0.2%). Only 3 persons reported isolated sesame allergy; the remainder also reported allergy to peanut (n = 2), TNs (n = 1), or both/unspecified (n = 7).

DISCUSSION

We have focused on peanut and TN allergies during each of 3 periodic US telephone surveys because allergies to these foods are often severe and rarely outgrown.[2] Our study is particularly unique because we determined peanut and TN allergy prevalence in the general US population using the same methods over time. Except for our national seafood allergy survey,[17] we are not aware of US food allergy prevalence studies that incorporate all age groups with a national sample. In our current study, although the total population prevalence of self-reported peanut allergy, TN allergy, or both did not increase among adults since 1997, there was a significant increase in self-reported allergies among children. In the group younger than 18 years, TN allergies increased from 0.2% in 1997 to 1.1% in 2008, and peanut allergy increased from 0.4% to 1.4%. Although this increase appears remarkable, the current estimate (eg, 1.4% of children affected with peanut allergy) is similar to recent reports from Canada (1.63% of kindergarten through third grade),[5] the United Kingdom (1.85% of Jewish schoolchildren,[11] 1.2% of a birth cohort of 3-year-olds,[8] and 1.8% of schoolchildren[10]), and Australia (1.15% in the Australian Capital Territory[7]), where the studies additionally

TABLE III. Comparison of reported peanut and TN allergies among the 1997, 2002, and 2008 surveys

	Census			Any nut			Both peanut and TN		
Age	1997	2002	2008	1997	2002	2008	1997	2002	2008
Child <18 y	2,998	3,127	2,915	18 (0.6%)	37 (1.2%)	61 (2.1%)	—	9 (0.3%)	13 (0.4%)
Adult	8,049	9,881	10,043	131 (1.6%)	126 (1.3%)	133 (1.3%)	4	23 (0.2%)	13 (0.1%)
Unknown	985	485	576	15 (1.5%)	3 (0.6%)	—	—	—	—
Total	12,032	13,493	13,534	164 (1.4%)	166 (1.2%)	194 (1.4%)	4	32 (0.3%)	26 (0.2%)

Increases in any nut, total peanut, and total TN allergies among children were significantly greater across survey waves (P value trend < .001). Between 2002 and 2008, increases were significant for children for any nut (P = .007) and total TN (P = .022) but not for total peanut (P = .058).

included evaluations, such as physicians' diagnoses, allergy tests, and food challenges. Hypotheses as to the reason for the increased rate of peanut allergies in children include increased allergenicity of roasted forms of peanut, early introduction of peanut when the immune system is immature, delayed introduction of peanut into the diet, and environmental exposures to peanut without ingestion.[2,18,19] Statistics from the United States Department of Agriculture (http://www.ers.usda.gov/Data/FoodConsumption/FoodAvailSpreadsheets.htm; accessed March 21, 2010) indicate relatively level availability of peanut in the United States over the past 40 years and almost a doubling of availability of TNs; it does not appear that availability alone would account for the results noted in this study.

Only a few other studies have evaluated peanut allergy rates using similar methods over time. Ben Shoshan et al[5] evaluated Montreal schoolchildren in kindergarten through third grade and reported for the 2000-2002 cohort a peanut allergy rate of 1.50% (95% CI, 1.2% to 1.9%) and in 2005-2007 a rate of 1.63% (95% CI, 1.3% to 2.0%). This increase was not statistically significant. Venter et al[8] recently reported their third peanut prevalence study using a birth cohort on the Isle of Wight, United Kingdom. The rates of sensitization to peanut in 3- or 4-years-olds born in 1989, 1994-1996, and 2001-2002 were 1.3%, 3.3%, and 2.0%, and rates of clinical peanut allergy were 0.5%, 1.4%, and 1.2%, respectively. Although rates increased between 1989 and 1994, they stabilized or slightly decreased in the most recent cohort. These results might have been influenced by differences in participant age, participation rates, and selection between their studies, but their more recent results, peanut allergy prevalence rates of 1.2% to 1.4%, are similar to ours. Environmental influences on the outcome of peanut allergy are being aggressively studied,[19,20] and the influence of recommendations that at-risk families avoid peanut during pregnancy, lactation, and for the first 3 years of a child's life remain uncertain.[8,11] Given the lack of evidence that extended periods of food allergen avoidance alter atopic disease, prior US recommendations to avoid peanut until age 3 years were rescinded in 2008.[21]

We added queries regarding sesame allergy to the 2008 survey because this allergy is increasingly reported from other countries[13-15,22] and the US prevalence has not been evaluated. We found that that sesame allergy was reported by 0.1% of adults and children. In a population-based study of 6-year-olds in the United Kingdom that included open oral food challenges, 0.1% had sesame allergy.[13] Studies from Israel that include surveys or allergy tests estimate 0.13% to 0.2% affected children.[11,14] A questionnaire study of Jewish children in the United Kingdom estimated 0.79% affected.[11] Meta-analyses of population-based studies evaluating perceived allergy, sensitization, or challenge tests indicate prevalence rates of 0.1% to 0.9%.[12] Although the population prevalence in our study is low relative to peanut/TN allergy, the severity of sesame allergy and the frequency of concomitant allergy with peanuts or TNs should not be underappreciated.[15]

Our study has several limitations inherent to telephone surveys and to self-reported diagnosis of allergy. Telephone surveys might overrepresent persons with a high socioeconomic status because homes without telephones are excluded and homes with multiple voice lines are more likely to be selected.[23] We did not query income levels to monitor this effect, although presumably any such bias would be similar across survey waves. Participation in telephone surveys has been decreasing in general, likely because of privacy concerns and increasing use of telephones for marketing and sales.[24] Indeed, the overall participation rate in our survey was proportionately lower for each survey wave, as might be expected. Although refusal rates increased, the relative consistency of the results among survey waves suggests the findings are predictive of the larger US population. It should be noted that respondents do not know that the survey entails queries about allergy until after they have agreed or not agreed to participate. An additional possible bias is the migration of households from landlines to cellular telephones; about 15% of households are cellular only.[25] However, to maintain comparability with prior surveys, we did not include cellular telephones. An additional subtle bias could include the availability of a household member; we attempted to reduce this concern by calling at different times and days, including weekends and evenings. If the prevalence of peanut/TN allergy is increasing in children and the allergy is not outgrown, we might predict an increase in young adults over the survey waves. This trend was not observed thus far, possibly because of relatively low numbers of subjects surveyed when evaluating subgroups by age, although such a trend will be interesting to follow in future surveys.

There are also limitations of the survey instrument to identify true allergy. The gold standard for diagnosing food allergy is the double-blind, placebo-controlled oral food challenge.[26] It was clearly not practical in this study to challenge subjects culled from the general population. However, peanut and TN reactions are usually acute and severe, and hence the false-positive rate of historical determination of allergy is generally low. In a study using this questionnaire instrument, 7% of 111 patients with convincing histories of acute reactions to peanut or TNs did not have detectable peanut or TN-specific serum IgE antibody.[16] Taking these limitations into account and including adjustments in which self-reported reactions that were not convincing were excluded, we conservatively report an overall rate of peanut and TN allergy in the United States of 1.15% (95% CI, 1.0% to 1.3%), representing more than 3 million Americans. It should be appreciated, as described in the results, that many of the subjects excluded

Total peanut			Total TN			Unspecified nut		
1997	2002	2008	1997	2002	2008	1997	2002	2008
12 (0.4%)	26 (0.8%)	40 (1.4%)	5 (0.2%)	16 (0.5%)	31 (1.1%)	1 (0%)	4 (0.1%)	3 (0.1%)
59 (0.7%)	58 (0.6%)	63 (0.6%)	59 (0.7%)	73 (0.7%)	53 (0.5%)	17 (0.2%)	18 (0.2%)	30 (0.3%)
—	—	—	—	—	—	15 (1.5%)	3 (0.6%)	—
71 (0.6%)	84 (0.6%)	103 (0.8%)	64 (0.5%)	89 (0.7%)	84 (0.6%)	33 (0.3%)	25 (0.2%)	30 (0.2%)

because of the unconvincing nature of their reaction had convincing symptoms with a delayed onset, had recurrent reactions, or both; therefore our adjusted prevalence rates are potentially quite conservative. It is also notable, as described above, that our estimates of peanut allergy in children are similar to rates reported from several international studies in westernized countries that included allergy testing and food challenges.[5,7,8,11]

In summary, we have documented a similar overall rate of peanut and TN allergy in the United States in 2008, as was noted in 1997 and 2002; however, over this 11-year period, there was an apparent increase in self-reported peanut and TN allergies among children. This noted increase must be interpreted with caution because of uncontrolled factors related to sampling and population composition. Sesame allergy is reported by 0.1% of the general population. Our survey has consistently shown that more than 1% of the population or more than 3 million Americans report peanut allergies, TN allergies, or both, representing a significant health burden. Better strategies for prevention and treatment are desperately needed,[27] particularly if we will be seeing a significant increase of these persistent allergies with time.

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Clinical implications: Peanut and TN allergies are common, affecting more than 1% of the US population, and the rates appear to be increasing among children.

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