

Should Peanut Be Banned in Schools?



Julie Wang, MD^a, and David M. Fleischer, MD^b *New York, NY; and Aurora, Colo*

INTRODUCTION

Up to 8% of children report an allergy to 1 or more foods, and as many as 1.4% of children are reported to have peanut allergy.^{1,2} Given these numbers, protecting children with food allergy has become a national concern. The 2 main pillars of food allergy management are allergen avoidance and preparedness to treat allergic reactions. Food-allergic individuals are instructed to completely eliminate the known allergen(s) because even low-dose exposures can trigger severe allergic reactions in certain patients.³ The potential for fatal and near-fatal food-induced anaphylaxis further fuels the intense desire to protect children from any possible exposure.

Because children spend a significant portion of their day in school, there is a keen interest in determining the best strategies for keeping peanut-allergic children safe in the school setting. Banning peanuts in schools has thus been proposed as one strategy to decrease the risk of allergic reactions and prevent poor outcomes for children with allergies to peanut. The campaigns for peanut bans in schools began approximately 20 years ago along with concerns that rates of food allergy were rising and that fatalities due to anaphylaxis were underreported. Whether this approach is necessary and effective has been widely debated ever since, and there are proponents for both sides of the argument. Supporters of peanut restrictions advocate for a community approach to keeping peanut-allergic children safe because schoolwide restrictions would lessen the risk of accidental exposures, as well as reduce anxiety and social stigma for the affected students. However, opponents of bans are concerned

that restrictions are very difficult to enforce and do not completely eliminate the risk of allergen exposure, leading to a false sense of security.

In this article, we explore the 2 sides to the argument whether peanut should be banned in schools and then provide a discussion synthesizing the arguments and available data.

PEANUT SHOULD *NOT* BE BANNED IN SCHOOLS

When considering schoolwide or classroom peanut bans, the first question that arises is whether peanut allergens are in fact detectable in schools, and if so, how much is detected and how great is the risk to children with peanut allergies? One study examined whether peanut allergens could be detected from various surfaces, including at schools.⁴ Cafeteria tabletops, desktops, water faucets, and food preparation areas at 6 preschools and schools were sampled and assessed for Ara h 1, a major peanut allergen, using an ELISA test. Two were schools with peanut-free tables and food preparation areas, 1 was a peanut-free school, and 3 schools had no peanut restrictions. Peanut allergen was not detected in the 36 samples taken from eating or food preparation areas and 22 samples from desks. Detectable Ara h 1 was noted only on 1 of 13 water fountains tested, which was located in a preschool. The level detected was 130 ng/mL, which is unlikely to elicit an allergic reaction, as some studies found that doses in the range of 1000 µg elicit subjective symptoms^{3,5} whereas objective symptoms are triggered by doses in the range of 2 to 50 mg.⁵ The results of this study suggest that conventional cleaning methods are effective for peanut allergen removal such that peanut allergen is generally low in the school setting.

Because it is likely that peanut allergen is found only at very low levels in schools, another important question to consider is the frequency of allergic reactions due to peanut reported in the school setting. A few studies have reported rates of allergic reactions for school-age children. In a study that followed 252 children with allergy to peanut, 29 children reported 35 accidental exposures over 244 patient-years, giving an annual incidence rate of 14.3% (95% CI, 10.0-19.9).⁶ However, most of these exposures occurred in the child's home or at the home of a friend/relative. Of 35 exposures, 1 accidental exposure occurred while the child was in school. Similar results were reported in a study from the United Kingdom.⁷ Of 785 children with allergies to peanut and/or tree nuts who were followed over 3640 patient-years, 114 had an accidental reaction over a median of 48 months of follow-up. This yielded an annual incidence rate of 3.1% (95% CI, 2.5%-3.7%) for accidental reactions to all nuts. Half the reactions occurred in the child's home and 40% were reactions to foods provided by the parent. Only 6 reactions (5%) occurred during school.

No studies have systematically examined whether rates of peanut exposures were lower in schools that had implemented policies to restrict peanuts. However, data can be gleaned from

^aDivision of Allergy and Immunology, Department of Pediatrics, Icahn School of Medicine at Mount Sinai, New York, NY

^bDepartment of Pediatrics, University of Colorado Denver School of Medicine, Allergy Section, Children's Hospital Colorado, Aurora, Colo

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Corresponding author: Julie Wang, MD, Division of Allergy & Immunology, Department of Pediatrics, Icahn School of Medicine at Mount Sinai, One Gustave L. Levy Place, Box 1198, New York, NY 10029. E-mail: julie.wang@mssm.edu. 2213-2198

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studies reporting peanut exposures in general. Nguyen-Luu et al⁸ prospectively followed 1411 children (mean age, 7.1 years) diagnosed with peanut allergy to monitor for accidental exposures. Over the course of 2227 patient-years, 221 children (15%) were reported to have had 266 accidental exposures, yielding an annual incidence rate of 11.9% (95% CI, 10.6-13.5). Similar to other studies, the child's home or the home of a friend or relative was the most common location for accidental exposures (39.5% in child's home; 16.5% at home of friend/relative). Only 17 exposures (6.4%) occurred in the school setting. Most of these (n = 12) occurred in schools that prohibited peanuts, whereas 5 exposures occurred in schools that did not restrict peanuts. Although most participants attended schools with peanut restrictions (87.2%), these results indicate that peanut restriction policies do not completely protect children from peanut exposures. This research team extended its study and subsequently presented data for a larger cohort of children (n = 1941).⁹ The findings showed that 567 accidental exposures occurred for 429 children (mean age, 6.9 years) over 4589 patient-years, with an annual incidence rate of 12.4% (95% CI, 11.4-13.4). In fact, this study showed that accidental peanut exposures were greater in schools with peanut restrictions than in those allowing peanut: 4.9% in schools with peanut restrictions versus 3.0% in schools allowing peanut.

Furthermore, rates of epinephrine administration are not lower in schools with restrictions compared with those permitting peanut.¹⁰ School nurses were surveyed from 2006 to 2011, and 1.5% of schools reported epinephrine administration for peanut or tree nut exposure during the study time frame. Although fewer epinephrine administrations were reported by schools with designated peanut-free tables as compared with schools without peanut-free tables, the authors reported that schools with more restrictive schoolwide peanut bans had higher rates of epinephrine administration compared with schools without peanut restrictions (incidence rate of epinephrine for peanut or tree nut was 1.1/10,000 students vs 0.2/10,000 students; $P < .05$), indicating that policies for peanut restrictions in schools do not result in lower rates of allergic reactions due to peanuts.

One study examined the efficacy of imposing peanut restrictions in curtailing the packing of peanuts into school lunches by families of elementary school children (kindergarten to grade 3).¹¹ The researchers disclosed to families the purpose of the study and participating families signed a written consent. Lunches of participating families were randomly inspected for food visibly containing peanut or labeled as containing peanut (items with advisory labels for peanut were deemed acceptable). These inspections occurred at a mean of 94.5 days after consent was obtained. In classes with peanut-free guidelines, 5 of 861 (0.6%) lunches contained peanut whereas 84 of 845 (9.9%) lunches from classes without peanut-free guidelines were found to contain peanut. Although it is not surprising that schools with guidelines restricting peanut did result in fewer lunches containing peanut, it is notable that these schools were not entirely free of peanut. These results indicate that enforcing such policies may be difficult and families can make mistakes when packing lunches. The risk in these situations is that there may be a false sense of security, potentially leading to less vigilance on the part of students, families, and school staff for preventing exposures and addressing reactions. Thus, allergic reactions to peanuts can occur in both schools that impose bans and in those without restrictions. In addition,

imposing policies to restrict peanuts from schools does not guarantee a peanut-free environment.

A concern often driving the ban of peanuts in schools is the potential for food-allergic reactions to lead to poor outcomes because fatal and near-fatal anaphylaxis in children has been reported to occur in the school setting.¹² However, there is currently no evidence that banning peanuts in schools will prevent these unfortunate outcomes. In a case series of fatal anaphylactic reactions to foods, 2 of 21 cases with complete information occurred in the school setting.¹³ These 2 cases involved teenagers who ate candy containing the known allergen, and both did not receive epinephrine in a timely manner. Another 4 fatalities occurred at college, 2 of which were noted to occur in the dormitory. Among the 11 with incomplete information, some younger children were affected. The triggers in these cases were fish and milk, allergens that are not the focus of most school food allergen restriction policies. An additional 3 cases occurred in colleges; however, proponents for restrictions on peanuts in schools have historically not focused on college campuses; rather, elementary schools are their main area of concern.

In a follow-up study by the same investigators, 31 cases of fatal anaphylaxis were reported, and 3 occurred in schools.¹⁴ One occurred in a cooking class, which is notably a high-risk situation, another occurred during a school outing, and the third case occurred at college. In all 3 cases, it is uncertain whether timely administration of epinephrine occurred. Additional cases have been reported in the media in recent years, and in several of those cases, the issue of quick epinephrine access has been in question. Thus, there is currently a paucity of data to support that food restrictions would result in a reduction in the frequency of allergic reactions in schools. In addition, not all cases of reported fatal anaphylaxis involved peanut as the allergen, and in most fatal or near-fatal anaphylaxis cases, delayed use of epinephrine was a major issue.

Banning peanut in schools is not a simple matter. Once allergen restriction policies are implemented, the question of how to promote and enforce the policies arises. This would necessitate time and resources to ensure that all members of the school community are aware and reminded of the policies, guidelines for how to check foods brought into the school, plans for removing the allergen if it is brought to school, and possibly the provision of replacement foods to ensure that affected school children do not go hungry. One can argue whether having such allergen restriction policies will provide a false sense of security because human error may occur. This could also lead to what some term a "slippery slope" as families of children with allergies to other foods such as milk, egg, or wheat may advocate for wider allergen restrictions because these foods can trigger severe reactions in allergic individuals as well.

It remains unclear whether enacting bans on peanut in schools would be the best use of the limited school resources available. Perhaps it would be better to promote education about food allergy and anaphylaxis, and ensure that quick access to life-saving epinephrine is available. Prompt treatment of allergic reactions in the school setting may make a bigger difference given the logistic difficulties of implementing school bans for peanut or a wider variety of allergens.

PEANUT SHOULD BE BANNED IN SCHOOLS

Well-conducted, nationally representative surveys indicate that nearly 6 million children in the United States are reported to

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