Persistent Cow’s Milk Allergy Is Associated With Decreased Childhood Growth: A Longitudinal Study


PURPOSE OF THE STUDY: To determine the long-term effects of persistent cow’s milk (CM) or peanut (PN) and/or tree nut allergy (TN) on growth past childhood age.

STUDY POPULATION: A retrospective chart review of 191 children with persistent IgE-mediated allergy to CM or PN and/or TN at age 9 seen at the John Hopkins Pediatric Allergy Clinic from November 1994 to March 2015. Patients adhered to a strict elimination diet and had clinic visits between the ages of 2–4, 5–8, and 9–12 years.

METHODS: Clinical data and anthropometric measurements were collected at all visits for patients aged 2 to 12 years, or longer if available. Z scores were used to evaluate differences in weight, height, and BMI.

RESULTS: Children with persistent CM allergy had significantly decreased weight (0.39; 95% CI, 0.13 to 0.66) and height (mean z score difference, 0.39; 95% CI, 0.11 to 0.67) but not BMI for age when compared with children with PN/TN allergy. Mean z score differences for height were more pronounced as the children aged: 2–4 years, −0.12 (95% CI, −0.30 to 0.06); 5–8 years, −0.34 (95% CI, −0.54 to −0.14); 9–12 years, −0.43 (95% CI, −0.62 to −0.23); 13+ years, −0.63 (95% CI, −0.93 to −0.33). Mean z score differences for weight showed similar trends initially but beyond 13 years were not significant: 2–4 years, −0.01 (95% CI, −0.19 to 0.16); 5–8 years, −0.31 (95% CI, −0.51 to −0.11); 9–12 years, −0.46 (95% CI, −0.67 to −0.24); 13+ years, −0.27 (95% CI, −0.61 to 0.07). Children with CM allergy also had significantly decreased weight and BMI z scores from baseline measurements (2 to 4 years of age) at older ages (weight: mean z score difference, 0.25; 95% CI, 0.06 to 0.43; P = .008; BMI: mean z score difference, 0.34; 95% CI, 0.09 to 0.59; P = .007). These findings were not affected by other atopic conditions or inhaled corticosteroid use. PN and TN allergy were not associated with significantly decreased weight, height or BMI-for-age. No stunting or wasting (z score < −2) was observed in children with milk allergy.

CONCLUSIONS: Patients with CM allergy had significant and progressively lower weight and height measurements throughout childhood that persisted into adolescence. Comparatively, PN and TN allergies were not associated with decreased weight, height, or BMI-for-age.

REVIEWER COMMENTS: These findings indicate persistent CM allergy may negatively influence growth and development throughout childhood. Additionally, children with CM allergy often have other food allergies. Since the time of the study, the availability of dietary advice and nutritional alternatives has improved, so it is possible these findings may be less distinct currently. However, the findings highlight the importance of closely monitoring growth in children with CM allergy and providing guidance to ensure nutritional needs are met.
were made for QoL scores, demographics, anaphylaxis and epinephrine autoinjection symptom experiences.

**RESULTS:** EI (3.8 vs 3.1, P = .02), SDL (5.2 vs 4, P = .002) and the overall FAQoL score (4.7 vs 3.5, P = .007) were significantly higher (worse FAQoL) in adolescents as compared with children. The median FAQoL score increased by 0.12 points (95% CI, 0.07–0.17) per year increase in age. The EI score increased by 0.09 points (95% CI, 0.05–0.13), the FA score increased 0.18 points (95% CI, 0.12–0.26) for children and the SDL score increased 0.09 points (95% CI, 0.03–0.14) per year increase in age. The overall FAQoL score was 1.65 points higher (95% CI, 0.67–2.63) for those who reported food allergy limited family activities a lot as compared with those who did not report limitation, the EI score was 1.83 points higher (95% CI, 1.04–2.62), and the SDL was 3.06 points higher (95% CI, 2.56–3.55). The FA score was 1.91 points lower (95% CI, –2.94 to –0.88) among those whose family activities were not limited as compared with those whose activities were limited a lot. Compared with younger children, more adolescents had previous anaphylaxis, reported anxiety caused by epinephrine autoinjectors, and experienced mouth and throat itching, tight throat, dyspnea, shortness of breath, wheezing, urticaria, abdominal cramps and lightheadedness during allergic reactions.

**CONCLUSIONS:** This study reports worse FAQoL for adolescents as compared with younger children, with increasing scores with each year of age. This could be secondary to their increased responsibilities, peer pressure and bullying. Families who reported limitations in family activities as well as increased levels of stress surrounding the diagnosis of their child’s food allergy had worse FAQoL. This could be secondary to the increased effort the patients’ families face in keeping their children safe (issues involving meal preparation, school, restaurants, camps and sleepovers). Higher rates of anaphylaxis in adolescents was attributed to more time with the food allergy and higher risk taking behavior, stress with carrying epinephrine for teenagers as compared with parents to their reluctance to carry and use it, and the increase in subjective and respiratory symptoms to their ability to verbalize symptoms and to have more severe reactions.

**REVIEWER COMMENTS:** The FAQoLs have a minimal clinically important difference of 0.5. This study shows that a difference of 3 to 6 years could significantly influence FAQoL. This was a cross-sectional study, so we cannot comment on how an individual’s FAQoL changes throughout childhood development; however, there does appear to be a difference in the influence of food allergy on FAQoL based on age. This study shows the importance of evaluating FAQoL in all patients, but with a particular focus on adolescents. It also highlights the importance of trying to safely include the child with food allergies in usual activities, because this exclusion contributes to impaired FAQoL. This study is limited by parent-reported FAQoL for children under 12 as compared with patient report for adolescents, which is not a direct comparison for these populations. In addition, there were only 24 adolescent questionnaires, <15% of the sample.

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**Multidisciplinary Education Improves School Personnel’s Self-Efficacy in Managing Food Allergy and Anaphylaxis**


**PURPOSE OF THE STUDY:** This study evaluates the impact of a multidisciplinary training course on the self-efficacy of teachers and caretakers in management of food allergy (FA) and anaphylaxis at school.

**STUDY POPULATION:** 592 Italian teachers and school caretakers volunteered to attend this free course. Caretakers help supervise children during breaks and mealtimes. Most participants were female teachers. Almost three quarters of participants worked in nursery and primary school.

**METHODS:** This 2-hour multidisciplinary training course was conducted by an allergist, a psychologist, and a lawyer. It focused on the practical management of FA and anaphylaxis, psychosocial issues involved in FA, and regulations of medication administration in the school setting. Each participant was able to practice with an adrenaline-autoinjector training device. Participants anonymously completed the previously validated School Personnel Self-Efficacy-Food Allergy and Anaphylaxis Questionnaire (S.PER.SE-FAQ) before and after the course, and the difference in scores was analyzed using a conditional regression tree. Participants rated their perceived competence regarding various goals for students with FA such as establishing a safe school setting and managing allergic reactions. Answers ranged on a scale from 1 (“cannot do at all”) to 5 (“highly certain can do”), with a maximum score of 40.

**RESULTS:** Baseline scores were lowest for self-efficacy in recognizing anaphylaxis and administering medications to a student having an acute reaction. There was a statistically significant improvement in self-efficacy scores in managing a student at risk for allergic reactions, putting in place a personalized care plan, recognizing anaphylaxis, and administering medication during a reaction, with an average increase of 1 point. 

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