

REVIEWER COMMENTS. A weakness of this study is that the incidence of atopic disease itself was based solely on self-report. As the data are reported, being born prematurely and at VLBW places an infant at a lower risk of sensitization to allergen as a young adult. However, the results do not support a decreased risk of allergy (sensitization plus symptoms with exposure).

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Vitamin D Levels and Food and Environmental Allergies in the United States: Results From the National Health and Nutrition Examination Survey 2005–2006

Sharief S, Jariwala S, Kumar J, Muntner P, Melamed ML. *J Allergy Clin Immunol.* 2011;127(5):1195–1202

PURPOSE OF THE STUDY. To examine the relationship between serum 25-hydroxyvitamin D (25[OH]D) levels and the prevalence of food and environmental allergies.

STUDY POPULATION. The study used the National Health and Nutrition Examination Survey 2005–2006, composed of a population of civilian noninstitutionalized US residents, which deliberately oversampled non-Hispanic black and Mexican American people to obtain accurate prevalence data in those subpopulations. All participants 1 year of age or older with available 25(OH)D levels and allergy-test results were included. Included in the final analysis were 3136 children and 3454 adults (>21 years old).

METHODS. Information about vitamin D supplements, milk intake in the previous month (daily, less than daily but more than weekly, and once weekly or less), and television, computer, and videogame time (“screen time”) (none, <2 hours/day, 2–4 hours/day, and >4 hours/day) was collected. Allergy was determined by a questionnaire, and serum was obtained for total immunoglobulin E (IgE) and for specific IgE to dust mites, cat, dog, *Alternaria*, peanut, egg, and milk. Subjects 6 years of age or older also had ImmunoCAP (Phadia, Uppsala, Sweden) levels measured for German cockroach, selected tree, grass, and weed pollens, and shrimp. Allergy was defined as any positive IgE test result (≥ 0.35 kU/L) or a total IgE level in the top quintile (>191 kU/L). Seasonal and perennial allergies were defined as a positive ImmunoCAP level to a pollen or perennial allergen, respectively. 25(OH)D levels were classified as deficient (<15 ng/mL), insufficient (15–29 ng/mL), or sufficient (≥ 30 ng/mL).

RESULTS. Deficient 25(OH)D levels were associated with being non-Hispanic black or Mexican American, having a low socioeconomic status, >4 hours/day of screen

time, lower frequency of milk-drinking, and not taking vitamin D supplements. Children and adolescents deficient in 25(OH)D had a higher prevalence of sensitization to most individual allergens, to any allergen, and to any seasonal or perennial allergen than those with insufficient or sufficient levels. The same trends were not seen in adults. Questionnaire data also revealed an association between deficient and insufficient 25(OH)D levels and prevalence of allergy symptoms in general but not to specific symptoms in children and adolescents.

CONCLUSIONS. Vitamin D deficiency is associated with a higher rate of allergic sensitization and self-reported allergy in children and adolescents.

REVIEWER COMMENTS. Results of this study support previous ones in which low vitamin D levels were implicated in higher rates of allergic disease. The noncalcemic effects of vitamin D, including its immunomodulatory effects on antigen-presenting cells and effector cells, are growing areas of research, but specific mechanisms are not yet known. “Got milk?” Although there are no data as to whether vitamin D supplementation or naturally acquired higher 25(OH)D levels can reverse allergic sensitization, these results provide 1 more reason for children to turn off the video screen and go outside to play.

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Nutrients and Foods for the Primary Prevention of Asthma and Allergy: Systematic Review and Meta-analysis

Nurmatov U, Devereux G, Sheikh A. *J Allergy Clin Immunol.* 2011;127(3):724–733

PURPOSE OF THE STUDY. Results of several individual studies have suggested an association between specific nutrient and food intake and the development of atopic disease. This study aimed to systematically review and analyze the published literature.

STUDY POPULATION. This was a systematic review and meta-analysis of published literature. Reviewed studies included pregnant women, infants, and children younger than 16 years.

METHODS. Eleven databases were systematically reviewed for studies that investigated the role of nutrients and foods for the primary prevention of atopic disorders in children.

RESULTS. There were 62 eligible reports identified from cohort, case-control, and cross-sectional studies. Serum vitamin A levels were lower in children with asthma compared with controls (odds ratio [OR]: 0.25 [95% confidence interval (CI): 0.1–0.4]). High maternal dietary

intake of vitamin D and E during pregnancy was protective for the development of wheezing (OR: 0.56 [95% CI: 0.42–0.73] and 0.68 [95% CI: 0.52–0.88], respectively). Adherence to a Mediterranean diet was protective for persistent wheeze and atopy (OR: 0.22 [95% CI: 0.08–0.58] and 0.55 [95% CI: 0.31–0.97], respectively). The authors of most (17 of 22) fruit and vegetable studies reported beneficial associations with asthma and allergic outcomes.

CONCLUSIONS. The available evidence is supportive with respect to vitamins A, D, and E; zinc; fruits and vegetables; and a Mediterranean diet for the prevention of atopic disease.

REVIEWER COMMENTS. Although the study was observational in nature, its results highlight the importance of dietary exposures in the development of atopic disease. Controlled interventional studies are warranted to determine if it is possible to prevent atopic disease with dietary modification.

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Partial Protein-Hydrolyzed Infant Formula Decreased Food Sensitization but Not Allergic Diseases in a Prospective Birth Cohort Study

Kuo HC, Liu CA, Ou CY, et al. *Int Arch Allergy Immunol.* 2011;154(4):310–317

PURPOSE OF THE STUDY. To determine whether feeding a partially protein-hydrolyzed formula in the first 6 months of life would decrease the incidence of future allergic diseases.

STUDY POPULATION. Taiwanese newborns who had at least 1 first-degree family member with a history of atopy and who were not breastfeeding participated.

METHODS. A total of 679 participants were exclusively fed with partially hydrolyzed whey formula (HF) ($n = 345$) or cow's milk infant formula (CM) ($n = 334$) for at least 6 months via an open-label protocol. They were prospectively assessed at 6, 18, and 36 months of age to determine allergic sensitization (immunoglobulin E [IgE] > 0.7 kU/L) and clinical presence of eczema, food allergy, asthma, or allergic rhinitis.

RESULTS. At 36 months, cow's milk protein sensitization in the HF group was significantly lower than that in the CM group (12.7 vs 23.4%; $P = .048$). There was no difference with sensitization to egg or peanut between the 2 groups. Aeroallergen sensitization and serum total IgE levels were not significantly different. Occurrence of allergic disease was significantly correlated with aero-

allergen sensitization but not to food-allergen sensitization, parental atopy, or feeding types.

CONCLUSIONS. The authors concluded that although HF feeding during the first 6 months of life helped to lower cow's milk protein sensitization, it alone is not enough to decrease the development of allergic disease.

REVIEWER COMMENTS. Can controlling a susceptible infant's diet early in life help to lessen the development of atopic symptoms in later years? These findings suggest that exclusively feeding this HF for the first 6 months of life does not. Other comparative studies have found more favorable outcomes in those infants who were fed extensively hydrolyzed formula. However, more large-scale, controlled studies that follow newborns through childhood are needed to better define the advantages.

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Association Between Short Sleep Duration and the Risk of Sensitization to Food and Aero Allergens in Rural Chinese Adolescents

Zhang S, Liu X, Kim JS, et al. *Clin Exp Allergy.* 2011; 41(4):547–555

PURPOSE OF THE STUDY. To explore the association between sleep duration and sensitization to food allergens and aeroallergens.

STUDY POPULATION. There were 1534 rural Chinese adolescent twins aged 12 to 21 years drawn from an ongoing prospective study on precursors of metabolic syndrome in children in a large Chinese twin cohort. Any participant aged 12 to 21 years at a follow-up visit for the main study with complete information on sleep questionnaires and skin-prick-test (SPT) results was included.

METHODS. Subjects completed standard sleep questionnaires and SPTs to 9 food allergens and 5 aeroallergens. Total sleep time was defined as the interval from bedtime to wake-up time minus sleep latency. Sensitization was defined as having at least 1 positive SPT result. Percentage body fat was calculated, because previous studies have suggested that sleep duration and allergic sensitization are associated with adiposity.

RESULTS. Compared with subjects in the highest tertile of sleep duration, those who slept less were more likely to be sensitized to any food allergen (odds ratio [OR]: 1.9 [95% confidence interval (CI): 1.3–2.7] and 1.4 [95% CI: 1.0–1.9] for the first and second tertiles [trend test $P_{\text{trend}} = 3 \times 10^{-4}$], respectively). The corresponding ORs for sensitization to any aeroallergen were 1.5 (95% CI: 1.1–2.0) and 1.3 (95% CI: 1.0–1.7) ($P_{\text{trend}} = 8 \times 10^{-3}$). These associations were independent of percentage body

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