parents participating in the Swedish Twin and Medical Birth registers. Children were 9 or 12 years old. The study base included 11 020 twins; data were available for atopic eczema among 10 132 and for allergic rhinitis among 10 896 participants.

METHODS. Birth weight, gestational age, birth weight by gestational week, and gender in SD score, as a measure of fetal growth, and birth length were used as exposure variables. Exposure variables were handled as both categorized and continuous variables. To control for shared genetic and environmental factors, co-twin–control analyses were performed in twin pairs discordant for atopic eczema or allergic rhinitis.

RESULTS. The rate of atopic eczema increased with birth weight from 12.6% in twin children born at <2000 g to 17.3% in children born at ≥3500 g. The overall rate of allergic rhinitis was 8.4%, and there was no clear relationship with birth weight, gestational age, or birth length. In the cohort analyses, the odds ratio for atopic eczema was 1.62 for a 500-g increase in birth weight. The odds ratio for allergic rhinitis was 1.00 for a 500-g increase in birth weight. The co-twin–control analysis on atopic eczema resulted in an odds ratio of 3.93 for a 500-g increase in birth weight, and there was no significant difference between monozygotic and dizygotic twins. The co-twin–control analysis revealed no evidence of association between allergic rhinitis and weight.

CONCLUSIONS. The risk of childhood atopic eczema increased with increasing birth weight. In the co-twin–control analysis, odds ratios did not decrease, and odds ratios did not differ between monozygotic and dizygotic twins, which indicates that genetic or shared environmental factors do not explain this association. The study results indicate that fetal growth influences the risk of childhood atopic eczema but not allergic rhinitis.

REVIEWER COMMENTS. It is not surprising that maternal and fetal characteristics influence the development of childhood disease. In addition to fetal growth associations, the authors provided extensive descriptive data for the rates of atopic eczema and allergic rhinitis by all queried child and maternal characteristics. Additional studies of singletons are necessary to further evaluate the reasons for the association of fetal growth and atopic disease.

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Preterm Birth Reduces the Incidence of Atopy in Adults

Siltanen M, Wehlkalampi K, Hovi P, et al. *J Allergy Clin Immunol*. 2011;127(4):935–942

PURPOSE OF THE STUDY. There is evidence that the risk for atopic disease is influenced during fetal development and by early life events. This study evaluated the association between preterm birth, very low birth weight (VLBW), and atopy in young adulthood.

STUDY POPULATION. Subjects from the Helsinki Study of VLBW Adults were compared to matched controls born at ≥37 weeks' gestation. Of 255 VLBW adults (birth weight: 1120 ± 221 g; weeks of gestation: 29.2 ± 2.2) and 314 controls (birth weight: 3593 ± 471 g; weeks of gestation: 40.1 ± 1.1) invited, 166 (65.1%) and 172 (54.8%), respectively, chose to participate. The mean age at analysis was 22.4 to 22.5 years.

METHODS. Skin-prick testing was performed to birch, timothy grass, mugwort, cat, dog, and *Dermatophagoides pteronyssinus*. Total immunoglobulin E (IgE) and serum-specific IgE levels to cat, timothy, and birch were measured. Diagnosis of asthma, allergic rhinitis, and atopic dermatitis were obtained from an unvalidated questionnaire that included physician diagnosis of asthma and allergic rhinitis. The primary outcome of atopy was defined as a positive skin-test result. Other indicators of atopy included elevated total or specific IgE level. Self-reported histories of atopic diseases were secondary outcomes.

RESULTS. VLBW adults were less likely than controls to have at least 1 positive skin-test result (45.5% vs 57.9%; adjusted odds ratio [OR]: 0.48; $P = .13$). Timothy and mugwort were the only individual allergens associated with a decreased OR in the VLBW group. Adults born at VLBW were also less likely to have any elevated serum-specific IgE level (adjusted OR: 0.48) or an elevated level to cat (adjusted OR: 0.41). Of the adults born at VLBW, those born appropriate for gestational age (AGA) were statistically less likely ($P < .05$) than those born small for gestational age (SGA) to have a positive skin-test result to dog or *D pteronyssinus* or to have elevated levels of total serum IgE, serum-specific IgE to any allergen, or serum-specific IgE to birch. Within the VLBW group, each week of earlier gestational age was associated with lower risk of any positive skin-test result or any elevated serum-specific IgE level (OR: 0.82 for each measure). The decreased risk was even more apparent when the SGA adults were excluded from analysis. There was no difference in the frequency of self-reported asthma, allergic rhinitis, or atopic dermatitis between the VLBW adults and controls or between the AGA and SGA VLBW subjects.

CONCLUSIONS. Young adults born at VLBW had a greater risk of atopy based on allergen sensitization. There was no difference in the incidence of atopic disease. The results of this study support the hypothesis that the risk for atopy is influenced by early life events.

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

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