allergic disease improve after removal from an environment with a large allergen burden. This study furthers our knowledge regarding allergen exposure in day care centers. The relationship between allergen burden and development of allergic disease was not looked at in this study.

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PREDICTION AND PREVENTION
ALLERGY DEVELOPMENT AND THE INTESTINAL MICROFLORA DURING THE FIRST YEAR OF LIFE


Purpose of the Study. Numerous studies have demonstrated that the prevalence of atopic diseases is lower in the Central and Eastern European countries as compared with Western European countries. The intestinal microflora is a likely source for the induction of immune deviation in infancy. The purpose of this study was to prospectively relate the intestinal microflora to allergy development in 2 countries differing with respect to the prevalence of atopic disease.

Study Population. A cohort of 24 infants in Estonia and 20 infants in Sweden followed prospectively through the first 2 years of life.

Methods. Stool samples were obtained at 5 to 6 days and at 1, 3, 6, and 12 months, and 13 groups of aerobic and aerobic microorganisms were cultivated through use of standard methods. Allergic status was defined as presence of atopic dermatitis and/or at least 1 positive skin test result. Skin prick testing was performed at 3 and 6 months to fresh egg white and cow’s milk. At 1 and 2 years of age, skin testing to dust mites, cat, dog, cockroach, birch, and timothy were conducted.

Findings and Results. By the age 2 years, 9 Estonian and 9 Swedish infants developed atopic dermatitis and/or positive prick skin test result. In comparison with healthy infants, infants who developed allergy were less often colonized with enterococci during the first month of life (72% vs 96%; P < .05) and with bifidobacteria during the first year of life (17%–39% vs 42%–69%; P < .05). Furthermore, allergic infants had higher counts of clostridia at 3 months (median value: 10.3 vs 7.2 log_{10}; P < .05). The prevalence of colonization with Staphylococcus aureus was also higher at 6 months (61% vs 23%; P < .05), whereas the counts of Bacteroides were lower at 12 months (9.9 vs 10.6 log_{10}; P < .05).

Conclusions. Differences in composition of the gut flora between infants who will and infants who will not develop allergy are demonstrable before the development of any clinical manifestations of atopy. Because the observations were made in countries with different standards of living, these findings could indicate a role for the intestinal microflora in the development of and protection from allergy.

Reviewer’s Comments. According to the “hygiene hypothesis,” atopy results from the imbalance between Th1 and Th2 type immune responses. Microbial stimulation is associated with induction of interleukin (IL)-12 and Th1-type responses. Therefore, an early and more extensive colonization with aerobic bacteria in healthy infants could conceivably protect from development of atopy. Additional studies are needed to elucidate the prophylactic potential of supplementation with probiotic microorganisms such as Lactobacillus or Bifidobacterium sp.

DIET AND ASTHMA, ALLERGIC RHINOCONJUNCTIVITIS AND ATOPIC ECZEMA SYMPTOM PREVALENCE: AN ECOLOGICAL ANALYSIS OF THE INTERNATIONAL STUDY OF ASTHMA AND ALLERGIES IN CHILDHOOD (ISAAC) DATA


Purpose of the Study. To provide a global analysis of prevalence rates of wheeze, allergic rhinoconjunctivitis, and atopic eczema in relation to diet, as defined by national food intake data.

Study Population. A total of 721,601 children of 2 age groups (6- to 7- and 13- to 14-year-olds) from 156 collaborating centers in 56 countries from the International Study of Asthma and Allergies in Childhood (ISAAC).

Methods. Symptom prevalence data was collected by video questionnaires assessing asthma symptoms and severity, allergic rhinoconjunctivitis symptoms, and atopic dermatitis symptoms. Using the 1995 food balance sheet and food supply data from the Food and Agriculture Organization (FAOSTAT) Web site, figures were compared of food and nutrient intake among the large number of countries in the ISAAC Phase One. Food consumption per capita is calculated to determine per capita consumption of macro- and micronutrients as a percentage of total energy consumption. Symptoms of wheeze, allergic rhinoconjunctivitis, and atopic eczema symptom prevalence were regressed against the per capita food intake and adjusted for gross national product to account for economic development.

Results. The 13- to 14-year-old age group showed a consistent pattern of decreases in symptoms of wheeze (current and severe), allergic rhinoconjunctivitis, and atopic eczema, associated with increased per capita consumption of calories from cereal and rice, starch, and vegetable nutrients (vitamin A, E, protein, monounsaturated fatty acids, polyunsaturated fatty acids, and saturated fats). The video questionnaire data for 13- to 14-year-olds and ISAAC data for 6- to 7-year-olds showed similar patterns for these foods. There was no association between monounsaturated fatty acid and polyunsaturated fatty acid intake. Olive oils showed a negative association with asthma, allergic rhinoconjunctivities, and atopic eczema, while soy oil consumption was associated with all 3 conditions.

Conclusions. A consistent inverse relationship was seen between prevalence rates of 3 allergic conditions and the intake of starch, cereals, and vegetables. If these findings could be generalized, and if the average daily consumption of these foods increased, it is speculated that an important decrease in symptom prevalence may be achieved.

Reviewer’s Comments. This is an interesting study that evaluates a large population of subjects to determine if there is any consistency between dietary intake of certain foods and the development of atopic disease. The authors suggest that perhaps by increasing the daily per capita amount of calories from cereal and rice that the prevalence of atopic disease could be decreased. Additional study would be required to evaluate if there are certain substances in these foods that may have benefit. Until then, I am not sure that increasing intake of starch, cereals, and vegetables alone will play a significant role in decreasing...
the prevalence of atopy, and it is likely that other nondi-
etary factors are also of importance.

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DOES LIVING ON A FARM DURING CHILDHOOD PROTECT AGAINST ASTHMA, ALLERGIC RHINITIS, AND ATOPY IN ADULTHOOD?


Purpose of the Study. The authors used a previously
generated database from the European Community Respiratory Health Survey to search for an association between childhood residence on a farm and protection from atopic disease in adult life. This investigation was prompted by the multiple studies showing decreased allergic rhinitis and asthma among children living on farms. The persistence of this effect into adult life had not been previously studied.

Study Population. Patients were drawn from 48 centers in 5 countries (Belgium, France, the Netherlands, Sweden, and New Zealand). Unselected individuals 20 to 44 years old responded to a short postal questionnaire about asthma and allergy symptoms. A random sample of respondents received a more extensive questionnaire and additional tests. Questions allowed identification of subjects who had grown up on a farm.

Methods. Data obtained on subjects entering the second phase of the study included pulmonary function testing with methacholine challenge, total immunoglobulin E (IgE), and IgE specific for dust mite, cat, Cladosporium, and Timothy grass, and 1 additional pollen common to the region of the individual center. Subjects with farm residence in childhood were compared with those without a history of farm residence by univariate and logistic regression with adjustment for potential confounders, including pet exposure in childhood, number of siblings, and parental history of allergy.

Results. Information on whether a subject had lived on a farm in childhood was available for 6251 of the 6604 subjects entering the second phase of the study. Compared with the other adults, those who had lived on a farm in childhood had a reduced risk of atopic sensitization (odds ratio = 0.76, 95% confidence interval 95% = 0.60–0.97). There was a lower risk of nasal symptoms from pollen in the farm-raised, but no difference in the prevalence of asthma compared with those not raised on a farm, or in the prevalence of nasal symptoms in the presence of animals or dust.

Conclusions. The authors conclude that environmental factors encountered in childhood may have a lifelong effect on the development of allergy. The effect has been previously noted in children, but this study indicates that a reduction of allergic sensitization persists into adulthood. However, studies of children have not consistently noted a reduction of asthma in those living on farms, as indeed was not seen in these adults. The reason for the protective effect of farm residence is not clear, but several potential alternatives are not supported by the data. The effect remains even after controlling for pet exposure in childhood, number of siblings, and presence of parental allergy. Of note, the reported rate of parental allergy was similar in the farm and nonfarm parents, an argument against the “healthy farmer” effect that supposes the allergic individuals would have elected to leave the allergen-rich farm environment.

EXPOSURE TO PETS AND ATOPY-RELATED DISEASES IN THE FIRST 4 YEARS OF LIFE


Purpose of the Study. To study the relationship between early pet exposure and the risk of developing atopic disease in the first 4 years of life.

Study Population. The study comprised a birth cohort of 3754 children born in Oslo during a 15-month period in 1992–1993. Over the 4-year period of the study, participants were excluded because of incomplete information or failure to be reached by mail during the follow-up period. The final analysis included 2531 children from the birth cohort.

Methods. The cohort was followed mainly by questionnaire to provide information about early life exposure to pets, child/family characteristics, environmental exposures, and atopy-related diseases. Questionnaires were administered at birth, 6, 12, 18, and 24 months, and a follow-up questionnaire was administered at 4 years. A subset (n = 502) of participants was studied in a matched case-control analysis of early environmental exposure and the risk of bronchial obstruction. These participants received home visits to assess environmental exposure and collection of dust samples for common aeroallergens. The information obtained from home visits was used to estimate agreement between questionnaire data on the presence of pets and allergen concentration in the dust samples. During the first 2 years of life, bronchial obstruction was defined as 2 or more episodes of obstruction or 1 episode lasting >1 month. Information on current asthma or allergic rhinitis was derived from the follow-up questionnaire and was based on a physician’s diagnosis during the previous 12 months. A history of eczema was taken from the 6-month questionnaire.

Results. This study found that there was a positive relationship between dog exposure at birth and bronchial obstruction during the first 2 years of life, although no association was noted at 4 years of age. There was a negative relationship (odds ratio = 0.6) between pet exposure and allergic rhinitis if a pet was present at birth. Additionally, the risk of having both asthma and allergic rhinitis (n = 44) was higher in unexposed children as compared with exposed children (0.023 and 0.006, respectively). Eczema was also less common during the first 6 months of life among the exposed population.

Conclusion. Although bronchial obstruction during the first 2 years of life was more common in dog owners, there was a negative relationship between pet ownership and atopy-related disease at 4 years of life.

Reviewers’ Comments. Information about the effects of pet ownership in childhood is controversial. Many previ-
Diet and Asthma, Allergic Rhinoconjunctivitis and Atopic Eczema Symptom Prevalence: An Ecological Analysis of the International Study of Asthma and Allergies in Childhood (ISAAC) Data

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