

Dietary Vitamin E During Pregnancy Reduces Childhood Asthma

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ABERDEEN, Scotland, Sept. 1 -- Children whose mothers consume more foods containing vitamin E during pregnancy are less likely to develop wheeze or asthma by the age of five, according to researchers here.

Those born to mothers who had the lowest vitamin E intake were 3.47 times more likely to have persistent wheeze and five times more likely to have early-onset persistent asthma than those born to mothers with the highest levels, found Graham Devereux, M.D., Ph.D., of the University of Aberdeen, and colleagues.

Higher maternal dietary vitamin E intake, assessed at 32 weeks gestation on a dietary questionnaire and nonfasting blood sample, was associated with less wheezing in their children after five years of follow up, even after adjustment for a full range of variables including breast feeding. they reported in the Sept. 1 issue of the *American Journal of Respiratory and Critical Care Medicine*.

Dietary vitamin E rather than supplements containing the antioxidant appeared to be key. "Maternal use of nutritional supplements during pregnancy was not associated with any of the outcomes measured in five-year-old children," wrote Dr. Devereux and colleagues.

For the lowest through highest intake quartiles, the adjusted wheezing hazard ratios were:

Wheeze in the previous year 0.76, 0.75, 0.51, and 0.46 ($P=0.01$ for the trend),

Wheeze in the absence of a cold 0.50, 0.56, 0.53, and 0.22 ($P=0.01$ trend), and

Wheeze for which a doctor was consulted 0.80, 0.75, 0.58, and 0.38 ($P=0.02$ trend).

Children of mothers who had more intrapartum vitamin E intake were also less likely to have asthma outcomes at age five. For the lowest through highest intake quartiles, the adjusted asthma hazard ratios were:

Ever had an asthma episode 0.64, 0.60, 0.59, and 0.47 ($P=0.04$ for the trend),
Doctor-confirmed asthma diagnosis 0.54, 0.53, 0.48, and 0.45 ($P=0.02$ trend), and
Asthma and wheeze in the last 12 months 0.56, 0.58, 0.61, and 0.28 ($P=0.02$ trend).

Maternal vitamin E intake during pregnancy was also negatively associated with persistent wheezing over the five years of follow-up (odds ratio 0.77 for each quartile, $P=0.02$) and early-onset persistent asthma (odds ratio 0.67 per intake quartile, $P<0.01$).

The 2,000 mothers who were recruited at Scottish antenatal clinics were also measured for other antioxidant levels including vitamin C, beta carotene, alpha tocopherol, and zinc. Of these, zinc had the strongest associations with early respiratory function.

With increasing maternal zinc intake during pregnancy, children had significantly lower adjusted odds ratios of:

Shortness of breath in the absence of a cold in the previous year ($P=0.05$),

Asthma ever ($P=0.04$),

Asthma with wheeze in the previous year ($P=0.003$),

Eczema ever ($P=0.03$), and

Current treatment for eczema ($P=0.04$).

Late onset asthma (after age 2) was correlated with lower maternal zinc intake during pregnancy (adjusted odds ratio 0.82 per quintile, $P=0.04$).

The children's own nutrient intake had no impact on their asthma, wheezing, eczema, or other outcomes. While breast feeding was not associated with wheezing or asthma outcomes at the five-year follow-up overall, breast fed children (74.6%) had greater magnitude associations between maternal antioxidant intake and outcomes than those who had not been breast fed.

The researchers said their results "are consistent with the notion that early life nutrient intake, both *in utero* and in the early postpartum period, modifies the risk of developing childhood asthma."

Other studies have found that supplementation with antioxidants including vitamin C and E and trace elements like selenium and magnesium does not consistently improve asthma outcomes for adults. Dr. Devereux and colleagues said that their study may offer an explanation for the inconsistencies between epidemiologic and dietary intervention studies.

"Dietary antioxidants may exert their greatest effects on the pathogenesis of asthma during a critical period of during early life," they wrote. "Maternal nutrient intake during pregnancy could modulate the development of asthma by influencing fetal airway development."

Major sources of dietary vitamin E in the United Kingdom include vegetable oils, such as sunflower, rapeseed, and corn oils, margarine, wheat germ, nuts, and sunflower seeds. Major sources of dietary zinc include liver, wheat germ, lean red meat, seeds, and nuts.

Action Points

Explain to interested patients that increased intake of vitamin E from dietary sources during pregnancy may reduce a child's risk of developing wheeze or asthma.

Caution interested patients that the study was observational and did not find that vitamin E supplements were beneficial.

Primary source: American Journal of Respiratory and Critical Care Medicine

Source reference:

Devereux G, et al *Am J Respir Crit Care Med* 2006; 174:499-507