

Maternal vitamins E and D intakes during pregnancy are associated with childhood asthma up to the age of 10 years

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Recently asthma rates have shown rapid increases within westernised countries, thus becoming a public health concern. Observation of concurrent dietary changes leads to the supposition that the two may be linked. In 1997/9, the prospective SEATON cohort of 2000 pregnant women was established to allow investigation of the hypothesis that maternal nutrition during pregnancy affects the likelihood of their children developing asthma⁽¹⁾.

At 32 weeks gestation mothers’ habitual dietary intakes were assessed by FFQ (Version 5.4 Scottish Collaborative Group). One thousand nine hundred and twenty-four live singletons comprised the birth cohort that has been followed up at 2, 5 and 10 years. Children’s asthmatic status was assessed by International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire and their dietary intakes at 5 and 10 years by FFQ (Version C1 and C2 Scottish Collaborative Group)⁽¹⁾.

Cross-sectionally at 5 years, higher maternal vitamins E and D intakes during pregnancy were associated with decreased likelihood of asthma and wheeze^(1,2). At 10 years, higher intakes of maternal vitamin D were associated with significantly decreased odds of asthma and wheeze, however, contrary to the 5-year findings, maternal vitamin E intake during pregnancy was not associated with asthma outcomes cross-sectionally at 10 years⁽³⁾.

Generalised estimating equations and Cox proportional hazards models were used to explore longitudinal associations between nutrient intake and disease outcomes over the 10 years of the study (after adjustment for potential confounders). OR and Hazard ratio presented are relative to the lowest quintile of intake.

Longitudinally, lower maternal vitamins D and E intakes during pregnancy were associated with an increased likelihood of ‘active asthma’ (derived from ‘doctor diagnosed asthma’ and ‘wheeze in the last year’) and ‘wheeze in the last year’ in the children over the course of the 10 years (Figs 1 and 2). There were no associations with the nutrient intakes of the children.

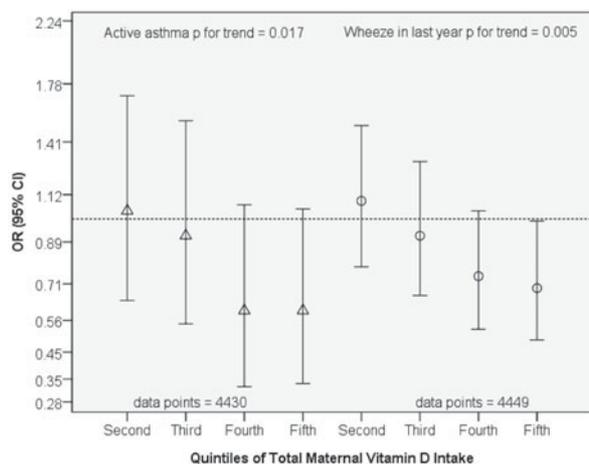


Fig. 1. Likelihood of asthma outcomes over ten years by maternal vitamin D intake.

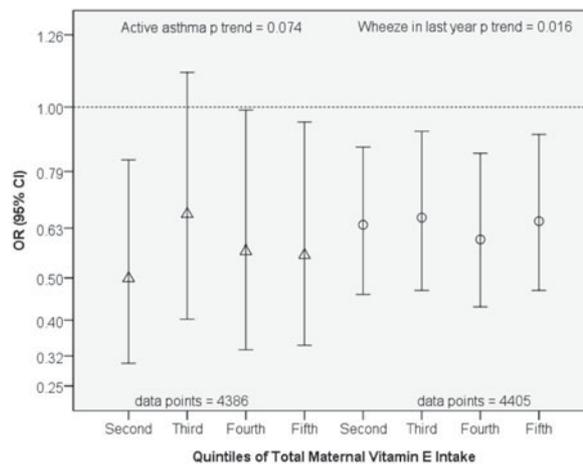


Fig. 2. Likelihood of asthma outcomes over ten years by maternal vitamin E intake.

Cox proportional hazards models for ‘doctor diagnosed asthma’ showed inverse associations with vitamins E and D also (HR 0.47, 95% CI 0.24, 0.93, *n* 1432, *P* for trend = 0.017 and HR = 0.73, 95% CI 0.37, 1.47, *n* 1446, *p* for trend = 0.020, respectively).

In conclusion: lower maternal vitamins D and E intakes during pregnancy are associated with an increased likelihood of childhood asthma up to the age of 10 years. Intervention trials are required to ascertain if dietary intervention during pregnancy actually reduces the likelihood of childhood asthma.

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- Allan K, Craig LCA, McNeill G *et al.* (2011) *Proc Nutr Soc* (In the Press).