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Can optimisation of dietary vitamin E intake by pregnant women reduce the risk of asthma in their children: a feasibility study

J. Clark, L. C. A. Craig, G. McNeill and G. Devereux
 Section of Population Health, University of Aberdeen, Aberdeen AB25 2ZD, UK

It has been suggested that the recent increase in asthma is, in part, a consequence of changing diet. Three large birth cohort studies from the US, UK and Japan^(1–3) have reported sub-optimal maternal intakes of vitamin E containing foods during pregnancy to be associated with an increased likelihood of childhood wheeze and asthma. However, a high-quality randomised placebo-controlled trial is required to investigate whether the optimisation of maternal vitamin E intake during pregnancy actually reduces childhood asthma. We have conducted a pilot study in preparation for a larger intervention study to determine whether pregnant women would participate and whether a dietitian supervised dietary intervention could increase maternal vitamin E intake to the 15 mg/d recommended by the US NIH in the absence of UK recommendation.

Forty-three pregnant women with a personal or partner history of asthma were recruited to the study at 12 weeks gestation and randomised to dietary intervention (*n* 23) or observation (*n* 20). Four women did not complete the study. A dietitian assessed the vitamin E intake of 19 women in the intervention group and provided tailored advice on dietary changes to optimise their intake to 15 mg/d. The remaining 20 women were not given dietary advice and acted as a control group.

| | Observation (<i>n</i> 20) | | <i>P</i> * | Dietary intervention (<i>n</i> 19) | | <i>P</i> * |
|--|----------------------------|-------------------|------------|-------------------------------------|--------------------|------------|
| | 12 weeks | 18/20 weeks | | 12 weeks | 18/20 weeks | |
| Food diary | | | | | | |
| Vitamin E mean (95% CI) mg/d | | | | 7.13 (5.63–8.63) | 17.4 (14.4–20.5) | <0.001 |
| Energy mean (95% CI) kJ/d | | | | 7192 (6594–7795) | 8903 (8008–9799) | <0.001 |
| Energy adjusted vitamin E mean (95% CI) mg/d | | | | 6.41 (5.30–7.52) | 17.0 (14.0–20.0) | <0.001 |
| FFQ | | | | | | |
| Vitamin E mean (95% CI) mg/day | 12.3 (10.4–14.1) | 12.4 (10.1–14.8) | >0.1 | 10.9 (8.50–13.3) | 15.9 (12.4–19.4) | 0.008 |
| Energy mean (95% CI) kJ/day | 10042 (8924–11154) | 9786 (8401–11175) | >0.1 | 9937 (8360–11519) | 10581 (8619–12548) | >0.1 |
| Energy adjusted vitamin E mean (95% CI) mg/day | 11.9 (10.6–13.2) | 11.8 (10.0–13.6) | >0.1 | 9.37 (8.13–10.06) | 13.9 (12.6–15.2) | <0.001 |

**P* values 12 vs 18/20 weeks.

Pregnant women with a personal and/or partner history of asthma were willing to participate in the study (recruitment rate 70% of those approached). The dietary intervention was associated with an increase in vitamin E intake from 7.13 mg/d (95% CI 5.63, 8.6) at 12 weeks gestation to 17.4 mg/d (95% CI 14.4, 20.5), *P*<0.001 at 18 weeks gestation when assessed by food diary and an increase from 10.9 mg/d (95% CI 8.50, 13.3) to 15.9 mg/d (95% CI 12.4, 19.4), *P* = 0.008, when assessed by FFQ. No increase in dietary vitamin E intake was observed in the control group. The study demonstrates the feasibility and effectiveness of the dietary intervention to optimise dietary vitamin E intake and justifies the inclusion of the dietary intervention in a multicentre vitamin E intervention study to prevent childhood asthma.

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