

Correspondence

Causal pathway analysis of mothers' responses to government advice on peanut avoidance

Sirs,

In 1998, the UK Government's Chief Medical Officer's Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) recommended that women who are atopic may wish to avoid peanuts during pregnancy and lactation.¹

In a previous paper, we presented findings produced by the first school cohort study (2003–2005) undertaken after the advice was issued.² In two UK cities, 1072 mother–child pairs were studied by means of maternal interview and skin prick testing (SPT) of children in school. Formal peanut challenges were offered to children with positive SPTs to peanut. About 44% of mothers and 37% of fathers were atopic. Our results showed that the UK government's advice had no clear impact on peanut allergy prevalence at school entry, which was 1.8% (peanut sensitisation was 2.8%) by 2003–2004, the highest prevalence estimate for peanut allergy in children yet recorded.² According to our findings, peanut allergy now affects one child in 55 of British children at school entry.

It remains uncertain if peanut avoidance during pregnancy and breast-feeding has any effect on the prevalence of peanut allergy in children. This uncertainty partly stems from our finding that although 61% of mothers recalled hearing the advice, only 3.5% of mothers stopped consuming peanuts while pregnant or breastfeeding.

In the present study, we further analysed previous data to explore (i) what, if any, are the major barriers to compliance with government advice, (ii) possible moderating variables in the pathway between receiving advice and compliance. Path analysis was conducted using MPlus, which can accommodate dichotomous variables (Fig. 1).

We found no differences between high risk and low risk mothers in recall of advice or on level of peanut consumption before pregnancy or breastfeeding ($\chi^2 = -1.21$ to -1.43 , $P > 0.05$). A causal pathway (only significant predictors following a series of logistic regression analysis were retained) clearly shows a direct impact of level of peanut consumption before pregnancy on consumption during pregnancy and breastfeeding. Thus, there is compliance with advice only if

peanut consumption is already low before the first antenatal appointment.

The model shows that prior level of peanut consumption is the most important barrier to compliance with COT advice. The *direct effects* of PNC before antenatal appointment on peanut consumption during pregnancy (0.54) and breastfeeding (0.35) can be compared to the product of the *indirect effects*, through COT advice, of peanut consumption during pregnancy (0.005) and the *indirect effects* through COT advice, delivered by a midwife or health visitor (0.017). The *total causal effects* of PNC before antenatal appointment on peanut consumption during pregnancy is 0.55 and on peanut consumption during breastfeeding is 0.37.

One of the key points in an intervention is its delivery/communication. In the pathway between recommendation and outcome there were two critical points worth noting. The first occurred during pregnancy when mothers initially encountered advice. Since the level of consumption of peanuts before pregnancy has the strongest direct impact on compliance with COT advice during pregnancy, uncertainty concerning the benefits of avoiding peanuts completely (low response efficacy), may have resulted in mothers calculating the costs as exceeding the benefits. When communicating the information, GP's themselves may not have been convinced of the relevance and effectiveness of the COT recommendations.

At the second critical point in the intervention trajectory, following birth of the child, the information was particularly relevant, and meaningful. Emotive factors may also have amplified the perceived risk.³ Delivery of the COT recommendations was enhanced by its communication by midwives to mothers who intended to, and did, breastfeed exclusively.

The data used in this study is retrospective and based on self-report. However, our findings suggest future research on risk advice should incorporate the following: (i) the incorporation of a conceptual model based on disease-specific empirical research so that the appropriate variables can be measured and the optimal interventions can be tested; (ii) the inclusion of psychological and social factors that influence the ways in which patients respond to risk information; (iii) careful measurement of relevant moderator and mediator variables, in order that responsive subgroups become known.

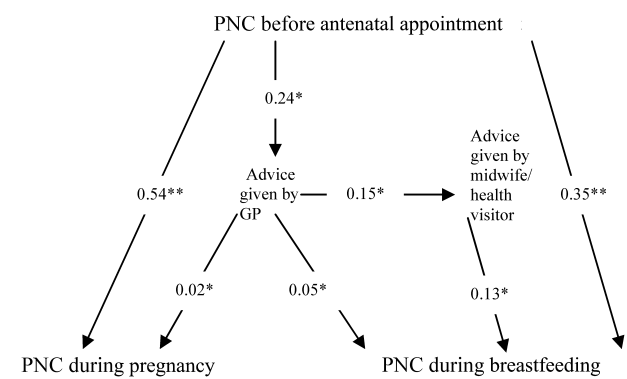


Fig. 1. Causal pathway illustrating the pathway between peanut consumption before antenatal appointment and peanut consumption during pregnancy and breastfeeding.

Provenance

Jonathan O’B Hourihane is a paediatric allergist. He has many years experience in research and clinical work in the field of food allergy.

Audrey Dunn Galvin is a psychologist and statistician shortly submitting a PhD in the biopsychosocial impact of food allergy in children.

Stephen Roberts is a paediatrician with a special interest in allergy.

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mothers had followed the COT advice correctly. We wish to thank the Food Standards Agency, UK, for the data provided.

References

1 Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT). *Adverse reactions to Food and Food Ingredients* 1998;**11**:91–7.

2 Hourihane JO’B, Aiken R, Briggs R *et al.* The impact of government advice to pregnant mothers on peanut avoidance on the prevalence of peanut allergy in UK children at school entry. *J Allergy Clin Immunol* 2007;**119**(5):1197–202.

3 Whitehead D, Russell G. How effective are health education programmes – resistance, reaction, rationality and risk. *Int J Nurs Stud* 2004;**41**:163–72.

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