

Letter to the Editor

Association between parental smoking and infant morbidity

SIR—A recent paper in the Journal by Ogsten *et al* (Vol 41, 21–25) examined associations between parental smoking, maternal age, feeding, heating type, and respiratory and alimentary illness in infants. The findings indicated several significant associations, although the purported effect of maternal smoking on symptoms was actually quite small. We were surprised that the explanations for the findings given by the authors failed to take into account other cogent alternatives and, at one point, indulged in a flight of fancy without recourse to any empirical support.

Firstly, the use of health visitors to collect all the information must raise the issue of investigator bias. The confounding of symptoms and disease categories makes it unclear whether or not the same criteria were used to ascertain illness in all the infants. Moreover, since presumably a number of health visitors were collecting data it is unlikely that this was done in a standardised manner. It is quite unclear as to how 'a paediatrician' verified diagnostic criteria and consistency for 1565 cases.

The authors assume on the basis of an 80% response rate by post-natal mothers that smoking remains constant during and after pregnancy. Since smoking is a major variable in this study, this assumption seems rather risky.

A social class gradient was evident for both respiratory and alimentary illnesses. As low social class is associated with low income and poor housing conditions, it is very surprising that neither of these important variables was taken into account. A recent double blind study in Edinburgh, for example, has indicated a strong relation between damp and mouldy housing and the presence of respiratory and alimentary symptoms in children where smoking, income, respondent bias, and heating type were all eliminated as contributory factors to outcome (Martin, Platt and Hunt, *Br Med J* 1987, in press).

Two explanations are suggested for the association between alimentary symptoms and parental smoking. One of these, quite reasonably, is that parents' smoking habits may be related to the child's social and demographic characteristics. However, we must take exception to the second suggestion that the association is more probably linked to the quality of care and that "mother's smoking might reflect inversely her maternal attitudes and personality and, as a result, the general level of health care provided to the child . . ." (p.25). There is not one iota of evidence for this

speculation which seems to represent a prejudice that is totally out of place in a scientific paper.

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The authors reply:

The issue of the quality of the morbidity data obtained from health visitors was a concern during the survey. The health visitor in each case completed a form on the infant's health during the first year of life, based on her own notes made when visiting the families. In cases where there was evidence that the information was inaccurate, either due to generally poor reporting or where the information disagreed with that available from other sources, the responses were classified as unknown. The omission of 18% of the initially eligible cases avoided the largest problems of poor reporting though admittedly at risk of introducing another source of bias. However, a comparison of the cases omitted with those remaining in the study did not show any significant differences in the main risk factors studied.

In an earlier analysis of respiratory illness (*Br Med J* 1985; 290: 957–69) we compared the morbidity derived from the health visitors reports with an independently measured outcome: recorded admissions to hospital for respiratory conditions. The associations we found there between hospital admissions and parental smoking, initial feeding method and maternal age showed stronger associations than the corresponding morbidity indicated from health visitors. It seems unlikely therefore that these associations could be attributed to investigator bias.

A re-analysis of the data restricted to those cases who completed the post-natal questionnaire and classifying the smoking behaviour according to the same source gave the incidence of respiratory illness among children of mothers who were either non-smokers or who had stopped smoking early in pregnancy as 27.4% compared with 36.7% among children of mothers who reported continuing smoking. The corresponding figures for alimentary illness were 14.2% and 23.3% respectively. These figures are very close to those obtained in the paper by classifying smoking on the basis of the initial interview. In 73 mothers who reported stopping smoking during middle or late pregnancy, the incidences were 39.7% (respiratory) and 13.6% (alimentary). Classifying these cases with those who

continued smoking, as we did in the paper, thus introduced a bias downwards in the alimentary incidence in children of smoking mothers and in the reverse direction for respiratory incidence, but both effects were very small.

We note with interest the finding by Martin *et al*, of illness being mainly associated with damp and mouldy housing conditions, but unfortunately data on this aspect of housing were not available to us. We did not have access to income data and had to rely on social class information as an indicator of economic status.

It is our view that many factors could give rise to an association between smoking and infant morbidity. In reality, it is likely that many of them contribute, each in a small way, to the association. The speculation to which the writers react so strongly was simply an instance of one factor which might be responsible for some of this effect. By selectively quoting from this part of our discussion, they manage to give the impression that we are advancing one particular possibility as a major hypothesis, which was not our intention. In any case, it hardly seems beyond the bounds of possibility that, for example, some of the pressures which result in people smoking might also affect the quality of care the child receives, with adverse consequences for health. We also considered that due to the already well publicised dangers of smoking, a larger proportion of the better informed or more concerned women who smoked originally might already have abandoned the habit before entry to the study.

The health visitors assessed some variables which might reflect poorer maternal care, by indicating cases where the mother showed poor practical management (28 cases), where HV access to the family or house was difficult (84 cases), where the child's diet was poor or inadequate (47 cases), where immunisations were not given (14), or where the mother was asked but failed to attend hospital clinics (24). The relative risks of these factors with respiratory illness were, respectively, 2.5, 1.1, 2.3, 1.6, and 1.8 and the relative risks of these factors with maternal smoking were 4.2, 1.4, 10.1, 3.5, and 5.4. While the quality of the data on these questions was doubtful, and they did not explain a large proportion of the observed association of smoking with morbidity, they illustrate the point that both smoking and morbidity are associated with a wide variety of other variables.

On a general point, there is an obvious place for conjecture in scientific papers where it is appropriate. We regret the rather inflammatory tone of the correspondents' letter which is just as much out of place as any prejudice which they claim to have detected in our paper.

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