Reviewer's report

Title: Pregnancy planning, smoking behaviour during pregnancy, and neonatal outcome: UK Millennium Cohort Study

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Reviewer: Alys Havard

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This manuscript aims to answer an important and interesting question about whether planning pregnancy is a potential avenue for improving neonatal outcomes, over and above focusing on quitting/reducing smoking. Although data addressing this research question have the potential to make a valuable contribution to the field, the manuscript has a number of important limitations.

MAJOR COMPULSORY REVISIONS

My first concern relates to the retrospective nature of the data collection. The authors acknowledge that respondents were asked to recall events up to 2 years before they were interviewed, and they recognise that self-reported smoking is subject to under-reporting. The potential impact of this, however, is diminished by stating that rates of pre-pregnancy smoking were similar to rates reported elsewhere. Given the pressure on women to avoid smoking during pregnancy, the risk of under-reporting is greater for the questions regarding smoking during pregnancy, with less concern the reporting of pre-pregnancy smoking. In light of this, it is not reassuring that higher than usual quit rates (77-84%) were reported by participants. The implications of this likely underreporting should be discussed. Within this there should be some consideration of the potential for differential misclassification in the measurement of smoking during pregnancy – smoking was assessed after the outcomes (low birthweight and pre-term birth) had already occurred, leaving open the possibility for recall bias associated with the outcomes.

My second major concern relates to the measurement of smoking. The comparisons reported in Table 3 involve the group of women who smoked before pregnancy. Some of the women in this group quit smoking during pregnancy, or changed the amount they smoked. The comparison therefore seems to be never smokers vs women who did not smoke during pregnancy (because they quit) + women who smoked less during pregnancy + women who smoked the same amount during pregnancy. It is difficult to know how to interpret the results of these comparisons.

The comparison between women who decreased/quit their smoking during pregnancy and those who did not (Table 4) seems to be more meaningful, however, I have concerns about the validity of this distinction. The question from which these groups were identified is worded as “Did you change the amount you smoked during your pregnancy?”. It seems to be assumed throughout the
manuscript this ‘change’ is equivalent to a reduction, although this assumption is not stated anywhere, nor is any justification given.

It is not explicitly stated how smoking during pregnancy was categorised when entered in the pregnancy planning models as a covariate, but it is possible that the results in Table 2 are also affected by the problematic measurement of smoking discussed in relation to Tables 3 and 4.

Insufficient information is given regarding the methods for calculating the population attributable risk fractions, making it impossible to assess the likely validity of the estimates produced.

The implications of the findings regarding the impact of smoking on neonatal outcomes after adjusting for planning are not discussed and should be. My interpretation of the findings is that smoking during pregnancy has an impact on birthweight that is over and above the effect of other health behaviours (with planning for pregnancy acting as a proxy measure for other health behaviours during pregnancy). I would think that this has been demonstrated previous research by directly measuring those other health behaviours contributing to neonatal outcome.

MINOR ESSENTIAL REVISIONS

It is stated that the survey designed oversampling and response rate were accounted for using variables that had already been created. A web address to the home page of the ESDS is provided, when a direct link or citation of a document describing the methods for creating these variables should be provided.

It is stated that the missing data on the 4.5% of participants who did not survive to 9 months of age (when the interviews were conducted) is unlikely to significantly impact the results. It is also not acknowledged in the limitations section that 4% of records had missing smoking information. Given that neonatal death is likely to be strongly related to both of the outcomes, and the missing smoking status is likely to be related to the smoking during pregnancy exposure, there is a strong risk that these missing data contributed to a bias.

MINOR ISSUES NOT FOR PUBLICATION

Figure 1 appears to be missing a legend.

The 3rd last sentence of the Results section of the abstract appears to be missing a word. I think it should end ‘did not change’ instead of ‘did change’.

The first sentence of the Conclusions section of the abstract: typographical error with ‘heath’ written instead of ‘health’.

Level of interest: An article of importance in its field

Quality of written English: Acceptable
**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I declare that I have no competing interests