Reviewer's report

Title: Sudden Infant Death Syndrome and Prenatal Maternal Smoking: Rising Attributed Risk in the Back to Sleep Era

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Reviewer: Melbourne Hovell

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The authors have employed a large and longitudinal data set to explore the relationship between maternal smoking during pregnancy and SIDS. Using multiple logistic and multiple regression models, the authors have demonstrated elevated risk of SIDS for mothers who smoked during pregnancy and this risk was sustained after statistical control for a number of important possible confounding variables. The investigators also explored the change in risk over time as the control of SIDS was attempted by promoting safe sleep positions. This design greatly strengthens the study and showed an increasingly large attributable risk for tobacco smoking during pregnancy.

I found no serious methodological concerns beyond the recognition that this study was an observational exploration of associations and cannot provide definitive causal inference for the role of tobacco in SIDS etiology. In this context, however, I believe the reported risk ratios might be considerably lower than would be true with more complete assessment of tobacco exposure. Thus, the primary change in the ms would be to provide a more detailed description of sources of “under-estimate” for probable risk ratios. This also should be the basis for recommending studies with more complete assessment of tobacco exposure and its relationship to SIDS.

The following sources of under-estimate should be considered along with a number of other more minor issues that could enhance the study and written report.

Sources of under-estimate of risk
1. From this report it is not clear whether the authors had access to data concerning prenatal maternal exposure to passive smoke. This could be substantial and might contribute to SIDS postnatally. Since the analysis did not include this source of exposure, total prenatal exposure was under-estimated. This likely reduced odds ratios.
2. Similarly, postnatal smoking and passive smoke exposure was not included in analyses and this too might have reduced risk ratios. It also makes it impossible to discriminate the relative importance of prenatal v postnatal exposure of the child to tobacco.
3. The investigators elected to exclude low birth weight, short term pregnancies and other abnormalities at birth. These exclusions might represent problems attributable to prenatal tobacco exposure. As such, these too tend to reduce the odds ratios likely to be true relative to those computed.
4. The investigators elected to control for prenatal alcohol use and this enabled estimated of the independent risk associated with tobacco exposure. However, the analysis and ms would be stronger if the investigators were to show the separate and combined risk of tobacco and alcohol exposure, especially since there might be a synergistic effect of the two toxins.

Control for Sleep Position
The authors assessed tobacco and SIDS over time and in so doing presumed that parents were increasingly aware and assuring that their new infants were placed in the safest position for sleep in order to prevent SIDS. The increasing risk ratio and attributable risks over time, imply that this assumption is correct. However, the investigators do not have a direct measure of sleep position or
how often parents may have allowed their child to sleep in positions likely to lead to SIDS. Thus, this component of the study is based on an “ecological” association and not a direct measure of sleep positions. This limitation should be noted in the discussion.

Minor table contents

The ms would be stronger if the regression results show in Table 3 were more complete. I suggest showing unstandardized regression coefficients, 95% C.I., standardized coefficients, p value and if possible bivariate associations between all predictor variables and the dependent variables. This would enable more complete review of the magnitude of association among variables included in the regression models. This would be especially important if the investigators elect to extend this analysis to include the role of alcohol as a possible correlate of SIDS.

Declaration of competing interests:

None