Reviewer's report

Title: Food patterns and dietary quality associated with organic food consumption during pregnancy; data from a large cohort of pregnant women in Norway

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Reviewer: Hazel Inskip

Reviewer's report:

Comments for the authors

This paper explores the relationships between consumption of organic foods and overall quality of diet during pregnancy. Its major strength is the study size, which is very large. The results, though, were not a surprise and I did wonder whether there was an element of tautology in this, in that the main reasons people choose organic food (and are prepared to pay extra for them) is for health or sustainability reasons. Thus the fact that there is then a correlation between use of organic food and a 'health and sustainability component' from the PCA is what one would expect. However, there is some merit in quantifying this and the authors have provided a summary that is of some interest.

I do, however, have some specific comments and a number of concerns in relation to the paper.

Major compulsory revisions:

1. I have various concerns about the paragraph labelled ‘Outcome variable’ on pages 7 to 8. The outcome variable is crucial to the interpretation of this paper so clarification of these issues is important:

   a) I had difficulty in following the description of the handling of missing data. We are told that various assumptions were made, but we are not told how the extent of the missing data, and how many women had missing data about which the assumptions had to be made.

   b) For those who reported no intake of certain food groups, the index is upscaled. However, the method used seems strange to me. The authors say that the sum index was upscaled by 6/5 for each food category for which no intake was reported. So, if two groups were omitted, this implies an upscaling of 36/25, whereas I would suggest the upscaling should be 6/4. I think the authors need to clarify this as it could distort the analysis.

   c) The classification of women with ‘frequent organic consumption’ seems strange to me. We are told that this is defined as having a sum index > 6. We are then told that this corresponds to having reported eating organic food ‘often’ for at least one of the six food groups. However, it appears that ‘often’ is a score of
2, and so eating organic food often in only one food group would only give a sum index of 2. Either there is an error in the calculation here or the description is unclear. We need to know how this has been defined as it is core to the interpretation of the paper.

d) Towards the end of the paragraph we are told that the consumption of organic foods in the individual food groups is defined as ‘low’ vs ‘high’, but we are not told what these are. How are these defined and how do they relate to the groupings that the women used to report their use: ‘never or seldom’, ‘sometimes’, ‘often’, or ‘mostly’? This needs clarifying.

2. The scores are described as ‘units’ but it’s not clear what a unit is. Have the scores been standardised after they have been obtained from the PCA? We are told that the intakes were standardised but there is no mention of whether the final scores were standardised. It would help the reader if these were presented as SD scores as otherwise they are uninterpretable. The authors dismiss a difference of 0.2 units as “in practice insignificant”, whereas if this were a difference of 0.2 SDs then I would argue that it is not insignificant. If SDs are not being used then the authors need to explain the range of the scores and give the reader an understanding of their distribution.

3. In Table 1, I don’t understand the information that is presented for the dietary patterns. The table presents figures such as 0.7 (<0.1). I initially assumed that the ‘<0.1’ was a P-value, except that we are also given stars to represent that. What do the figures in brackets mean? For the rest of the table the figures in brackets are standard errors, but the authors do not explain what the brackets contain for the dietary patterns.

Minor essential revisions:

1. I found the description of the PCA to be over-elaborate. There was a large amount of information given about loadings and where the women were placed on a scores plot, but do we need this information? The second principal component is largely dismissed for this analysis and so the relationship between that and the first principal component detracts from the main point of the paper. I would suggest that Figures 1 and 2 are unnecessary and could be deleted, along with much of the second paragraph on page 9. I think that this would streamline the paper and make it easier to read.

2. Tables 1 and 2 are hard to follow. It was not immediately obvious to me that the heading ‘Frequent consumption of organic food’ referred to all but the first column, and that all the results in the columns under that heading referred to differences from the first column. I was puzzled by negative consumptions until I worked that out. This needs explaining in the heading, the footnotes or in the table itself.

3. The authors use the word ‘tertile’ when they mean ‘third’. The tertiles are the cut points, whereas the authors are referring to the groups.
4. Could the authors clarify their use of the word ‘beverage’ on page 14? They refer to wine consumption elsewhere in the paper but on page 14 say that they have excluded beverages. Do they mean all beverages (and if so, why the analysis of wine)? Or do they mean non-alcoholic beverages or perhaps hot beverages?

Discretionary revisions:

1. I wonder whether the tables need to contain so much data. Particularly Table 2, I feel, gives a very large amount of information and maybe we do not need all the columns for the specific food groups.

2. The authors comment on page 14 that other studies tend to use the first two principal components to represent ‘healthy’ and ‘unhealthy’ diets whereas here they found that these types of diets were covered by the first principal component. I hesitate to suggest references from my own work, but in our analyses we have similarly found that the first principal component provides information on ‘healthy’ and ‘unhealthy’ diets. A couple of example references are as follows:

   

3. I don’t understand the sentence “Despite limitations in product availability from organic production in the time of the study (2002-2007), it would have been possible to have largely the same dietary pattern as observed for non- or low-organic consumers in this study; only with (a share of) products from organic agriculture.” It’s particularly the part after the semi-colon that doesn’t make sense to me. Could this be clarified?

4. I was surprised by the results from the earlier paper that are summarised in the first paragraph on page 19, about the types of women who were more likely to have frequent organic consumption. In the UK, organic food is considerably more expensive than non-organic and I think we would not see the same frequencies among the less well off. I wonder if the authors could explain the use of organic products in Norway. Would they be organic because there is a large rural community consuming locally- or home-grown produce that is cheaper? Some context would be helpful. It might indeed contradict my concern that this paper has an element of tautology about it.

5. I also think a table summarising the characteristics of the population would be helpful. There is a large table in reference 22, but readers should not have to look up another paper, and a smaller summary table would help set the study in the context of other studies.
In summary, I have some concerns about the analysis of the data and the presentation of the results. The message is not clear and it is quite hard for the reader to follow some of the information. Addressing the points above, would, I hope, help to clarify the paper.

Hazel Inskip
18/10/11

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests