Reviewer’s report

Title: Alcohol consumption, body mass index and breast cancer risk by hormone receptor status.

Version: 3 Date: 4 May 2015

Reviewer: Emma Miller

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Title: Alcohol consumption, body mass index and breast cancer risk by hormone receptor status: Women’ Lifestyle and Health Study

General comment:

This is a well written paper on a topic of increasing health interest. I do have a small number of concerns about some aspects of the methods, and presentation of results as follows:

• Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

1. In regard to alcohol, most importantly, I am not sure that consumption data taken at entry in early 1990 provides evidence of sustained drinking practices over time. As is well known, alcohol behaviours may change considerably over time. If alcohol data were collected at follow up and/or this has been explained in a previous report, it should be restated here for clarity.

2. The ‘Results’ section is very (perhaps overly) succinct and many of the findings on which the subsequent conclusions are based are either not presented in this section or are referred to but not fully described. e.g. SHBG by BMI (line 186 in ‘Discussion’) isn’t mentioned in the ‘Results’ section.

3. The rationale for categorising consumption of alcohol is discussed as a mathematical function (i.e. based on frequency distribution) but doesn’t seem to be meaningful in terms of population risk. It would be helpful to link this to the Swedish recommendations for alcohol consumption. In Australia, for instance, a ‘standard drink’ is 10g of alcohol and the recommendation is for 1 or less standard drinks per day in women. Categories of consumption might then be based on the prevailing understandings of risk.

From line 143, it is stated that the proportion of BMI >25 was greatest in non-drinkers. While this reflects the analysis presented in Table 1, it is important to note that there was essentially no difference in BMI across the other categories of drinking (in the same table). This suggests that the alcohol consumption data, at least for BMI, could be dichotomised as ‘drinks’ and ‘doesn’t drink’. Yet, from line 147, the median consumption of alcohol is used and the differences again make me question the rationale for the categories of consumption used in the initial analysis and as presented in Table 1.
4. In line 144, the patterns seen in Table 1 per alcohol consumption are listed but not later discussed or explained in the ‘Discussion’ section. Some of these ‘trends’ are very slight (and no indication of significance testing is provided) and some are not mentioned (e.g. the apparently increased proportion with Br Ca history in mother or sister in the highest category of drinking!).

5. The discussion was coherent and well-written, although it seemed that some of the conclusions flowed from findings that were either under reported or not reported at all in the ‘Results’ section (see line 186). For instance, further discussion and/or explanation of the findings presented in Table 1 is required here and whether they are consistent/inconsistent with the literature etc.

6. From line 213, the strengths of the study are reported but no limitations (with the exception of a brief mention on line 196 about low statistical power) are discussed or how these limitations were addressed or otherwise mitigated.

7. Table 2 presents breast cancer risk by hormone receptor status according to alcohol consumption. The small numbers involved render much of the analysis difficult to interpret and it is not surprising that it was not possible to demonstrate significant differences. Yet, a consistent pattern seems apparent for higher risk in increasing alcohol consumption. It again makes me question the meaningfulness of the alcohol consumption categories used.

- Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

8. Table 1 has a row for alcohol consumption per day which seems odd when the analysis is stratified according to the column headings of alcohol consumption per day.

- Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

9. The term ‘subject’ is used quite often throughout this paper. It would be preferable if ‘participant’ was used instead.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests’