Reviewer’s report

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

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Reviewer: Nirmala Pandeya

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In this manuscript, the author has assessed the association between breast cancer outcome and alcohol consumption in a cohort of 30-49 years old women enrolled in the Swedish Women’s Lifestyle and Health study. The complete follow up of breast cancer outcome during 17 years of follow up was done through data linkage to national registries. Poisson regression has been used to estimate the relative risk of breast cancer associated with alcohol consumption and the effect modification on this association by BMI status has been assessed.

1. I understand with the word limit restriction, including great details of data collection and derivation in a single paper is difficult and for that reason the author has cited the previously published paper. However, given this manuscript is focused on association between alcohol consumption and breast cancer, I would expect at least detailed information on alcohol and BMI data collection and derivation without having to pull out the previously published paper.

2. The authors describe use of Poisson regression model to estimate the relative risks. It is unclear what the author meant by “Age was used as a main time scale variable in the analysis”. Has the age been used as a denominator person time in the Poisson regression?

3. For the adjustment for confounding effect, the author mentioned adjusting for variables that are highly correlated such as menopausal status and menopause age; parity, age at first birth and breast feeding duration. It should be clearly stated how the author handled the multi-collinearity problem while adjusting for correlated variables simultaneously.

4. The use of time varying variable for menopausal age is not clear. Menopause is one-time event and does not vary with time unlike other time varying covariates. It is not clear how the menopause age was handled as a time varying variable and what was used for those without a menopause?

5. Table 3 presents the RRs for breast cancer by BMI status. Although it appears as a BMI stratified analysis, based on the reference group of <=25 kg/m2 for all estimates (in two BMI columns), it seems the authors have used cross categories of BMI by alcohol to obtain the RRs. The methods should clearly state whether that was the case. Also not clear how the interaction was assessed in the model and how the interaction P values were obtained.
6. Based on the alcohol data description on the cited reference, it appears the alcohol consumption was the current consumption reported at baseline and does not consider participants past alcohol consumption or their lifetime consumption which may vary and have an impact on the association between alcohol and breast cancer. The author should state this as the limitation of the study.

7. The authors mentioned the use of spline model to assess for the non-linearity in the estimate, it would be good if they could provide the plot produced by this exploratory analysis in the appendix.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests