**Reviewer’s report**

**Title:** Obesity and breast cancer outcomes in chemotherapy patients in New Zealand – a population-based cohort study

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**Reviewer:** Joanne Kotsopoulos

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BCAN-D-17-00920

Obesity and breast cancer outcomes in chemotherapy patients in New Zealand - a population-based cohort study.

J. Mark Elwood; Sandar Tin Tin; Marion Kuper-Hommel; Ross Lawrenson; Ian Campbell BMC Cancer

The current study is a well-powered and robust analysis of obesity and breast cancer outcomes, as well as overall outcomes, among breast cancer patients from New Zealand. The authors describe the methodology quite well, along with the statistical analysis; however, the discussion lacks from critical interpretation of prior studies as well as of their findings.

Some specific comments are as follows:

1. **Introduction:** although referencing a meta-analysis is a simple way to summarize prior findings, there needs to be more focus on key findings from the larger/well-designed studies and the existing literature surrounding why obesity might impact prognosis.

2. **Results:** the tables and figures are well displayed; however, the paper refers to single factor HR’s while the tables refer to Crude HR’s. This should be consistent, and the Crude HR should be replaced with age-adjusted HRs.

3. **Results, Figure 2:** did the frequencies differ by ethnicity? If yes, can you please provide p values?

4. **Results, Figure 3:** the authors should show the risk estimates and p-values and provide more description on what is being displayed in this figure. Also, some more discussion
and interpretation of these estimates is needed in the text; particularly given the impact of low BMI on favorable outcomes. This should not be ignored.

5. Results, Tables/Figures: a little more information in the legends are needed to ensure these are stand-alone documents. For example, what are the adjusted HRs adjusted for?

6. Results: where are the results for the subgroup analyses? I especially think the analyses stratified by ethnicity are important to show and discuss. What about the pre- vs post-menopausal analyses? Given the literature showing menopausal status as an effect modifier, why was this not discussed further?

7. Discussion: The authors discuss prior findings; however, they do not critically discuss key findings from the larger, more impactful studies. It would be helpful to the reader to understand the landscape of the current evidence regarding obesity and breast cancer outcomes. Also, there is no mention of mechanisms mediating such associations.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

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