Author’s response to reviews

Title: Years worked at night and body mass index among registered nurses from eighteen public hospitals in Rio de Janeiro, Brazil

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Author’s response to reviews:

Thank you very much again for your valuable comments. We are pleased and have the impression that our manuscript has improved. You find our answers to your comments and suggestions below, point by point. Revisions were incorporated directly into the revised version of the manuscript. All new changes are highlighted in red.

Kind regards.

Reviewer #2: Sampsa Puttonen

Minor Essential comments:

1. Page 5 line 108-115: I did not understand the first sentence. Rephrase it and describe more in detail the working time arrangements. Include the following information to the text: Proportions of participants working a 12-hour shifts among day and shift workers; How many consequent night shifts the participants worked.

We agree with the referee as regards the first sentence. We rewrote the items Measures and Exposure variable so as to clarify the text (page 5-6, lines 107-124). However, the main variable in this study is related to the exposure to night work (years worked at night). Therefore, the current proportion of day- and night workers does not seem to be relevant for the present study. Similarly, the number of consecutive nights, which may have varied along the years of exposure to night work, is not relevant for the study, as our objective is related to the duration of exposure to night work (at least once a week).

2. Results line 184: “Full adjusted regression models found positive, independent associations between years worked at night and higher BMI levels for both women and men.” line 197 “The final model considers all covariates…”

The difference between these two models is not clear. Add references to the
specific models to clarify this (Eg. model x in table 3). line 205: “ Figure 1 presents the predicted BMI over years working as nurse by gender and years of night work. The estimated average BMI was 24.7 kg/m2 [range, 24.3 25.2] for those women who did not work at night during 15 years”. I did not understand where the expression “during 15 years “comes from. You did not explain or introduce this in the methods. Clarify and change this.

We agree with the referee. We rewrote all results of adjusted regression models (page 10, lines 221-237) and explained in methods (page 8, lines 178-183)

3. Title and the data of figure 1 are not fully in line with each other. You did not use full data on exposure to night shift work. Why? Choosing data from 10 years onwards is both unintuitive and puzzling. The picture shows that after 10 years of exposure to shift work no visible change towards an increase of obesity in shift work compared to day work occurs in women. This conflicts with the main results. OR all change towards obesity in relation to shift work has occurred before 10 yrs exposure (which I think is not a likely explanation). In any case the figure fails to show the main result of the study. You need modify the figure so that it gives the change of BMI (that is adjusted for BMI at 20 yrs) in the four groups additionally adjusted for covariates. Or you can use some other valid method to depict your main findings.

We made a new figure and rewrote the results to clarify the main idea of predicted BMI according of years of exposure to night work among women and men (page 10, lines 225-237).

4. The text includes many unclear sentences. Check the text carefully for semantic and language errors (e.g. page 11 line 245 ) “We included sex interaction test, and we no significant difference was observed.” page 11 line 245 . “However we maintained analysis stratified by sex, because the absence of statistics evidence does mean no gender difference”. I fail to see the logic behind this. You tested for an interaction between sex and working time and found no significant effect. This means that there are no significant sex differences. I suggest that you make reference to earlier findings showing a sex difference to motivate the sex specific analysis. Also, add that overall the findings for men should be interpreted with some caution due to the rather low number of male participants in the study. You mention this a bit later in the text, but the low number of male participants may have affected the reliability of the overall findings in men not only in the adjusted analyses you mention. I advise you to modify the text accordingly.

We explained the reasons why gender-stratified analyses were carried out, despite results of interaction tests. We also recognized the limitation derived from the small size of the masculine sample in all analyses (please, look at page 8, lines 172-177).

5. You have provided references (45- 47) showing the validity of self-reported BMI. Correct me if I’m wrong, but these references do not assess the validity of RETROSPECTIVE self-report of BMI. It is not enough to show that concurrent self-rated measure of BMI is reliable; the question is whether retrospective
ratings are reliable. If there is no data on this you need to say that openly and consider whether it may have affected your results.

We included a reference (46) that shows results about reliability of weight at age 20 and we improved the text (page 14, line 327-332)