Reviewer's report

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

**Version:** 3  
**Date:** 20 October 2014

**Reviewer:** Sampsa Puttonen

**Reviewer's report:**

Thank you very much for your responses and modifications you made to the manuscript. I think the manuscript has progressed much. I still have some issues that I feel need to be addressed, however.

**Minor Essential comments:**

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.

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.

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.

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.

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 you results.

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

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

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests’