Reviewer's report

Title: Night work duration and body mass index among registered nurses from eighteen public hospitals in Rio de Janeiro, Brazil

Version: 2 Date: 19 August 2014

Reviewer: Sampsa Puttonen

Reviewer's report:

Thank you for this interesting and well-written study. Although the study is cross-sectional and relies on self-reported data, the aim to assess cumulative effect of night shift work on BMI is welcome. Focusing on a homogenous and large group of workers (nurses) and the use of several covariates may reduce confounding due to socioeconomic and other factors known problematic in shift work research.

Major Compulsory Revisions

Clarity how earlier shift workers were treated in the analysis. In page 11 you write (last para) “.. group consisted of night and day workers, with the latter group sub-divided by previous experience in night work”. This is rather puzzling and not in line with earlier writing in methods.

You spend quite a lot of space to discuss sex differences. As you mention the number of men is rather small (e.g. only 33 day workers). I think that the question of sex differences cannot be very reliably studied in the dataset. In addition, it appears that you have not tested whether significant sex differences exist : do the regression lines (slopes) differ significantly between men and women and do you see possible interaction of sex in predicting BMI?

Diet is a relevant mediating factor between shift work and obesity. However, the lengthy discussion on eating habits /rhythms goes a somewhat beyond the results of the study. You included several possible behavioral mediators of effect in the analyses, but not eating habits. Do you think that lack of measure on diet can been as a slight limitation to the study? I suggest that you put more emphasis on earlier studies between shift work and obesity in the discussion.

You do not make reference to the Figure 1. I received a version with two copies of the figure in the end of the document. I do not see the figure as of being very informative (see my earlier comment on low number of men and lack of testing sex differences). I think that a figure showing the regression lines for day and shift workers would be more informative.

Finally, discuss the reliability of self-reported BMI.

Minor essential revisions

Measures. Describe more in detail shift arrangement of the nurses in the study. Classification of working times also needs more specification “a night shift was
considered working at night at least once a week or 4 times a month 12-h shift. It appears that all night shift workers did 12-hour shifts but what were the working times of day workers? Were all participants full-time workers? If a person did less than 4 nights per month was he/she coded as a day worker.

Results first para. \(\pm\) values after the means. Are these SDs?

End of third para of Results, reference to table 3 -> table 4.

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

**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