Reviewer's report

Title: Associations between overweight, obesity, health measures and need for recovery in office employees: a cross-sectional analysis.

Version: 2 Date: 6 November 2013

Reviewer: Karen Lamb

Reviewer's report:

Thank you to the authors for their thoughtful responses and for clarifying the issues raised in the previous review. I have some further suggestions and queries regarding the manuscript.

MAJOR COMPULSORY REVISIONS

1. Dependent variables

Regarding previous review comment:
"Secondly, you describe a dichotomy for the NFR score, grouping individuals into low or high and only present descriptive statistical information for NFR based on this dichotomy, not for the whole scale. However, you mention that you use linear regression to conduct the analysis which leads me to believe that you treated NFR as a continuous outcome variable. If NFR was indeed treated as a continuous variable in the analysis, please add further clarification in the text as Table 2 makes it appear that the dichotomy was adopted. Also, did the NFR scale follow a normal distribution, meaning the assumptions necessary for the linear regression were valid? Please provide detail on how you verified the assumptions."

Thank you for your response to this query. Considering that all regression modelling was conducted using NFR on the continuous scale, I am not sure how useful Table 2 is. I would suggest either adding further discussion on the examination of categorical NFR if this cut-point is of clinical interest and conduct adjusted analyses for this binary outcome or changing Table 2 to correspond to the formal regression analysis. For example, Table 2 could be changed to report the mean and SD for NFR by each of your categorical predictor variables and the correlation between the continuous measures and NFR as this will correspond with the analysis presented in Table 3. Alternatively, Table 2 could be removed altogether (and the mean NFR for each BMI category could be reported in the text) as your unadjusted analysis in Table 3 contains information about the relationship between continuous NFR and each predictor. As you do not continue to assess the dichotomised NFR in the analysis, I do not see that Table 2 adds much to the analysis or discussion.

2. Independent variables

Regarding previous review comment:
"Body mass index
I would suggest also considering BMI as a continuous predictor for NFR in the analysis. This would increase the sensitivity to detect differences. You mention in the discussion the difficulties with using BMI as a categorical variable so it would seem logical to consider BMI as a continuous predictor."

Thank you for your response to my query about BMI. It is still not clear to me, however, why you did not examine BMI as a continuous predictor in your analysis. While the WHO thresholds are commonly used, continuous measures are more sensitive and I would suggest using them where possible, particularly when you have the continuous information to hand. You state that you did not expect a linear relationship between BMI and NFR but did you examine the shape of the relationship between BMI and NFR? It may be that a different threshold, rather than the WHO BMI thresholds, may be critical for determining when BMI has an impact on NFR. Did you look at scatterplots of the two continuous measures or attempt to model the relationship between the two continuous variables in any way?

I see that you have changed focus to overweight and obesity and was wondering if you had conducted a sensitivity analysis to see how changing the thresholds adopted for the categorical variables affected the conclusions reached (e.g. did you compare overweight/obese to normal in dichotomy as this is often conducted when considering BMI or did you compare obese/normal & overweight)?

3. Significance level
You state that “The level of significance was set at p<0.05”. However, you consider multiple tests in this analysis and thus an adjustment for multiple testing should be considered.

4. Results
Regarding previous review comment:
"The results section needs a bit of work to clarify the findings of the study. You put more emphasis on ‘significant’ results than you perhaps should given the fact that p-values are on a continuous scale and that a p-value of 0.05 is simply an arbitrary threshold. In the adjusted analysis of BMI and NFR, the lower confidence limit for obesity is 0.01 and the strength of the association is substantially reduced after adjustment (p-value increased from 0.005 to 0.05). You should highlight this feature and not overstate your findings."

Again, to avoid overstating the findings, I would suggest rephrasing this statement “This finding suggests that obesity as compared to normal body weight is associated with a higher NFR”. After taking multiple testing into account, p=0.05 would not be statistically significant. I would also rephrase the abstract with this point in mind. I don't think the results on obesity are as conclusive as the descriptions imply.

Did you also consider whether or not differences existed between the obese and
overweight group? The unadjusted analysis seems to suggest there may be a
difference. Did you formally test this?

5. Sample size
You state that 412 employees signed the consent form. However, in Table 1, you
have some sample sizes of 413 and 414. Shouldn't these all be 412 (or fewer)? It
is not clear how you dealt with missing data. Was all missing data across all
covariates of interest removed prior to conducting the formal analysis to ensure
comparable samples?

MINOR DISCRETIONARY REVISIONS
1. General health and mental health
Regarding previous review comment:
"You mention general health twice in the methods- once as a health measure to
be investigated and once as a potential confounder. It is not clear to me how
these two measures differ or what the definition is of the general health measure
in the potential confounders section. I believe that the first health measure is a
perceived measure so perhaps the second measure is more objective. However,
if the data are from self-reported questionnaires, do these two measures differ
greatly? Further detail is required of how the general health confounder is
defined and how similar it is to the perceived measure."

Thank you for the clarification on this point. As both measures of general health
are the same, I think you need to be more explicit in the text about this. I would
perhaps consider rephrasing the Potential Confounders section to state the
following:

General health, described previously, was included as a potential confounder of
the relationship between overweight and obesity and NFR. Literature shows that
obesity and general health are related [41-43].

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

Quality of written English: Acceptable

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.