Reviewer’s report

**Title:** The impact of sitting time and physical activity on major depressive disorder in South Korean adults: A cross-sectional study

**Version:** 1  **Date:** 04 Apr 2017

**Reviewer:** Cris Glazebrook

**Reviewer's report:**

The authors have responded to most of my concerns but there are still a few comments which I think the authors have misinterpreted. I have tried to make these points clearer and I don't think it should be too difficult to address them.

Comment 2: Abstract needs to make clear that Physical Activity (self-reported high or low PA) was unrelated to MDD in the total group or in males or females. Reporting of interaction between sitting and PA and gender very confused. Ignores that for women it seems that high physical activity with high sitting increases risk of MDD.

Response: You raise a very valid point about the interpretation we employed in our original submission. As per your advice, we have revised our sentence in the manuscript (abstract section, line 39-42, page 2).

My response to response: The authors have still left out the point that for women sitting time is only related to MDD where women are active. In the active group of women sitting more than 10 hours a day increases the risk of MDD (OR=2.27). This is in contrast to men where the risk is in the low active group. This is discussed in the discussion but not reported in the results. (The results (p8 line 175-179) say the analysis assessed the relationship between MDD and sitting according to PA but the relationship with PA isn't stated). They have also left out the point that in the logistic regression PA is unrelated to depression. The abstract conclusion (and the discussion) state that lack of physical activity was associated with great risker of MDD and concludes the need to increase PA.

Comment 3:

My response to response: The authors' response is helpful. Line 60-61 just needs rewriting. ie "The relatively fewer expressions for depressed mood in Asian populations may have resulted in under-reporting of depressive disorders"

Comment 4
My response to response: I understand that the authors have to leave out people with incomplete data. That wasn't really the point I was making. I am worried the reported very high (77.8%) response rate is misleading for a number of reasons. For example it includes people not eligible for the study (people <20 years). What we need is to know is

1) How many people in the study age range (ie >19 years) were surveyed in year 1 of the survey - this is the total potential population

2) How many of those in age range responded to year 1 of the survey

3) How many of those who responded in year 1 responded in year 2

4) How many of those who responded in year 2 responded to this study

5) How many of those were excluded for missing data.

Comment 10

My response to response: Although the statement that MDD was higher in those who had lower physical activity has now been removed, both the abstract and the conclusion still state that lower PA is associated with higher risk of MDD.

Comment 16: As this is a cross-sectional study we have to consider that it is very likely that people with major depression (or at least more depressive symptoms) sit more. Regardless of the direction of the association, one important message could be that people with depression may have poorer physical health because of their sedentary lifestyle. This is a good justification for trying to reduce sitting time in people with depression.

Response: Thank for you providing your meaningful ideas. We agree with your opinion and have already described that point in our discussion section (line 214-216).

My response to response: The authors say they have already made this point but I can't see it either in the old or new version. I was trying to say that although we can't tell if sitting causes depression or depression causes sitting it is still an important finding because it suggests that people with depression will have more of the health risks associated with sitting and will benefit from less sitting even though reducing sitting won't necessary improve mental health.

**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.

No

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.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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