Reviewer’s report

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

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Reviewer: Cris Glazebrook

Reviewer's report:

Although the study has a number of strengths (large sample, validated measure for depression) there are a number of limitations and the results are sometimes difficult to follow.

Abstract

Line 39 Should be less <5 hours not <4 hours?

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.

Introduction

This is a cross-sectional study when aims to explore relationship between sitting time and major depressive disorder (MDD) in a South Korean population. It is reasonably well written and confirms previous research suggesting an association between time spent sitting and poorer mental health.

Previous cross-sectional research has established an association between sedentary behaviour and depression. The novel aspects of this research are identified as the sample (a representative South Korean population) and using total sitting time rather than specific sedentary activities such as TV watching.

The introduction would benefit from more background on mental health in South Korea. High rates of suicide are mentioned but not prevalence of MDD. Also the literature on the potential interactive effects of sitting time and physical activity is not covered (but explored in the results) nor is there consideration of the different contexts for sitting behaviour (eg sitting at work vs tv watching at home).
At first sight the study seems to have a highly representative sample (77.8% responded). However, roughly 15% of those eligible for this study had missing data and were excluded which reduces the representativeness of the sample. More concerning is that this sample was made up of people who had responded to an earlier survey. I am not clear, therefore, how representative they are of the whole population.

Method

I am not really clear why a cut-off of 8 was used to classify depression. Whilst a lower cut-off may achieve greater sensitivity, in this type of research specificity is important. Previous research with this same sample (Lee et al 2016) used the recommended PHQ-9 cut-off of 10 and found a prevalence of 6.6% in this population. Bromet et al (2011) suggest that we should expect a 12-month prevalence rate of 5.9% in low to middle income countries. The prevalence of depression is not reported (thought it should be) but my estimate from the figures in table 1 suggests a 2-week prevalence of 10% for major depressive disorder which is high given that the lifetime prevalence world-wide is 11-15%.

There needs to be some consideration of the validity of the outcomes. The sitting question is very broad and asks for a typical day. The recommendations for the activity questionnaire are to ask for the previous 7 days. Some research has suggested that weekend inactivity is a better marker for depression than weekday sitting in employed people (Puig-Ribera et al 2015). Obesity is not classified correctly - 25 Kg/m2 is the cut-off for overweight. It should be 30 Kg/m2 for obesity.

Results

Lines 150-151 States men more likely to sit for more than 11 hours than women (Table 1 appendix) but I can't see that statistical analysis. What you can see from that table is there is a relationship between higher sitting time and depression for women but not for men. The results are very difficult to follow and I don't think that point is clear.

Lines 158 to 161 - I am not clear where these findings have come from or how it has been analysed.

Line 161 states that risk of MDD was higher in those who had lower physical activity - but this not a significant finding and so this comment is confusing. Low PA does not increase the risk of MDD.
Lines 165-172 discuss figure 1 which looks at the relationship between sitting time and MDD according to PA (low or high). Strangely the results are not presented in relation to PA and it's not clear what the point is.

There is a typo on the figures in figure 1. I think it should be =>150 not =<150. It looks like that for men having low levels of PA and sitting a lot really increase the odds of MDD but for women those high levels of PA plus high levels of sitting seem to have higher risk.

Discussion

Line 177 - Grammar needs attention. Not sure what point is being made here in relation to findings

Line 203-205 There was no significant relationship between high sitting and MDD for women in the low activity group so it's confusing to state there was a relationship.

Lines 225-227 It is not surprising that high levels of sitting is associated with lower levels of PA.

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.

Limitations should include validity issues with self-report measures of physical activity and sedentary behaviour. Sitting time was assessed with one question which asked about a typical day. It did not distinguish between work and non-work days (see above).

References


Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

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