Author’s response to reviews

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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Dear Reviewers and Editor,

We sincerely appreciate your valuable comments and suggestions regarding our manuscript. Herein, we have revised the manuscript accordingly. Detailed revisions are highlighted in yellow in the text, and listed below in a point-by-point manner. We hope that our revisions have improved the paper such that you now deem it worthy of publication in BMC Psychiatry. Please find detailed responses to your comments below.

RESPONSES TO REVIEWER #1’s COMMENTS:

Comments 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.

Response: Thank you for your valuable comments. We have added our sentences in the manuscript (abstract section, line 43-45, page 2; result section, line 172-173, 179-180, page 8-9). Added sentences are as follows:

Sitting for long periods with lack of physical activity was associated with great risk of MDD in South Korean adults. Therefore, reducing sitting time and increasing physical activity are needed for alleviation of MDD.

Moreover, regarding PA, risk of MDD was not a significant association both men and women. Women who sat for > 10 h/d were at greater risk of MDD compared to those who sat for <5 h/d (OR: 2.27, 95% CI: 1.23–4.21)

Comments 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"

Response: Thank for you providing your meaningful comment. We have revised the part you mentioned in the manuscript (background section, line 60-61, page 3). Revised sentences are as follows:

The relatively fewer expressions for depressed mood in Asian populations may have resulted in under-reported of depressive disorders

Comments 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.

Response: Thank you for your comment. You raise an important point with respect to co-authorship over time. In fact, there were some mistakes about translation in our manuscript. KNHANES is a nationwide cross-sectional survey conducted every year, and each survey year includes a new sample of about 10,000 individuals aged 1 year and over. Therefore, respondents in year 1 and in year 2 were not same people. This study did not include respondents in year 1. The second year (2014) of the sixth KNHANES survey included a new sample of 9,701 individuals, but the final respondents were 7,550 individuals so a response rate in 2014 was 77.8%. We are sorry that made you confused as insufficient explain and invalid number. Now we explain how we include a study population just 2nd year of 6th KNHANES and have revised our sentences in the manuscript (methods section, line 97-100, page 5).

* The total potential population was 5,897 individuals aged >19 years in year 2 (2014) of the 6th KNHANES.

* The age range of respondents in year 2 of the 6th KNHANES before excluding missing data.

Age(N)
20-29 years (611)
30-39 years (1032)
40-49 years (1035)
50-59 years (1134)
60-69 years (1010)
70+ years (1075)

* We have excluded those who had been diagnosed with cancer (n=114) and those who had no information regarding depressive symptoms (n=1011), sitting times (n=61), or covariates (n=1306).

Data for individuals who were younger than 19 years of age (n = 1,653) or had been diagnosed with cancer (n = 114) and those for whom no information regarding depressive symptoms (n = 1,011), sitting times (n = 61), or covariates was provided (n =566) were excluded from the study.

Comments 10: 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.

Response: We apologize for the confusion. We have revised our sentences you mentioned (abstract section, line 43-44, page 2; conclusion section, line 281-282, page 13)

Sitting for long periods with lack of physical activity was associated with great risk of MDD in South Korean adults.

Moreover, sitting for long periods with low PA levels were associated with high MDD risk.

Comments 16:

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.

Response: We apologize for the confusion. We absolutely agreed with your opinion but we had omitted that sentence. Now we have described that point in our discussion section (line 250-252, page 12).

As a result, people with depression might have poorer physical health because they were more likely to choose a sedentary lifestyle due to their depressed feeling, fatigue, or evasion of social interaction.
Again, we appreciate all of your insightful comments. We have tried our best to respond appropriately. Thank you for your time and efforts to help improve the quality of our paper.