Author's response to reviews

Title: National survey of the association of depressive symptoms with the number of off duty and on-call, and sleep hours among physicians working in Japanese hospitals: a cross sectional study

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------Responses to the Reviewers------

[RESPONSES TO REVIEWER 1]

1. grammatically, use of "sleep" rather than "sleeping" would be better throughout the manuscript.

   Thank you for your comments. We revised accordingly.

2. Reference for page 4 Quick Inventory of Depressive Symptomatology

   We are sorry but we cannot understand what is required here. Page 4 is the abstract, so we are not able to use a reference.

3. Ethics section should make note of the consent process

   We revised as follows; Ethics:The Human Research Committee at the Institute for Science of Labour gave approval the study protocol prior to it being conducted. Since the questionnaire was in an anonymous form, we assumed that participants agreed to participate in our study by returning their questionnaire.
[RESPONSES TO REVIEWER 2]

This is an important study with significant findings and implications for physician well-being. It demonstrates a clear association between symptoms of depression and an increased burden of physician work hours. The size of the survey is impressive and lends weight to the results.

Minor Essential Revisions
1. In Table 2 “number of days of overnight works per month” should read “work.”

Thank you for your comments. We revised the text and table accordingly.

Discretionary Revisions.
1. Table 2 of odds ratios is the clearest representation of the results, however the selection of the work parameter that used to normalize the data (odds ratio of 1.0) is not consistent. For “days on call” and “days of overnight work” 0 was used as a reference and given an odds ration of 1.0. This seems appropriate. For hours of sleep on days not working the odds ratio of 1.0 is assigned to the category “6 to less than 7” which is the category with the least depressive symptoms. This also seems appropriate. For the “days off duty” parameter the “8 days or more” category should be assigned an odds ratio of 1.0 since this category has the least depressive symptoms. Choosing the category with the most days off duty would clarify the progressive increase in symptoms of depression with decreasing days off duty. I see no reason to pick “5-7 day” off duty as the norm.

Thank you for your comments. Usually, when comedicals in Japan are supposed to take 2 days off per week; however, 48% of our respondents took fewer than 4 days off per month. As an additional step, we would like to encourage physicians to take more days off in the near future; up to 5 to 7 days. Thus, we chose 5 to 7 days off per week as a reference. We also would like to show that 8 or more days off, which are ideal, could be a factor preventing depressive symptoms.

We added the following in the Discussion section: “In our analysis we chose 5 to 7 days off as the reference because we would like to encourage physicians to take more days off. This was prompted by the fact that about 50% of our respondents took fewer than 4 days off per month. We also stressed that 8 or more days off per month, which are ideal, could be a factor preventing depressive symptoms. Arrangements need to be set in place so that physicians can take more days off.”

2. The discussion should note that the “off duty sleep duration” could represent a symptom of depression (insomnia or hypersomnia) rather than be causal. This would fit in the section discussing limitation.

Thank you for your comments. We added the following limitation; “Third, average sleeping hours were less than 5 hours for days that were not worked overnight; this could have been reflected in depressive symptoms.”
3. Reference 30 (Iglehart 2008) cites the IOM recommendation that call be no more frequent than every third night and no fewer than 5 days off duty per month. In the authors results these work parameters were associated with increased risk of depression. The authors could comment that these recommendations would still result in an increased risk of depression and may not be strong enough.

According to our results, physicians who took no days off had a higher risk of depressive symptoms, and this accorded with the IOM recommendations. Our results also showed that physicians who were on-call more than 5 days per month had a higher risk of depressive symptoms, which did not accord with the IOM recommendations. However, the IOM reports were for medical residents who are younger than our study participants, who were mainly senior physicians. That might be the reason why the recommendation of the IOM did not accord with our study regarding the on-call situation. Further studies are needed about working-hour restrictions for senior physicians.

4. Each of the respondents had a Quick Inventory Depressive Scale score (1-27) which was used to place them in the categories of “without depressive symptoms” or “with depressive symptoms.” Reducing the score to the two categories results in a loss of information detail. A data analysis using the numerical scale score could reveal additional results. Specifically information about the severity of the depressive symptoms might be interesting. The group of physicians falling at the upper range (severely depressed) would be particularly worrisome. The current analysis is certainly adequate (with important findings) but the authors could consider looking at a regression analysis using the scale scores.

We performed statistical analyses using both logistic regression and multiple regression; we chose logistic regression analysis for this manuscript. We are preparing another manuscript that uses regression analysis for a different research question. Thank you for your comment.

5. In the first paragraph of results section, the phrase “refused to answer” implies the respondents had some objection to the study. The reasons given suggest that they are not currently practicing so that terms such as “not appropriate” or “not applicable” would be more accurate.

We revised the results section as “and 176 replied but did not answer the questionnaire because they were not suited for this study.”

6. It would strengthen the article to discuss the link of depression to poor job performance. Calls for changes to improve physician well-being (such as resident work hour limits in the U.S.) are often blocked by assertions that patient outcomes are not affected. There is abundant literature linking fatigue with performance deficits. More recent literature connects physician well being to patient outcomes (such as Shanafelt TD, Balch CM, et.al., Burnout and Medical

Thank you for your suggestions. We revised the part of the discussion as follows;”’ With regard to patient safety, there have been some studies showing that burnout and fatigue, which also could represent a symptom of depression, are associated [23.24]. Adler et al. indicated depression could affect job performance [25] Since a number of physicians in Japan were found to have depressive symptoms, it will necessary to provide services to support such physicians for their and their patients’ safety.”

We greatly appreciate the comments of the editor and the reviewers. Their efforts have helped us to improve our paper. We hope the revisions have acceptably addressed the issues raised and that the manuscript is now suitable for publication.