Author’s response to reviews

Title: The mental health of neurological doctors and nurses in Hunan Province, China during the initial stages of the COVID-19 outbreak

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Author’s response to reviews:

Dear Editors and Reviewers:

Thank you for giving us the chance to revise our manuscript "The mental health of neurological doctors and nurses in Hunan Province, China, during the COVID-19 outbreak" (BPSY-D-20-00243R1). We are truly grateful to the reviewers’ critical comments and thoughtful suggestions. According to these comments and suggestions, we have made careful modifications on the original manuscript. In the revised version, all changes made to the text descriptions are in red color. Below you will find our point-by-point responses to the reviewers’ comments. Attached please find the revised version, which we would like to submit for your kind consideration.

We would like to express our great appreciation to you for comments on our paper. Looking forward to hearing from you.

Thank you and best regards.

Yours sincerely,
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Reviewer 1:
Thank you for inviting me to review this paper. I have the following recommendations. I am happy to review this paper again after amendments.

1. Under the Introduction, the authors mentioned "while transmission via the fecal-oral and the aerosol routes remains ambiguous [11-13]." A significant number of Chinese believe in airborne transmission. Please add this mode of transmission:
   while transmission via the airborne, fecal-oral and the aerosol routes remains ambiguous [11-13, Wang et al 2020]

Reference
Response: There are many studies demonstrate that airborne transmission is a potential and important route, precautions should be taken especially in specific circumstances and settings in which procedures that generate aerosols are performed. We have included in our introduction.

2. The authors stated the following statement:
The experience with SARS indicated that the prevalence of psychiatric morbidity, such as fear and anxiety, was high among medical workers, patients, and even the general public [18, 19]. To date, the psychological impacts of COVID-19 have remained unknown.

The above statement is inaccurate because the psychological impacts of COVID-19 has been researched. Please include the following landmark papers:

Key findings to be included:
This study included 1210 respondents from 194 cities in China. In total, 53.8% of respondents rated the psychological impact of the outbreak as moderate or severe; 16.5% reported moderate to severe depressive symptoms; 28.8% reported moderate to severe anxiety symptoms; and 8.1% reported moderate to severe stress levels.


Key findings to be included:
This study found that there was a statistically significant longitudinal reduction in mean IES-R scores (from 32.98 to 30.76, p 24) for PTSD symptoms, suggesting that the reduction in scores was not clinically significant.

Key findings to be included:
The mean IES-R, DASS-21 anxiety, depression and stress subscale and ISI scores were higher in psychiatric patients than healthy controls (p < 0.001). Serious worries about their physical health, anger and impulsivity and intense suicidal ideation were significantly higher in psychiatric patients than healthy controls (p < 0.05). More than one-third of psychiatric patients might fulfil the diagnostic criteria post-traumatic stress disorder (PTSD). More than one-quarter of psychiatric patients suffered from moderately severe to severe insomnia.
Response: We apologized the omission of these important and landmark papers. We wrote the paper in March, 2020, at that time, there have been very few published studies on mental health related to COVID-19. We have cited these papers and also put forward our aim of this study.

3. Under discussion, the authors stated "Our study found that the SAS scores of the neurological staff was higher than the Chinese national norms". It is important for the authors to compare the prevalence of depression and anxiety with healthcare workers in other countries and other workers during COVID-19 pandemic. Please refer to the following landmark studies:

Key findings to be included:
Out of the 906 healthcare workers who participated in the survey, 48 (5.3%) screened positive for moderate to very-severe depression, 79 (8.7%) for moderate to extremely-severe anxiety, 20 (2.2%) for moderate to extremely-severe stress, and 34 (3.8%) for moderate to severe levels of psychological distress.

Key findings to be included:
We found that 10.8% of respondents met the diagnosis of post-traumatic stress disorder (PTSD) after returning to work. The respondents reported a low prevalence of anxiety (3.8%), depression (3.7%), stress (1.5%) and insomnia (2.3%).
Response: Thanks for your suggestion. We have compared our data with healthcare workers in other countries and other workers during COVID-19 pandemic in the discussion part.

4. Under discussion, the authors stated "It is difficult for neurological workers to differentiate and screen patients with manifestations of the neurological system as the initial symptoms without fever and pulmonary disorders, which may lead to inadvertent exposure of medical staff to the virus." It is important to mention other sources of stress reported by healthcare worker: inadvertent exposure of medical staff to the virus. Reasons for the fear reported by healthcare workers include reduced accessibility to formal psychological support, less first-hand medical information on the outbreak, less intensive training on personal protective equipment and infection control measures (Tan et al 2020).
Reference:

Response: We have added other sources of stress in discussion.

5. The authors should mention about psychological resilience:

Workers with psychological disorders can also use online psychological self-help intervention systems to reduce symptoms of anxiety and depression [23] and develop psychological resilience (Ho et al 2020).

Reference:

Response: Thanks for your good advice. We have added to our discussion.

6. I recommend the authors to add one additional limitation:

This study was limited by its use of the SAS and SDS to measure symptoms of anxiety and depression, which was different from a clinical diagnosis and did not measure severe psychiatric symptoms such as suicidal ideation or psychotic experience (Tan et al 2020).

Response: Thanks. We have added this point into the limitations.

Reviewer 2:
This study examines common psychological impacts of the current COVID-19 outbreak - depression and anxiety - among neurological workers in Hunan Province, China. The focus on neurological workers is compelling, given that most studies focus on front-line health care workers and the neurological symptoms increasingly noted among COVID-19 patients. However, there are several areas that require revision and clarification before publication, which are detailed below.

Abstract
1. In Background, it would be helpful to include information that helps make the case for why this study was conducted and what it adds to our knowledge / the literature. It seems like the study does more than just estimate prevalence of depression and anxiety among these health care providers.
Response: We have re-written this part according to the Reviewer’s suggestion.
2. Additional information is needed in Methods, including cutpoints for the SAS and SDS, the correlates examined, and the statistical methods utilized (briefly).
Response: Thanks for your suggestion, we have added additional information into the methods part.

3. The Results don't fully reflect the findings from regression analysis for both depression and anxiety.
Response: Thanks, we have added the important results from regression analysis in the new abstract.

Introduction
1. There are a few points that could be expanded upon, to more clearly make the case for this study. Please include additional discussion of the psychological impact of COVID-19 on health care workers. There has been quite a bit of literature now on this topic during the current pandemic, and the authors could also cite additional studies from the SARS outbreak. A more compelling case also needs to be made for the focus on health care workers in neurology. Why this particular population? There is some mention of their risk, if a patient presents with headache, but are there other factors to consider? Are these providers less likely to have PPE, or training in prevention of infectious disease spread? Much of this is raised in the Discussion, but could be included here.
Response: We have included other factors which could be contributing to infection among neurology medical workers.

2. It is my understanding that COVID-19 has led to stroke, as well. This may be something important to add, given the focus on neurological workers.
Response: There are several reports of COVID-19 patients presenting with stroke. It’s important to mention this point. We should remind medical workers keep an eye on COVID-19 patients with cerebrovascular diseases.

Methods
1. Please include additional information about participant selection. How were participants randomly selected for participation? Can the authors clarify what is meant by "randomly distributed"? Can the authors include the total number (approximate is OK) of neurology department doctors and nurses in Hunan Province overall? How many total surveys were distributed, and what was the response rate? Were doctors and nurses sampled separately? Is there a sense of how representative this sample is of all doctors and nurses in Hunan Province? Because the study focuses on prevalence, this is a critical issue.
Response: Given the fact that the investigation was performed during the COVID-19 epidemics, the quarantine measures demanded less face-to-face communication and contact. Therefore, an anonymous questionnaire was conducted on a non-commercial mobile app called “Sojump” (www.sojump.com). We distributed those questionnaires to neurological healthcare workers in Hunan Province via WeChat using snowball sampling approach. It's not strictly randomly methods. The total number of neurology department doctors and nurses in Hunan Province overall is about 7000. A total of 700 questionnaires were distributed. Finally, we collected 650 questionnaires, of which 612 were valid. Doctors and nurses were sampled together. These valid
questionnaires were collected from almost 100 hospitals from 14 cities in Hunan Province. There was not much difference of sociodemographic factors between the cities.

2. It would be helpful to include calculation of Cronbach's alphas to measure internal consistency reliability of the SDS and SAS in this sample.
Response: The Cronbach's alphas were 0.84 for SAS and 0.87 for SDS in the present study. We have included this data in Methods.

3. Did the study assessment household composition? If there are many people in the household, younger children, or older adults, this might contribute to anxiety around bringing the infection home. Did the study ask about previous mental health conditions?
Response: The household composition would be beneficial in analyzing potential anxiety factors. To be honest, we didn’t assess the household composition We have mentioned this aspect as a study limitation.

4. Logistic regressions were also used to identify independent risk factors for depression as well?
Response: Yes, logistic regressions were also used to identify independent risk factors for depression as well.

5. The authors state: "Significant variables identified by univariate analysis were then entered into the regression models". Did the authors mean those variable as associated with anxiety or depression in bivariate analysis? (this is also stated in Results on p. 4 line 28).
Response: Yes, that’s right. We are sorry for the mistakes. It should be ‘Significant variables identified by bivariate analysis were then entered into the multivariate regression model’.

6. Because the SAS and SDS are not diagnostic measures, I might define the outcome measures in this study as "probable anxiety" and "probable depression".
Response: We agree with you and have defined the mental health outcomes as "probable anxiety" and "probable depression".

Results
1. Please include p-values for bivariate results reported in the text from Tables 1, 2 and 3
Response: We have included p-value for bivariate results in the text.

2. What was the overall prevalence of anxiety and of depression? This is important to note.
Response: The overall prevalence of probable anxiety and depression is 16.3% and 25.0%, respectively. We have added this in the results.

3. The logistic regression analysis would be multivariate, not bivariate.
Response: We are very sorry for the incorrect writing. It should be multivariate logistic regression analysis.

4. What is the rationale behind presenting both depression and anxiety symptoms severity and depression and anxiety prevalence?
Response: We have defined the outcome measures in this study as "probable anxiety" and "probable depression" and remove the wrong statement of depression and anxiety symptoms.

Discussion
1. Several part of this section could be also mentioned in the Introduction, to better make the case for this study, e.g., the lack of PPE in neurology departments, these departments being high risk places for COVID-19 infection.
Response: Thanks for your suggestion, we have added these essential points in the Introduction.

2. Can the authors compare the prevalence of depression and anxiety in this study to studies of other health care workers? One might hypothesize that the psychological impact of COVID-19 would be somewhat lower in this population compared to front-line workers.
Response: We have compared the prevalence of depression and anxiety in this study to studies of other health care workers. The prevalence of depression and anxiety was lower in our study when compared with the pooled prevalence in healthcare workers from two meta-analyses.

3. Citations are needed to support the hypothesized explanations for greater anxiety or depression among women, nurses, and younger health care workers. Also, occupation and sex were not independently associated with the outcomes in logistic regression analysis.
Response: We have added citations to support our results. And more detailed discussion can be seen in the revised manuscript.

4. There are somewhat different results for depression and anxiety. Depression is also somewhat more common in this sample compared to anxiety. Was this expected? How does this compare to previous studies? Correlates also differ between depression and anxiety. This should be discussed.
Response: Depression is also somewhat more common in this sample compared to anxiety. This was as expected and supported by two recent meta-analyses. More detailed discussion can be seen in the revised manuscript.

5. A bit more can be said under Limitations. In what way is Hunan Province different from other populations in a way that would impact generalizability? Do the authors mean that this makes it difficult to compare findings to other studies, or generalize results to other populations? The correlates included were also not extensive and some factors identified as important in other studies were not included, e.g., history of mental health conditions, having high risk individuals in their households. Also, it should be noted that sample size was relatively small, which limits the study to a more descriptive focus.
Response: Thanks for your suggestions. Yes, you are right. Hunan Province is the province nearby Hubei Province, the epicenter of COVID-19 in China. There were more imported cases from Hubei province in Hunan than in other provinces in China. Our study just included healthcare workers in Hunan Province. Much more researches are needed to explore the mental health of healthcare workers out of front-line from other provinces and other countries. Other suggested limitations have been added to the limitations.

Tables
1. Table 2 is not needed. This information can be reported in the text only.
Response: We have deleted Table 2.

2. In Table 3, the "Numbers" column may not be needed, as this information is already presented in Table 1. Please include the overall prevalence of anxiety and depression in the sample.
Response: We have deleted the “Numbers” column and included the overall prevalence of probable anxiety and depression in the sample in the end of Table 1.

3. What does P for trend indicate in Tables 4 and 5? Please add this to the Methods and Results. I'm not sure that this is appropriate for some of the three-category variables, e.g., those with responses options of yes/no/uncertain. What trend?
Response: Sorry for this mistake. We have deleted “P for trend” in Tables, that is the result of a linear trend test in a regression model. As you indicated, P for trend is not appropriate here for three-category variables.

4. Tables 4 and 5 can be combined.
Response: We have combined these two tables. Please see the renewed Table 3.

5. In Table 4 and 5, it is unclear what the reference groups for each of the binary variables are.
Response: We have labeled the reference groups in renewed Table 3.