

Peer Review File

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Reviewer A

This study investigated the associations between particulate matter and CPAP adherence. It is an important contribution, and this paper can be published, but there are still several issues need to be addressed.

Response: Thank you for your appreciation in our work.

1. As stated by the author in the methods section, the study is described as a cohort study. Nevertheless, I did not find any follow-up information. I am inclined to believe that it might be more accurately characterized as a time-series study.

Response: Thank you for your advice. We changed it per your suggestion. Revised manuscript in the abstract section page no. 2, line 32, highlighted and in the methods section page no. 4, line 85, highlighted.

2. The author concurrently controlled for SO₂, NO₂, and O₃ in the model, potentially resulting in collinearity. Could you please provide the correlation coefficients among the air pollutants?

Response: Thank you for your advice. We added the correlation coefficients among the air pollutants per your suggestion. Revised manuscript in the results section page no. 6, line 130-131, highlighted and in the table 2. Additionally, the collinearity was checked and all variables in the model showed VIF < 5.

3. The author's stratified analysis, following the WHO air pollution guideline for PM_{2.5}, has caused confusion. It remains unclear why a comparable stratified analysis for PM₁₀ was not undertaken by the author. And why did the author only show the result of higher level of exposure, how about the lower level of exposure?

Response: Thank you for your advice. We deleted it per your suggestion for preventing the confusion.

4. I recommend incorporating a stratified analysis for both sex and age to provide a comprehensive examination of potential variations within these demographic factors.

Response: Thank you for your advice. We added a stratified analysis for both sex and age per your suggestion. Revised manuscript in the results section page no. 6-7, line 138-140, highlighted and in the table 3.

5. I recommend the inclusion of monthly data on CPAP adherence in Figure 1. This addition would improve the clarity of the time series trend analysis.

Response: Thank you for your advice. We added monthly data on CPAP adherence in Figure 1 per your suggestion. Revised manuscript in the Figure 1.

Reviewer B

The authors evaluated the effects of PM₁₀, PM_{2.5} on low CPAP adherence in subjects with obstructive sleep apnea (OSA) in Thailand. It added new information on the association between air pollution and CPAP adherence. Please see my comments as below.

Response: Thank you for your appreciation in our work.

Major comments:

1. The authors defined the study as a retrospective cohort (Line 32), however I did not find clear description of the cohort in the method section (e.g. the definition of follow-up period, inclusion criteria). This study used 2686 visits of CPAP compliance records from 839 OSA patients' computerized medical records. Therefore, I would prefer to describe it as a repeated measured study.

Response: Thank you for your advice. We changed it per your suggestion. Revised manuscript in the abstract section page no. 2, line 32, highlighted and in the methods section page no. 4, line 85, highlighted.

2. Statistical analysis:

Generalized linear model (GLM) was applied in the current study. I would suggest the authors using Generalized estimation equation (GEE) or generalized linear mixed model (GLMM). Both of them are more suitable for repeated measured outcomes.

Response: Thank you for your advice. We changed it per your suggestion. Revised manuscript in the abstract section page no. 2, line 39, highlighted and in the methods section page no. 5-6, line 111-115, highlighted. Additionally, the results and discussion were

changed

accordingly.

3. Definition of high and low pollution periods:

The authors used the annual average of air quality guidelines level of WHO guidelines (25 $\mu\text{g}/\text{m}^3$ of PM_{2.5}) as cut-off value. According to Figure 1, the majority of the monthly PM_{2.5} values were higher than 25 $\mu\text{g}/\text{m}^3$. Could you present the percentage of high and low pollution periods? If most of days fall into high pollution period, I don't think it's necessary to adopt this classification, not to mention the comparison between high and low pollution periods.

Response: Thank you for your advice. We deleted it per your suggestion for preventing the confusion.

4. The definition of PM₁₀ and PM_{2.5}:

The effect of PM₁₀ and PM_{2.5} were evaluated using data of lag of zero months.

(1) Monthly average PM₁₀ and PM_{2.5} would smooth out the peak of daily values. However, the acute effects of air pollution are more concerned in real life, if the data is available, I would like to suggest the authors assessing the association between daily PM₁₀ and PM_{2.5} and CPAP.

Response: Thank you for your advice. The monthly average of PM₁₀ and PM_{2.5} and monthly average of CPAP adherence were used for analysis in our study. Thus, we mentioned it in the limitation of the study. Revised manuscript in the discussion section page no. 8, line 168-172, highlighted.

(2) Lag effects: sensitivity analyses should be added focusing on the lag effects of PM₁₀ and PM_{2.5}.

Response: Thank you for your advice. The sensitivity analyses were added per your suggestion. Model calibration was evaluated using a calibration plot between observed (actual) risk and expected (predicted) risks were added. Revised manuscript in the methods section page no. 6, line 119-120, in the results section page no.7, line 141-142, highlighted, and in Figure 2.

5. Confounding factors:

In the limitation section, the authors stated "the the meteorological parameters including climate temperature, atmospheric pressure, rain, humidity, and wind speed were not

included as confounding factors for the analysis.” As far as I know, open access meteorological data are available from NOAA and some other websites. If it’s possible, I would recommend the authors to consider meteorological parameters in the sensitivity analyses for the reason that meteorological parameters are definitely confounding for both air pollution and CPAP adherence.

Response: Thank you for your advice. The meteorological parameters including climate temperature, atmospheric pressure, rain, humidity, and wind speed were included as confounding factors for the analysis per your suggestion. Revised manuscript in the methods section page no. 5-6, line 111-115 and in Table 3. Additionally, the results and discussion were changed accordingly.