

Peer Review Report

Review Report on Long-Term Exposure to Traffic-Related Air Pollution and Diabetes: A Systematic Review and Meta-Analysis

Review, Int J Public Health

Reviewer: Pablo Knobel

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EVALUATION

Q 1 Please summarize the main theme of the review.

This systematic review summarizes the evidence on the associations between traffic-related air pollution and diabetes.

Q 2 Please highlight the limitations and strengths.

The authors of this meta-analysis thought about some of the problems they might run into before going into the review, which allowed them to end up with a robust, comprehensive review and meta-analysis.

However, these same methods are very challenging to follow in the manuscript. Writing, in general, can be improved. Additionally, I wonder why they decided to report the review in two stages: it adds complexity to some already complex methods, and I'm not sure it was the best way of approaching this.

Q 3 Please provide your detailed review report to the authors, structured in major and minor comments.

MAJOR COMMENTS:

* General:

- + While the grammar is mostly correct, in some cases the ideas are obscured by the writing. I think the authors should consider revising some of their sentence structure to improve the manuscript's clarity. A few examples of this:
 - Line 5: I would add an "and" before the "783"
 - Line 9: the sentence started is key in the author's rationale but needs to be restructured as it's difficult to follow. I would also consider dividing the paragraph in two: 1st setting the stage for T2DM and 2nd delving into air pollution - TRAP.
 - Line 15: the sentence starting in this line could also be restructured for clarity.
- + The authors base their systematic review on a previously existing HEI report. While I believe this is valid and does not necessarily detract from the quality of the review itself, I'm not sure it should have the central role it has right now. It sounds like the authors are just re-flavoured existing work, detracting from the work they did.
- + The methods section is quite confusing as a whole. I believe that the methods used would be difficult to reproduce by people other than the authors due to a lack of clarity. This section needs to be heavily reworked.

Introduction:

- + Line 17: is there anything available other than a narrative review to use as a reference here? This statement is a cornerstone in the rationale for this manuscript and should be better grounded, if possible.

+ Line 18: the authors present the chemical components for the tailpipe emissions and should do the same for non-tailpipe ones. Also, they mention PM in the tailpipe but not in the non-tailpipe, which generates a false dichotomy as both include PM.

+ Authors should consider adding a paragraph on biological mechanisms. All the ideas are there but in different parts of the introduction.

+ Line 25: I understand that the HEI report is relevant for the methods but I do not think the details about it are relevant to the reader.

+ Line 32: Similarly, I believe the aims would be stronger if they were not written in relation to the HEI report.

Methods:

+ If I understand the methods correctly, this systematic review was conducted in two different stages: the HEI report and then an additional one to bring the results up to date. These two stages had slightly different methods. Right now, this is quite convoluted in the text (I will bring in examples in the following comments).

+ Line 36: the authors refer to a panel that hasn't been introduced yet.

+ Line 41: which review? The HEI or the manuscript? Same with the methods in line 43. This is relevant, but the authors should focus on their review instead of the existing HEI one.

+ Line 48: again, I'm not sure if the authors are referring to the HEI review or this new one.

+ Line 51: authors should report the keywords used in the search.

+ Line 57: searched up to 2019. Line 59: 2022. Again, this isn't easy to follow. Was the second search was 1980 to 2022 or only 2019 to 2022? Was the search protocol different between the HEI review stage and the new one? Why? Would it be possible to conduct the review using the same protocol for the whole period? I think having two different strategies is detrimental to the robustness of the review and makes the methods challenging to follow.

+ Line 66: Inclusion criteria: 1. What about case crossover, case time series, or other study designs that are not ecological? If the authors only wanted to exclude ecological studies, they don't need inclusion and exclusion criteria to be reiterative. 2. Should indicate what is the cut point for adult and I do not think "no geographical restrictions" can be considered an inclusion criterion.

+ Line 72: Exclusion criteria: In general, inclusion criteria and exclusion criteria do not need to be reiterative. 5. It Would be difficult to asses only based on the title and abstract.

+ Line 77: authors should separate the search strategy, eligibility criteria, and screening into three clearly differentiated sections.

+ Line 81: This is eligibility criteria.

+ Line 88 (all this section): Again, this is eligibility criteria. The authors are using a relatively new framework that probably will not be known by the reader. As it seems to be an essential element in their rationale, they could bump it to earlier in the methods. This being said, I don't fully understand the framework: how are the three aspects of TRAP assessment combined?

+ Line 101: the inclusion and exclusion criteria explained here should be straightforward and clearly defined. In other words: if the reader had to decide if a study is included or not, they should have no doubts. I do not think this is the case right now.

- + Line 121: authors need to explain all the methods they used for standardization, and they need to be robustly referenced.
- + Line 138: mention all the analysis, not just some examples. If they were selected a priori: why?
- + Line 142: So the results from the updated search were not included until now?
- + Line 150: why only do the quality assessment for the meta-analyzed studies? Also: this is explained in a highly complex way. Is there a reason not to say: we obtained the quality considering these things in this way? I'm struggling to follow this section in general.

Results:

- + Line 178: I'm confused again. I understand the authors are combining the results of both searches. If they only include the second search, why did they explain so much about the HEI report in the methods?
- + Line 197: authors should also report how these measures were distributed.
- + Line 216: 3.3 is the Results of the meta-analysis, yet the second paragraph refers to pollutants not included in the meta-analysis. This paragraph should be more precise in the reporting.
- + Line 222 (this whole section): needs to be rewritten for clarity. Same as last, the results need to be more precisely reported. E.g., line 235 says effects were attenuated but no quantitative measures.
- + Line 238: while the process could be interesting I think the authors should focus on the final results. The upgrade and downgrade language is challenging to follow.
- + Line 255: authors should consider combining the content of this paragraph with the one in line 216 to have a section before the meta-analysis. Many reviews do it this way: first summarizing the results of the systematic review (narrative as the authors call it here) and then proceeding with the meta-analysis.
- + Line 268: I apologize to the authors if I missed something but I do not understand why they are separating the new articles. What the added value of doing this? I would have used the new search criteria in the whole time frame and use only that as my article pool.

Discussion:

- + Line 297: while interesting, the incidence vs. prevalence discussion is not one of the review's main findings and should be moved later in the discussion.
- + Line 305: this section only links this review with existing ones on the topic of "incidence vs prevalence" and I think it should also link the main study results.
- + Line 317: the mechanistic discussion is interesting, but I do not see how it's linked to the review's findings.
- + Line 346: Typically, authors explain how they tackled the limitation they mentioned. For example misclassification could be tackled by sensitivity analysis limiting the studies according to their definition of diabetes. I think authors should also include the fact that they had to standardize standardized to a common exposure contrast and something on type 1 and type 2 diabetes.
- + Line 360: I would move this idea to future research.

MINOR COMMENTS:

- + Line 186: most reviews directly reference the article, not the codename.

+ Line 187: authors are using numbers in parenthesis for references and counts.

PLEASE COMMENT

Q 4 Does the reference list cover the relevant literature adequately and in an unbiased manner?

Yes

Q 5 Does this manuscript refer only to published data? (unpublished data is not allowed for Reviews)

Yes.

Q 6 Does the manuscript cover the issue in an objective and analytical manner

Yes.

Q 7 Was a review on the issue published in the past 12 months?

No.

Q 8 Does the review have international or global implications?

Yes

Q 9 Is the title appropriate, concise, attractive?

Yes

Q 10 Are the keywords appropriate?

Yes

Q 11 Is the English language of sufficient quality?

No. The grammar is correct, but the structure and writing is convoluted in some sections.

Q 12 Is the quality of the figures and tables satisfactory?

Yes.

QUALITY ASSESSMENT

Q 13 Quality of generalization and summary



Q 14 Significance to the field



Q 15 Interest to a general audience

Q 16 Quality of the writing

REVISION LEVEL

Q 17 Please take a decision based on your comments:

Major revisions.