

## Peer Review Report

# Review Report on Long-term exposure to particulate matter and mortality: An update of the WHO global air quality guidelines systematic review and meta-analysis

Review, Int J Public Health

Reviewer: Gerard Hoek

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### EVALUATION

#### **Q 1** Please summarize the main theme of the review.

An update of the 2020 systematic review for the WHO guidelines of long-term exposure to PM<sub>2.5</sub> and PM<sub>10</sub> and mortality is presented. A sizable number of number of papers have been presented in the past five years, resulting in modestly larger relative risks compared to the 2020 review. Conclusions regarding confidence in the evidence are largely unchanged, remaining at high to moderate.

#### **Q 2** Please highlight the limitations and strengths.

The paper is well written and the study well conducted. The review adds a a substantial amount of new studies, broadening coverage of countries.

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

##### Main comments

1. I invite the authors to consider to move some material from supplement to the main text and vice versa.
  - a. With the larger database, the comparison of RRs across regions is more interesting than before and a key issues for HIA: use a global or a region-specific estimate. Move e.g. the table or the figures for selected outcomes e.g. natural-cause and possibly circulatory, respiratory and lung cancer to the main text and add some text discussing the issue. Differences seem to be mostly small, though HRs sometimes differ substantially with the p-value being high due to wide CIs.
  - b. The sensitivity analysis with deleting high risk of confounding studies may be worthwhile adding. RRs are identical, consistent with the idea risk of bias is not actual bias and may be both directions as explained in more detail in the previous review
  - c. The Funnel plot could be supplement (not that exciting, it is anyway the plot with no significant Egger test)
2. The authors compare extensively with the earlier review in the text. This could be easier to digest for the reader by
  - a. Adding a main text table comparing for (selected) outcomes the current and previous RRs and 95% CI and number of studies. Repeats table 1 partly, but facilitates much easier reading. In the abstract, I found the % increase difficult to interpret give that RRs are on a relative scale, maybe drop and instead add for PM<sub>2.5</sub> and PM<sub>10</sub> RRs for the current and previous review, plus CI.
  - b. Why are confidence intervals larger in the updated review? Larger heterogeneity probably, maybe related to the larger number of WPR studies. In general discuss, some of the studies with deviating RRs a bit more. Does the Traini study with very large RR (small contrast and population?) contribute to the assessment of heterogeneity?
  - c. Adding how many new cohorts located where were added. Some of the Canadian, European and North-American studies had been studied before.
3. Any speculation on why lung cancer RRs are larger in Europe than in NA? More diesel vehicles?
4. The combination of adult and childhood mortality studies is difficult to interpret. What happens to the RR if the three studies with childhood mortality are excluded from natural mortality? If they are not included, clarify this.

5. Add some more text describing the new studies, e.g. countries, new cohorts, size of cohorts (supplemental files 4 and 6). In the text you report the mean of median (which are very high), in the supplement the median, comment
6. The two pollutant section is not fully correct. In the Stafoggia paper, there is no PM2.5 association left after adjusting for NO2. The overall story is right

#### Minor comments

1. At some points, add a bit more textual information from the supplemental, e.g. line 183 deviations (anything important?); line 228 on Risk of bias;
2. Reword l 253 associations are positive or RR above 1
3. L257 why on the other hand? Add a bit on how the reader should interpret this
4. In the 2024 update, please add the RRs and 95%Cis in the main text of the five studies. The current higher/lower formations are hard to grasp.

#### PLEASE COMMENT

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

Yes. I could not trace the Wang, 2023 reference. Typo?

**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?

Absolutely, the WHO framework gives the paper an important implication.

**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?

yes

**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:

Minor revisions.