

## Peer Review Report

# Review Report on Indoor air quality and COVID-19: A scoping review

Review, Public Health Rev

Reviewer: Daniela Anker

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### EVALUATION

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

The authors performed a scoping review to investigate the association between ventilation/air quality (control) on SARS-CoV-2- related outcomes. Overall, they found a that their exposure was associated with reduced SARS-CoV-2- outcomes.

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

The authors cite unpublished papers, which have to be removed. The results of the study are not clearly presented and over-interpreted. Furthermore, the authors make strong recommendations on elements that are not part of the investigation.

The manuscript is well written and touches upon a relevant question.

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

Major issues:

1. Results of the studies are over-interpreted and some conclusions don't match the research question. More precisely

- The authors imply causality, although the majority of papers included in this scoping review are observational, implying correlation. Hence, I would suggest the authors use a more moderate language that reflects the uncertainty of their findings all across the manuscript. For instance, following sections are problematic: Title + l.98 (use of word "impact"), abstract / conclusion + l.171 (use of "protective effect" and "protective impact"), , conclusions/first paragraph.

- The authors state on the effectiveness of using CO2 monitors and recommend their use although this was not part of the research question and was not investigated. Amongst others, following sections are problematic: abstract / conclusion, main text/l.60 / l.209-215/l.297

2. The Exposure is unclear: in the abstract, the exposure is « ventilation », and in the main text/methods + l.120, it is "air quality", whereas l.183 it is "controlling air quality". The authors should define clearly the exposure and use a consistent language across the manuscript. Furthermore, they should clarify whether the exposure is non-interventional, e.g., air quality, or interventional, e.g., controlling air quality.

3. The discussion section contains a large part of results (l.189-294), which need to be moved to results. Furthermore, I would suggest the authors reduce the quantity of text; they should focus on topics related to the research question only.

4. Results should be displayed with more clarity. In the results section, please differentiate results from interventional vs observational studies. Table 1 should be self-explanatory (adapt title to describe content and explain all abbreviations) and contain relevant information in a more structured way. More specifically, I would suggest

- Reference number should be replaced by author and year of publication, while the reference should be stated according to the journal's referencing style

- Adding columns stating exposure and outcome; the exposure should be identified as interventional vs non-interventional, and eventually natural vs mechanical ventilation

- Adding columns indicating study design including sample size and location (amongst other possible design elements)
  - Main findings should be presented in a more summarized and standardized way; consider indicating crude, age- and sex adjusted, and further adjusted associations.
- NB. Furthermore, the authors should make sure the fields contain what the columns stands for, e.g., main findings for ref 51 describes exposure instead of findings.
5. the authors cite unpublished papers: they have to be removed

#### Minor issues

- The methods need some clarification
  - o Please indicate what type of study designs were included, at least non-interventional vs interventional
  - o L.119-121 please specify if the relationship between air quality/ventilation and sars-cov-2 related outcomes had to be primary aim/main results in the studies investigated
  - o What is meant by "cluster" in "date of cluster" (l136) and "rate of implemented study" (l.138)
- L.121 clarify whether the outcome needs to be related to sars-cov-2 / covid-19 or whether it can be related to any virus
- L.79 the author mention « covid-19 infection », since covid-19 is the disease that develops following an infection by the virus, I would replace by either coronavirus/sars-cov-2-infection or developing covid-19
- inclusion and exclusion criteria: I would suggest removing exclusion criteria from the main text, which are the opposite of inclusion criteria
- L.128 can you explain why mechanical ventilation was excluded? Furthermore, I believe the results include mechanical ventilation, can you please clarify?
- Add two limitations: 1) there was only one reviewer of the publications screened and only one data extractor ; 2) mention that this study design does not allow for causal conclusions; 3) limitations related to design (scoping review), e.g., non-exhaustive search, no individual participant data with possibility to pool data and make summary analysis, which also means that only studies, which investigated the relationship in question could be integrated in the search.
- I would suggest integrating a paragraph research outlook in the discussion, i.e., the authors made a scoping review, what would be the next research step that would provide stronger evidence on the strength of association, or a potential causal relationship?
- Results: with regard to low sample size of studies (n=8), I would suggest removing indications of % in brackets when describing the number of studies in each setting
- L.150 please explain what « real life cluster » is
- L.158 dilution method: I would consider explaining in introduction
- L.164-170 : please mention references according to referencing style of the journal ; explain how "secondary cases" were investigated and how exposure and outcomes were measured in the studies
- Results: mention what was found in terms of reviews and guidelines during the review process, since reviews and guidelines were part of the research strategy

#### 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)

No.

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

No.

**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?

concise and attractive: yes

appropriate: no as it implies strong causality, although the evidence generated by the review is not strong enough (see my comments)

**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?

No.

#### 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.