Reviewer’s report

Title: Associations between indoor environmental quality in schools and symptom reporting in pupil-administered questionnaires

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Reviewer: An Van Nieuwenhuyse

Reviewer's report:

The authors report on the associations between indoor environmental quality (IEQ) in schools and reporting of symptoms, as well as whether associations were stronger if participants relate symptoms to the school environment. The study is based on a previous large-scale epidemiological study in Finnish schools (Helsinki, Winter 2017 and 2018). Pupils of primary and secondary schools reported themselves on the outcomes (symptoms) and whether they think the symptoms are related to the school environment. Exposure was assessed by expert evaluation and assessment of moisture and mold damage in a subsample of schools. IEQ problems were associated with increased symptom reporting. Associations were stronger in magnitude if symptoms were attributed to the school environment.

This is a well-designed epidemiological study. The current analysis is unique in the sense that it confirms the importance of indoor pollution, but also highlights the importance of perceptions and beliefs. In addition to the classical laboratory technical investigations, the findings stress the benefits of integrating questionnaires, including symptoms and beliefs, in the indoor investigations. It offers also new openings for prevention, i.e. education and communication in function of specific target groups.

The article is written in a transparent and straightforward way. It shows the professional expertise and multi-disciplinary experience of the team. I only have minor comments and suggestions:

p.6, line 110: the response rate in pupils was in general above 50%. Do you have information of non-responders? It may be good to elaborate on potential consequences of this rather limited response rate (selection bias).

p.7, Outcome measures: for the secondary school pupils, the same wording is consistently used in the following paragraphs on pages 7 and 8. However, for the primary school pupils, the wording changes into 'primary pupils'.

p.8, line 164: IEQ was assessed by expert evaluation and consensus as reached during several sessions. It would be helpful to describe the methodology that was applied during this consensus reaching.
p.9, line 178: assessment of moisture and mold damage was done in a subsample of 43 schools. Describe the criteria of the sub-selection and in what sense this subsample is representative or not for the 129 school buildings for the current analytical study.

p.9, lines 185-187: the authors report on two techniques to compare the rating by the experts and the inspectors. Later on in the discussion, the authors elaborate more on the differences between experts and inspectors, and interpretation (p17, lines 377-385). It may be useful to already include the goal of the different techniques and the rationale of including both techniques in the Method section.

Tables: as there is a substantial amount of tables, make sure that the final print layout is also reader-friendly. It is important that the reader can keep the overview and extract the most important findings fluently.

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The article provides new insights into the management of indoor quality problems and as such is useful to broaden the perspectives of all public health institutes in charge of this type of problems.

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