Reviewer's report

Title: Exploring cross-sectional associations between common childhood illness, housing and social conditions in remote Australian Aboriginal communities

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Reviewer: Nico Dragano

Reviewer's report:

The manuscript addresses an important issue and presents interesting data. Nonetheless it should be partly revised as the analysis is not straightforward and the generalizability of the results beyond the specific setting of Aboriginal communities could be made clearer to non-Australian readers.

Major Compulsory Revision

1. Definition of the setting: What exactly are ‘remote Aboriginal communities’? A short description would be helpful. Moreover the authors could comment about the general housing standard in those communities.

2. Methods; Analytical Framework: Figure 1 depicts the analytical framework but it is only briefly described in the text.

3. Methods; Analytical Framework: I can not follow the argumentation that complex causal associations are best captured by correlating as much variables as possible with different outcomes – which is multiple testing. The authors define in the abstract that their study aim is to explore associations between housing conditions and child health. It would be more straightforward if the analyses could be focused on that particular question.

4. Methods; FHLP Score: The scoring seems arbitrary to me. For instance, if the bathroom door is missing the ‘wash children’ score is fail. Is this a valid marker for a low housing standard? Looking at table 3 it becomes obvious that most houses fail in most categories. Maybe the authors could apply sensitivity analyses with different cut-points (e.g. number of items not functioning in the respective score) to capture housing conditions in more detail.

5. Methods; Statistics; FHLP Score: Following remark 4 it must be noted that odds ratios are no valid estimators for high prevalent exposures as they overestimate associations in that case.

6. Methods; Hygenic Conditions: Why are the variables about hygiene (tab 2d) defined as secondary explanatory variables? They directly refer to housing conditions.

7. Methods; NLES Score: The description suggests that the score contains questions about poor health of household members. If this is true, those questions must be removed as they overlap with the outcome measure.
8. Results: Results could be restricted to those relevant for the primary study question. For instance, table 2d contains roundabout 155 odds ratios which is not very informative.

Minor Essential Revisions:

9. Methods; NLES Score: The description of the score could be shortened as it is only of minor importance.

10. Methods; Hierarchical Models: Here individuals nested in households nested in communities are tested. As the adjustment for clustering is essential: could the authors explain the approach of hierarchical analyses in more detail?

11. Methods: Is environmental pollution a problem in the communities?

12. Results; Prevalences: The disease prevalences are very high, could the authors shortly comment on this?

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests