Reviewer's report

Title: Longitudinal analyses of indoor temperature and body mass index in children: the PIAMA birth cohort study

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Reviewer: Denise Heppe

Reviewer's report:

This manuscript of Scheffers et al. is focused on the association of indoor temperature and childhood adiposity. This is the first study to assess this association in a large study population and since indoor temperature is a modifiable factor, findings could be relevant. The study was embedded in a very large cohort and data on anthropometrics of the child was collected at 10 time points throughout childhood. In order to analyze the associations refined statistical methods were used. Multiple imputation was applied to prevent bias arising from loss to follow-up and by adjusting the analysis for life-style related factors a decent attempt was made to reduce the issue of confounding.

From the results, the authors concluded that indoor temperature is unlikely to influence body mass index in children. The limitations of the study are well addressed in the Discussion. The explanation speculated on was not based on scientific evidence and needs to be revised. Overall, it is a well-written paper based on well performed analyses.

I would like to give a few suggestions that would improve the paper.

Materials and methods.
1. Page 5. Please specify more clearly where and how mothers recruited?
2. Page 5. Please specify inclusion and exclusion criteria, if applicable. If not, please state none were used.
3. Page 7. “Maternal overweight before … confounder in this case”. Is there any evidence suggesting overweight is likely to affect indoor temperature? If not, maternal overweight is unlikely to be a confounder in the association.
4. Page 7. Did the authors have a specific reason (biological or statistical) to stratify the analysis? If so, please specify.
5. Page 7. Are ethnic minorities included in the study? (please add to description of study population) If so, ethnic background could be a confounder in this association and should be adjusted for.
6. Page 7. Missing values in anthropometrics add up to over 45%. Despite these high percentages missing values are imputed. Are children included that miss all growth data from early onwards?

Discussion
7. Page 12. “In our study, … during a 2-week period.” Significant correlation, yet correlation is not very high.

8. Page 12 “Living room and bedroom temperature … move to another house,”. Do the authors have any substantiations supporting these assumptions?

9. Page 13. The suggested explanation for the findings is not very well founded. It is not unlikely that there may be no association between indoor temperature and BMI in childhood. At least, this should be one of the explanations suggested. The substantiation of the stated explanation should be strengthened with citations to scientific work of others or removed.

Tables and figures
10. Table 2-5. Please add “temperature” and units (temperature and BMI) to the tables.
11. Please consider using a flow diagram to illustrate the number of participants eligible and included in the study population.

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests