Reviewer’s report

Title: Built environmental characteristics and diabetes: a systematic review and meta-analysis

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Reviewer: Laura Rosella

Reviewer's report:

Summary

The purpose of this article is to summarize the literature on the built environment and diabetes using a systematic review and meta-analysis. Overall the review methodology was sound and well done. The cautions around interpretation cross-sectional evidence were well described. The comments below mainly relate to the interpretation of the findings, which if addressed will significantly strengthen the paper.

1. One of the challenging aspects of studying the built environment across jurisdictions is the great heterogeneity that exists in definitions - above and beyond income level of the country. For example, the urban/rural classifications differs greatly across countries. In European countries, where they are geographically smaller, the urban rural differences are quite different than a geographically vast country such as Canada where rural populations are very far from urban centres, often north and with a higher number of Indigenous people and lower number of immigrant populations. The authors should comment on the definition of urban and how this definition actually differs depending on the country/region.

2. Selection bias is also a major concern with these studies. When looking at these comparisons one must always be cognizant of who is selecting to live in certain areas and why. For example, immigrants tend to settle in urban environments and may also be at increased risk for diabetes depending on their country of origin. Also related to the above point - selection pressures of living in an urban and more densely environment may differ according to setting. Finally, there are life stage and socioeconomic factors that determine where one lives, for example younger age, marital status, having dependents and income. It's unclear how the included studies attempted to address selection bias (or if they did). Regardless, the authors should consider how selection bias may be an explanation for the findings from the meta-analysis.

3. Confounding is a major challenge with respect to built-environment studies and associations, particularly in cross-sectional studies. The authors should provide more detail on the level of confounder adjustment in the various studies. The confounder/risk adjustment should be
detailed in the study characteristics table and wherever possible when summarizing the analytic results the nature of the adjustment should be summarized.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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