Reviewer's report

Title: Toothache and associated factors in Brazilian adults: a cross-sectional population-based study.

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Reviewer: Anne Nordrehaug Astrom

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Review of ms "Toothache and associated factors in Brazilian adults: a cross-sectional population based study"

General comments:

A descriptive cross-sectional study involving 2022 adults 20-50 years old residents of an urban area of a medium sized city in Southern Brazil is described. The specific objective was to assess the prevalence of pain and factors associated with toothache in this population. The sample design is described as a two stage cluster and a sample size taking into account the design effect has appropriately been calculated a priori of conducting the study. The prevalence of toothache was 18% and gender, age, use of dental services, race, income smoking and alcohol consumption were all statistically significantly associated with toothache in Poisson regression analysis. Toothache is considered a major public health problem for this Brazilian population

Major compulsory revisions

1) It could be useful with a more detailed description of the process by which the two stage sample was actually drawn. What was the primary sampling unit?

2) Factors at different levels of a conceptual hierarchy that were statistically significantly associated with toothache in Poisson regression analysis after controlling for factors at the same and previous levels of the hierarchy were identified as correlates of toothache. Using such an approach – one might omit the caveat that distal factors whose effect are mediated thorough more proximal ones in the hierarchy are identified as important associated factors (e.g. underestimates the importance of the distal socio-demographic factors). However as to the presentation of the analysis in table 2, I would prefer to show all variables at all steps in the various models to fully account for the complexity of the model and to provide information, not only on confounding effects but also on possible mediation of effects of distal variables through more proximal ones. What about interaction effects to reveal the extent to which risk factors might vary by subgroups of the sample?

3) The literature review considering studies of dental pain is limited and should be updated

4) The English writing is not acceptable – authors should consult an expert opf the English language before eventually re-submitting this article.
**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests