Reviewer's report

Title: Social Determinants of Health and Periodontal Disease in Brazilian Adults: a cross sectional study

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Reviewer: Thiago Ardenghi

Reviewer's report:

1) General comments

The authors present a well-designed study aimed at investigating the prevalence of periodontal disease in Brazilian adults its relationships with social determinants. The study had a cross-sectional design and used a multistage cluster sampling strategy; 744 35 to 49-year-old adults living in a large southeastern city in Brazil were orally examined. Data on socio-demographic characteristics were gathered through questionnaires; the results indicate a social gradient in the prevalence of periodontal disease, namely the highest level of the outcomes in the group with lower social indicators. The manuscript addresses an interesting topic and has relevant implications for the scientific community and may be a major interest for the target population. However, some aspects should be noticed for improvement of the manuscript as follow:

2) Discretionary Revisions

2.1. Introduction

- Its well-written. However, it would be strengthened including official data regarding the prevalence and severity of periodontal disease in the country.

2.2. Methods

2.2.1. Although the sample size represents one of the strengths of this study, sample size was calculated only to assess prevalence. Authors should give what is the minimum sample size required to assess the associations posed in their research question.

2.2.2. As this manuscript used data from a countrywide survey of oral health, further details on the SB Brasil Project would be desirable (for instance, the coverage, sample and so on). I suggest including the following reference:

2.2.3. Please, provide the rationale for the ethnicity classification. It seems that the authors assessed color skin/race rather than ethnic group. So, I suggest changing the term "ethnicity" for "race".

2.2.4. Variable “level of education”: for proper comparison, I suggest also
providing it in years of formal education.

2.2.5. Analysis: As the authors used a multistage cluster sample, a correction factor for cluster sample must be used for run the descriptive analysis.

2.3. Results
- Provide the number of eligible and the response rate.

2.4. Discussion
- The sentence: “In addition, biological susceptibility.....than the risk for white individuals”. I suggest omitting this sentence since there is no strength evidence supporting the hypothesis of biological/race susceptibility regarding periodontal disease. For a better discussion about the etiological pathways the links periodontal conditions and race, I suggest including the following references:

2.5. Conclusion
- In my opinion, the sentence “Despite the social inclusion policies implemented in recent years in Brazil, there is still much to do.” should be omitted. It is not related to the research question and it was not assessed in the paper.

Level of interest: An article of importance in its field

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'