Reviewer’s report

Title: Prevalence of dental caries in children and adolescents with type 1 diabetes: A systematic review and meta-analysis

Version: 1 Date: 30 May 2019

Reviewer: Nathalia Ladewig

Reviewer's report:

*General comments*

Dear Authors, this paper is interesting and relevant to Oral Health Care field. The methods used were correctly described and are suitable to answer the central question of the work. However, substantial adjustments are needed for a better understanding of the study, its results and scientific contribution.

At first, I strongly suggest a wide revision of the English grammar and writing.

*Summary*

1-Please, review the data from results (lines 34-38), because it does not match with in-text and flowchart information (487 non-duplicated article versus 358 non-duplicated articles). Besides, the following sentence is not clear: "(…) a total of 10 articles involving 538 were included". Involving 538 what?

2-Please, add the systematic review registration at PROSPERO database.

*Introduction*

1-There is no connection between the first and second paragraphs. I strongly suggest that information be merged to allow reading fluency. Besides, to begin talking about diabetes, instead of dental caries, may be a better solution, since BMC Oral Health readers probably have a larger background regarding dental caries - the information is well-known.

2-It is not clear the relevance/importance of your work.

3-The information within lines 69-71 is really important to justify your work. I suggest you to better explore it within your introduction instead of filling this session with information regarding the basis of studied diseases.

4-Please, review the sentence related to the aim of your study (lines 71-73): "estimate the exact prevalence" is contradictory.
*Material and Methods*

1-Lines 87-89: Only DMFT (permanent dentition) was considered in the inclusion criteria? If a study used dmft (primary dentition) exclusively was not eligible for you? If yes, please justify it.

2-Lines 92-93 "However, some abstracts with enough information to calculate prevalence and evaluate the quality of article were also included". This sentence is not clear. There were more than 10 studies evaluated or some of them did not allow the access to full-text reading? If so, they should not be included.

3-Lines 93-96: Does inter-rater reliability was calculated before both inclusion and exclusion phases of articles selection?

4-Lines 102-106: It is not clear how the Newcastle-Ottawa Quality Assessment Scale was modified, since the reference used also discusses only cohort and case-control studies. Besides, I strongly suggest that the results be illustrated with a table or an image containing the answers for all study evaluated (results session).

*Results*

1-Line 123 "Finally, 10 articles, with a total sample size of 538, were included in our meta-analysis". What did you mean with "sample size of 538"? It is important to highlight that it is more appropriate to consider the sample size of a systematic review as the number of articles included and not the number of subjects included in each study individually.

2-Table 1: I strongly recommend that table's label be modified from "epidemiology" to "study characteristics of included studies" as it is described in-text (lines 131-132) to make clear what type of data is presented.

3-Table 1: I strongly recommend the inclusion of information regarding sample size and type of dentition evaluated (permanent, primary or both) in each study. If both dentition is considered, please inform to the readers if the prevalence is given separately or not (dmft + DMFT).

4-Do the included studies provide information regarding mean DMFT+dmft? If they do, I strongly recommend to also add this information in Table 1 and to try to use it in your statistical analysis. The prevalence of caries may vary from 1 affected tooth to all teeth, and this variation is important to your results and discussion.

5-Table 1: it is not clear what is the data in each column. The age is measure in years? Are you presenting mean and standard deviation of age? "Type 1 diabetes" is the same as "Metabolic control"? If yes, what the numbers means: the percentage of individuals with controlled diabetes? What is the information "Dental caries"? Please, let the information more clear.

6-Lines 126-127 "Among these included articles, four in Asia, three in Europe, two in South America and one in North America": please review this sentence, because there is no verb. It seems that some information is missing.

7-Subgroup analysis and influence analysis: why did you not performed a subgroup analysis considering age and/or type of dentition?
*Discussion*

1-Overall, the discussion is confused. Please, review English grammar and overlapping of information.

2-Lines 158-159 "Thus, this meta-analysis was performed to review the relevant studies worldwide". I strongly suggest that the aim of the study be written fully to retake the reader to your study. It is not appropriate to summarize it.

3-Lines 165-169: At this point of the discussion, only results are described. Please, put this information in the results session.

4-Line 170 "As mentioned above, as a multifactorial disease, the occurrence of dental caries depend on the interaction of oral cariogenic bacteria, food intake and oral hygiene in patients with type 1 diabetes". This information was not mentioned above, but only in your introduction. Nevertheless, I strongly suggest choosing only one place to use it or rewriting with new information.

5-Lines 172-180: It seems that you are trying to state that it is expected a higher prevalence of caries in individuals with diabetes. However, as you perfectly highlighted, caries is a multifactorial disease and the studies showing some positive association with diabetes have poor level of evidence or clinical significance. Besides, the aim of your study was not to compare these groups.

6-Lines 181-195: A lot is said about dietary habits. However, it is well-known that type 1 diabetes is strongly related to genetic inheritance over dietary habits as type 2 diabetes. Information are a little bit contradictory and bring limited contribution.

7-Lines 196-197: "Previous review articles mainly assessed severity of dental caries in diabetic children and adolescents with type 1 diabetes(...)". Please include the reference of these articles in this sentence.

8-There is no discussion regarding the results of risk of bias assessment. This becomes relevant since 8 of 10 studies presented NOS < 3. Is it a methodological limitation of the studies, low quality of design or the scale used was not effective to qualify these studies? What is the implication of it to your results?

9-There is no discussion regarding the heterogeneity of your meta-analysis.

10- What is the main contribution of your results? A lot of effort is made to compare the prevalence of caries between diabetic and non-diabetic individuals, but little is discussed regarding what can be done to promote oral health in children presenting type 1 diabetes. What about public health policies?

11- Most of the studies included presented a mean age of 10 years old or more. Do you think that this could interfere with your findings? If younger ages had been evaluated, prevalence of caries could be different? What about the other variables collected? Poor discussion regarding it was made.

12- What would be the implications of your study for future research?

*Conclusion*

1-Lines 208-209 "There is a high prevalence of dental caries among children and adolescents with type
I diabetes worldwide". The use of adjectives such as low/high are critical: what is your reference? What would be low?

2-Lines 209-213: These information would fit better in the discussion. Some information are not related to the aim of your study.

3-Lines 213-214 "Thus this study provides valuable reference data to clinicians, health-care personnel and scientists". Please, talk more about it in your discussion. This is valuable.

**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

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Please indicate the quality of language in the manuscript:

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