Author’s response to reviews

Title: Are standardised caries risk assessment models effective in assessing actual caries status and future caries increment? A systematic review.

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Version: 1 Date: 06 Jun 2018

Author’s response to reviews:

Technical Comments:

Editor Comments: Improvements to the English language within your manuscript have been requested, please have your manuscript reviewed by someone who is fluent in English before resubmission.

The full text was revised by an English native speaking

Reviewer reports:

Joyce Duarte (Reviewer 1)

Title: The word 'standardised' must be corrected to standardized.
Full text must be revised considering English quality.

The full text was revised by an English native speaking

Abstract - Methods: The review method and planning were registered at Prospero (PROSPERO2016:CRD42016038590). Unnecessary information, you could cut this from the abstract and keep the phrase in methods section only.

The sentence was removed from the abstract

Correct English - "Corresponding author".

The word was corrected

Keywords - Please use Mesh terms.

Mesh-terms were used instead the previous Keywords

Methods - Was there any specific reason for the research period beginning in 2000? If no, this is an important limitation of this systematic review.

The literature search was begun in 2000 since all standardized caries risk methods were developed and/or tested from the 2000s onwards. This concept was in clarify in the Introduction section

Results - Long Text, you may synthesize it in a summary of findings table, or just summarize it to be easier to read and follow.

The result section was summarized as request
Ethics approval and consent to participate:

Not applicable as this paper is a systematic review.

Consent to publish:

All the authors gave their consent to the publication of the paper.

Availability of data and materials:

Data and materials (Supplementary file 1, 2 and 3) are available via the BMC Oral Health website.

Competing interests: The authors declare that they have no competing interests. There are no financial competing interests as we have not received any grants. The authors alone are responsible for the content and writing of the paper.

Acknowledgements: The authors...

Rita Cordeiro, Ph.D (Reviewer 2): Please include all comments for the authors in this box rather than uploading your report as an attachment. Please only upload as attachments annotated versions of manuscripts, graphs, supporting materials or other aspects of your report which cannot be included in a text format.

Please overwrite this text when adding your comments to the authors.

No suggestions to improve the paper are proposed by the reviewer

Sergio E Uribe, PhD., MSc., DDS. (Reviewer 3):
This systematic review is about caries risk models and their ability to predict caries. Since dental caries is the most prevalent human disease this is a relevant research. There are missing information that prevent a proper evaluation of the report, hence there are major changes required.

1. As stated in the first paragraph, there are narrative and systematic reviews about CRA available. The manuscript should indicate clearly what is already know and the gap of the knowledge that a new systematic review about CRA will fill. This information could be in any part of the introduction, preferably at the end.

What do we know already:

- In view of the multifactorial nature of caries etiology and the complexity of the prediction of individual caries-risk, a multivariate approach is necessary (1)

- The scientific basis for caries risk assessment, prevention and treatment on an individual patient basis requires further development, specification and continuing validation. (2)

- The evidence on the validity for existing systems for CRA is limited (3)

- Baseline caries prevalence was the most accurate single predictor in all age groups. (4)

- There is a great need to standardize study design, outcome measures and reporting of data in studies on caries risk assessment (5)

- CRA still has great potential to enhance patient care (6)

We thank a lot the reviewer for his important suggestion. The introduction section was modified accordingly.

2. Indicate which data were extracted and the process of extraction.

Data and process of extraction were reported in detail in “Search strategy and quality assessment” (Methods section)
3. The methods sections could be greatly improved with the adherence to the PRISMA guideline (7)

As suggested by the reviewer the Method section was modified following the PRISMA 2009 Checklist

4. The supplementary files are useless without the information of the current report. For example, the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies is already available. What is necessary and could be an addition to the knowledge is the tabulated data from all the papers included in the current report.

The previous supplementary File 3 was replaced with the checklist containing the assessment of the quality of the included papers following the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

5. Add a comment about the reasons of exclusion of so many papers with the reason "Different outcome".

Additional file 1 and 2 were modified and the reason “Different outcome” was removed.

The following reasons for exclusion were provided:

Review, Guidelines, Case report (exclusion criteria)

Not in English (exclusion criteria)

Research noise (when papers were not related to caries risk)

No caries or CRA data (when paper was related to caries risk, but not data on both outcomes - caries and standardized CRA- were present)
No caries data (when paper was related to caries risk and CRA data were reported, but not data on caries were available)

No CRA data (when paper was related to caries risk and caries data were reported, but not data on CRA recorded using standardized CRA models were available)

6. A good result could be a clear graph with the mean standardized value of the CRA and the caries status at 1, 2, 3, n years later. If the manuscript can't show this, at least add the tabulated data from table 3 as supplementary material or publish elsewhere, as osf.io or figshare.

Unfortunately, it was not possible to follow the reviewer’s request, the data were too heterogeneous.

7. Even with the declaration that “different indices used to measure carious lesions” (page 14, lines 43-48), a quantitative synthesis could be done grouping articles with similar outcome.

As suggested, in the result section a quantitative synthesis of the included papers grouped for caries index used was reported.

8. Repeat the last subanalysis grouping by quality

As suggested, in the result a quantitative synthesis of the included papers grouped for the quality assessment was included.

9. In case of high heterogeneity, omit the meta-analysis, but show the graphs with the information required in the previous points 7 and 8.

We tried to prepare a graph but this means the loss of a lot of important information, so we decide to keep as it is. Moreover, meta-analysis allows us to discuss data.