Reviewer’s report

Title: The impact of ICDAS on occlusal caries treatment recommendations for high caries risk patients: an in vitro study

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Reviewer: Sophie Doméjean

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Review for BMC Oral Health

Manuscript number OHEA-D-18-00391R1

Title The impact of ICDAS on occlusal caries management recommendations for high caries risk patients

Overall appreciation

The reviewer thinks that the manuscript is not suitable in its present form for publication in BMC Oral Health and needs major revisions mainly related to text remodelling and alignment with the current terminology/concepts in Cariology.

Terminology and typography

The authors must refer to the current international terminology related to Cariology.

- The distinction between "caries" and "carious" as well as has to be made as well as the distinction between treating the caries disease and managing a carious lesion to match the current international terminology related to Cariology.

- "Detection" and "diagnosis" that are not synonyms; please refer to the current international terminology related to Cariology.

- "Cavities" is a term to be used with patients but not in a scientific article.

- ICCMS should be ICCMSTM.

- ICDAS 0 versus 1,2 versus 3,4 5,6 is called "merger-ICDAS scores" and not 4-level-ICDAS scores.

- The term "heuristic maximum kappa of <0.8" is difficult to understand.
All numbers below 10 should be in full e.g "5 different examiners" should be "five different examiners".

Some formatting is necessary in the text: for an example, [7, 8, 9, 10, 11, 12] should be [7-12].

Title
The in vitro nature of the study design as to be mentioned: a title as to be informative.

Background
- ICCMSTM is not only a standardized method for caries classification and management, it is also and above all evidence-based" - this must be stipulated.
- The authors wrote: "Little is known about the mechanisms or criteria dentists use for making caries management decisions [14]. If it was the case in 1997 when Bader et al published the cited article, many questionnaire surveys have been undertaken around the globe and many narrative articles described the fact the factors influencing treatment decisions and potential practice changes.

Methods
- Please give a proper description of the five examiners and be more descriptive than "Five examiners with a minimum of five-year experience in clinical practice participated in this study. All of the examiners were regularly involved in treating patients and training undergraduate students on caries diagnosis and management." Age? Clinical experience of each? Selection modality?
- The authors should mention when the study has been done. They mention that none of the examiners had any information about the ICCMSTM. ICCMSTM has developed and disseminated in 2014; has be study been done before 2014?
- The authors mention that the examiners were asked to evaluate the occlusal surfaces of the teeth. They must mention what has been asked to the examiners: presence/absence of a carious lesion? Lesion severity stages? Lesion activity?
- Statistical analysis: this is very strange to me that merged-ICDAS was the standard for inter-examiner reproducibility assessment (0 versus 1,2 versus 3,4 5,6) when later in the text other thresholds have been used (ICDAS D1 threshold (code 0 as sound/enamel caries and codes 1-6 as dentin caries); ICDAS D2 threshold (codes 0-2 as sound/enamel caries and codes 3-6 as dentin caries), and ICDAS; D3 threshold (codes 0-3 as sound/enamel caries and codes 4-6 as dentin caries). Indeed, in ICDAS 2 threshold, code 3 refers to dentin carious lesions and in ICDAS 3 threshold to an enamel carious lesion.
Results and Tables

- The reviewer is sorry but does not understand the link between Table 2 and the related text section.

- The authors wrote: "ICDAS training statistically significantly increased the percentages of operative recommendations for two examiners." Significantly? P-values?

- Same comments for numbers presented in table 6: significantly?

- Table 5: would it be possible to have the results codes by codes and not all teeth together.

- The authors must describe the treatment options that have been indicated as non-operative strategies. Were therapeutic sealants an option?

- Table 6: "under": under what? Undertreatment? In reference to ICCMSTM?

Discussion

- The authors wrote: "we investigated the impact of ICDAS training on the decision-making for the management of cavitated and non-cavitated lesions in patients at high risk for caries." That is a different objective that the one expressed in the introduction. Moreover, ICDA code 4 refers to non-cavitated lesions but I am not sure if this point is clear in the present work.

- The discussion should be shortened and more straight to the point.

- References that have been considered are not the most recent in the domain.


  o And other guidelines/recommendations related to caries management in adolescents

References

- Some formatting is necessary in the text: for example, [7, 8, 9, 10, 11, 12] should be [7-12].
- The reference related to ICCMSTM is missing in the introduction.
- Please, update ICDAS and ICCMSTM website
- The references need some reformatting; e.g. capital letters in the middle of the title.
- The pages of reference 35 are not cited appropriately.

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

No

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

Yes

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

No

**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 recommend additional statistical review

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Please indicate the quality of language in the manuscript:

Acceptable

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