Reviewer’s report
Title: Comparative effectiveness of school-based caries prevention: A prospective cohort study

Version: 0 Date: 03 Oct 2017

Reviewer: Yusuke Matsuyama

Reviewer's report:

Dear authors,

Thank you for the opportunity to review this paper. In this study, treatment group received primary and secondary prevention program whereas control group received primary prevention program only. In this study,

- The primary prevention program consisted: a twice-yearly dental evaluation conducted by a dental hygienist, oral hygiene instruction, prophy, fluoride varnish, and glass ionomer sealants placed on permanent first and second molars.
- The secondary prevention program consisted: glass ionomer interim therapeutic restorations (ITRs) placed on all asymptomatic teeth with carious lesions.

Thus, simply saying, the effectiveness of ITR in addition to primary prevention on untreated dental caries and caries experience was evaluated. The result showed that ITR was effective to decrease untreated dental caries but not effective to reduce caries experience. This seems to be reasonable. However, there are a lot of problems to be considered.

Major comments

#1

Necessary information as epidemiological research is lacked. e.g. how was the target population chosen, how was the treatment assigned, duration of follow-up time, etc. I recommend following guidelines such as CONSORT though this study does not seem to be RCT.

#2

Generalized additive model was applied to evaluate nonlinearity of the effect of increased intensity of care (line 86; this means ITR?) on reduction in dental decay; however, the reason
why non-linear relationship was expected is unclear. Please describe the reason to choose GAM and the benefit of finding non-linear relationship. On line 105, it is described that "GAMs are useful in the analysis of longitudinal data because of their flexibility in modeling nonlinear effects." But longitudinal data itself does not necessary mean non-linear relationship. Or, if there is any benefit for policy makers or scientific perspective, I feel that is sufficient reason to apply GAM but there was no explanation of it.

#3
One of outcomes is total observed caries experience (TOCE). TOCE was calculated as the sum of all observed decayed or filled teeth observed over the course of the study, regardless of exfoliation.
I could not understand the difference between TOCE and DFT. Please explain it.

#4
In discussion, it is described that "In addition to treatment of existing cavities, interim restorations can reduce the levels of cariogenic oral bacteria, preventing the progression of decay and lowering the rate of secondary caries [14]." The description in the paragraph is redundant, but before staring the discussion, is the outcome of this study (TOCE) able to obtain secondary caries? If not, following discussion of the effect of ITR to reduce secondary caries would not be necessarily.

#5
Short detail of intervention should be described in abstract.

#6
Conclusion in abstract was not understandable or not matched with objective.

Minor comments
#1
Line 65: The prevalence of dental caries would be in top ten but I am not sure DALYs due to dental caries is in top ten among all diseases. Please check the reference.
#2
Line 81: How long do you expect as "long-term"? If there is studies in short-term effect, please describe it.

#3
Line 109: why same coefficients were expected though the outcome is different?

#4
Line 110: In this function, what do x and π mean?

#4
Line 137: What do the percentages mean (person-level or tooth level)?

#5
Line 162: "evidence of comparative effectiveness in community-based settings is limited" but how limited it is? Number of studies is limited? The design is poor?

#6
Line 184: "ITRs may be more effective at reducing the subsequent risk of decay on teeth that are adjacent to the tooth that was recently restored." I guess you can analyze it using the data because the data include tooth-level information.

#7
Table 2A: Age and visit did not included in the model?

#8
Figure 1 &2: Why does the range of x-axis different between Figures? What does y-axis mean? At the left end of the graph seems to be more than 0. What does this mean?
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

Quality of written English
Please indicate the quality of language in the manuscript:
Acceptable

Declaration of competing interests

Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?
2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?
3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?
4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?
5. Do you have any other financial competing interests?
6. Do you have any non-financial competing interests in relation to this paper?
If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal