Author’s response to reviews
Title: Comparative effectiveness of school-based caries prevention: A prospective cohort study

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Author's response to reviews:
Reviewer reports:

Yusuke Matsuyama (Reviewer 1): Dear authors,

Thank you for your effort and time to revise the manuscript. The paper has been much improved, but there are still points that should be considered. Please consider to revise the manuscript according to comments below.

We again would like to thank the reviewer for reading our re-submission and are glad that the assessment is that the paper is improved. We have addressed all of the comments below and respond accordingly.

Major comments

#1

Please include following descriptive statistics to Table 1:

- Number of schools in treatment/control group
- the number of teeth at baseline with decay
− Prevalence of participants who had access to fluoridated water
− Average TOCE at each visit
− Prevalence of untreated dental decay on permanent teeth at each visit

We have added the number of schools in each group to Table 1, and the prevalence of participants with access to dental care. For the average TOCE and decay prevalence at each visit, as Table 1 is a baseline comparison, we have added this information in a new Table (new Table 2) so as not to confuse readers (there are now 4 tables due to this revision).

#2

Table 2, models 2a and 2b shows that water fluoridation was significantly associated with larger TOCE. Is there any possible reason of the (weird) association?

We suspect it could be due to residual confounding. We have addressed this in the discussion and limitation section to further clarify this point.

#3

I am still not convinced with Figure 1.
− How did you conclude that there was difference in TOCE development between treated/control group? Was any statistical test conducted to evaluate this difference in GAM model?
− It would be easier to compare if the two graphs were put together.
− How can we interpret the y-axis (smoothed components)? Does the y-axis mean s1 and s2 in the equation at line 152? Or, does the y-axis mean predicted TOCE at each visit?
Our conclusion that the rate of TOCE is lower in the treatment group versus the control was derived from the significant statistical interaction shown in Table 3a (IRR=.96, 95% CI = .94, .98). The overall group difference also shown in 3a was *not* significant. So while there is no predominant group effect simply from treatment, the rate due to treatment is lower with primary and secondary prevention. However, the effects are small. As the GAM analyses used smoothed terms for this interaction, the coefficient estimate based on the additive model is not estimated, hence our use of the GEE and MLM methods for expository purposes, such that the reader can have parametric estimates for all smoothed components used in the GAM model.

Unfortunately, the graph is produced by our statistical software by treatment group, since we plot the rate of change in TOCE by group—thus two graphs are necessary. To answer the last question, the y-axis refers to the smoothed components, which reflect the effects of each beta coefficient over time for the rate of change within each group (stratified by group, hence the two graphs). The y-axis has “smoothed components” as the legend, and we have added additional information on this to the methods and results sections of the manuscripts. Both show an increasing TOCE over time (confirmed in Tables 3a/b). The rate is lower in the treatment group. As shown by the parametric estimate in Table 3a, the rate is lower but the effect is small, which shows why the graphs are not too dissimilar. We’ve also added this as a discussion point to the discussion.

Minor comments

#1

"Adult decay" in the Table 2 and "Untreated decay" in the Table 3 should be "Untreated decay on permanent dentition".

This has been changed
All abbreviations should be spelled out in each Tables and Figure to make them self-understandable.

We have included notes to each table in this revision to have an abbreviation list for reference (this was cleaner than having every one spelled out in each instance of the table).

In the second paragraph of the Result, it would be better to describe which model (GAM or GEE) the values come from.

We agree—we re-arranged the layout of Table 2 (now table 3) and changed the manuscript in results to reflect which part (3a or 3b) the results refer to. In so doing we re-organized both the methods and results to better flow and match up how the tables are laid out for ease in interpretation.

Satoru Haresaku (Reviewer 2): All remarks were answered by the authors.

Thank you!