**Reviewer’s report**

**Title:** Vitamin D status and dental caries in healthy Swedish children

**Version:** 0  **Date:** 02 Aug 2017

**Reviewer:** Robert Schroth

**Reviewer's report:**

Title: appropriate

Abstract: 41% participation rate in this aspect of the broader study is low.

A suggestion is to shorten the background section of the abstract and enhance the methods and results section of the abstract.

The reviewer was initially struck by the question of whether there was a difference in the vitamin D level of children who were part of this study (n=85) and those who did not participate in this dental component (n=121)?

Background:

Paragraph 3, line 59-60 - citations are required to support this statement.

Line 60-61 - the authors reference a study by Herzog which used data from the US NHANES. They could also consider reviewing Schroth, et al 2016 Vitamin D and dental caries in children J Dent Res, as data reported in that paper was based upon a representative sample of Canadian children 6-11 years of age which is similar to the ages of children in the present study.

Paragraph 4, line 73-80 this text is more appropriately suited for the methods section rather than the background section. Please merge this into the methods section.

Methods:

How were the 85 children distributed between the three randomly assigned supplementation groupings in the parent study? It is important to understand this.

How did those who did not return and participate in this dental study (n=121) differ from those who did participate (n=85)? Were there differences in the mean 25(OH)D levels between these groups?
Line 125 - what is meant by medial upper and lower incisors? Do you mean central incisors?

Overall, while the methods are very detailed, they are extremely long - 6.5 pages. Please try to be succinct and reduce the amount of text. Alternatively, some of the methods could become a supplemental document to the manuscript.

Regarding the logistic regression models, did the authors ever consider performing a backwards logistic model with all independent variables and then seeing which variables remained significant? Did the authors ever consider just including those variables that were significant or approaching significance with caries at the bivariate level?

The reviewer is wondering why the second model included BMI z-scores as the rationale for this was not clearly presented.

Results:

Table 1 - were the baseline and post-intervention vitamin D levels of children in the DVISUM (n=206) different than those only in the dental study (n=85)? It appears that those who returned had higher baseline 25(OH)D levels - does it possibly mean that there are some differences between those who returned and those who didn't complete this dental study?

Table 2 - is this table useful? Wouldn't it be appropriate to compare these characteristics to the baseline cohort of children (n=206) to show if/how they differ too?

This table should also have a column for all 85 children in the present study focusing on dental caries.

Line 39 - Caries score - are the authors referring to dfs/DFS?

Line 41 - what do the authors mean by mineralization disturbance? Do they mean enamel hypoplasia?

Page 15, line 270 - the authors mention mean intake of products with extrinsic sucrose. However, did they have information on the actual amount of sugar intake and frequency of intake?

Line 275 and 276 - data is not shown? Please consider showing these data. The review would like to see the distribution of the 85 children in this study according to these 3 groups.

Page 16, line 287-292 - the reviewer is wondering whether this paragraph is needed in this paper as it really isn't related to the main objective of this paper?

Considering that this paper is too long, the results section lacks focus. It would be better if the authors could stick to the main objective(s).
If 25(OH)D was measured at 6 years of age why are the authors trying to associate it with supplement intake 2 years later? This doesn't seem to make any sense and is beyond the scope of this paper.

Line 290 - weren't follow-up results also 3 months after the baseline phase at 6 years of age? Presenting data on the correlation between baseline and follow-up 25(OH)D seems beyond the scope of this paper.

Page 16, line 293-297 - how is this section related to the primary objective of this study? This should be a separate paper likely linked to the full cohort of children. The reviewer finds that the results section is not focused on the primary association of interest.

Table 3 - Again, what is meant by mineralization disturbance?

Is it DFS only or a combined dfs/DFS?

Table 4 - please show the entire models so that the reader can see all the independent variables included. In the present form, the reviewer is unable to comment on the appropriateness of the models.

The authors should really focus on the first set of rows "all subjects, regardless of supplement intake at caries examination" and just include supplement intake in the model. The other two types of subgroup analyses leave the impression of data mining. The authors should revisit their models.

Page 19, line 342 - do they mean central incisors instead of medial?

Line 348 - please report the data.

Why weren't enamel hypoplasia and LL37 also included in the regression model?

Page 20, line 350-354 - Show the full model, not all the small models. It makes the reviewer think that you are data mining.

Page 20, line 363-370 - maybe the study wasn't powered to detect this difference in LL37 considering you only had 85 children? If LL37 is lower in children with lower vitamin D levels, then wouldn't you hypothesize that LL37 is lower in children with caries?

Discussion:

Page 21, line 378-379 - please provide references.

Line 380-382 - Schroth et al 2016 J Dent Res discusses issues of caries among 6-11 year olds and vitamin D status and that previous 25(OH)D status might have influenced the caries seen at
the time of actual dental assessment. It might be useful to review their discussion section of that manuscript.

Page 23, lin3 416-417 - references are needed.

Line 421-422 - the authors may not have had sufficient statistical power to study this. Any need to comment on this?

Where is the discussion on limitations of this study? There certainly are several limitations - small sample, linking data from different stages of the study, response bias to questions, not having 25(OH)D status at age 8 years, etc.

How do the findings from this study compare to the other national studies - Herzog et al, Dudding, Schroth et al 2016 J Dent Res?

**Level of interest**

Please indicate how interesting you found the manuscript:

An article whose findings are important to those with closely related research interests

**Quality of written English**

Please indicate the quality of language in the manuscript:

Acceptable

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