Reviewer's report

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

Version: 1 Date: 15 Nov 2017

Reviewer: Geraldine Lo Siou

Reviewer's report:

The reviewer would like to thank the authors for addressing the comments, adding Figure 1 illustrating the flow diagram, and revising the manuscript accordingly.

The reviewer is in general satisfied with the responses provided by the authors; but has some additional comments:

- The reviewer thanks the authors for providing details regarding the two-step method for PCA and PLS. However, to avoid confusion in Lines 188, 265, and 270, the reviewer suggests choosing another wording for "clustering of subjects" (Line 188), "clustering of the children" (Line 265), and "clustering of subjects" (Line 270) as the "clustering" wording typically refers to another type of data-driven technique (cluster analysis) and is a very different technique than PCA or PLS. In addition, if the objective of using PCA and PLS is to select independent variables that are important in explaining the variations in y, then the reviewer suggests removing results from PCA: PCA, unlike PLS, chooses the scores t1 and t2 without regard to the dependent variable (e.g., caries status).

- Table 3: the reviewer apologizes for not being clear in the previous comment regarding Table 3. The reviewer understands that this table is now restricted to all 85 children as recommended by reviewer 1. Since 37 children had caries (according to Table 2), and that Model 1 includes 6 covariates; Model 2 includes 8 covariates and Model 3 includes 9 covariates; this leads to low EPVs (events per variable) of 6, 5, 4 for Models 1, 2, 3, respectively. Consequently, there is likely an issue of estimating inaccurate logit coefficients when using the traditional (maximum likelihood) logistic regression in small samples. The reviewer suggests applying a method, such as the Firth's correction, to improve the accuracy of the logit coefficients in this study.
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