Reviewer's report

Title: Factors related to children's caries: a structural equation modeling approach

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Reviewer: Xiaodong Liu

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Utilizing structural equation modeling (SEM), this manuscript aims to examine the factors related to children's caries among 1332 five-year-old children in Gangzhou, China. The data collected from such a large sample are valuable. I am a stranger to the substantive research field so my comments hereafter focus mainly on the methodological portion of the paper.

Major Compulsory Revisions:

1) A clarification on “children’s caregivers” (e.g. on p.5) is needed. Are the caregivers in this study mainly children’s parents or grandparents? Was the survey done based upon mainly fathers, mothers, or both?

2) Some details of each of the measures should be given (for example, sample question for the measure of oral health knowledge, psychometric information of the measure). It is not clear how children’s dental care utilization was measured (e.g. is it a yes or no type of question, or frequency of dental care?).

3) Details of how the measurement models (and the SEM model) were estimated should be discussed. Since some of the observed variables are categorical (some with three categories) and children’s caries are count data (right?), special attention should be given to the estimation methods (so different distributions can be taken care of).

4) The following statement cannot stand without further appropriate test/data: “...the path coefficient of caregivers’ oral health practices on children’s oral health practices was greater than that of caregivers’ oral health attitudes on children’s oral health practices, and this result demonstrated that caregivers can be role models for children’s practices in everyday life...” (p. 9).

Minor Essential Revisions

5) A proofreading and professional editing of this manuscript will be helpful. As an example, “caregivers’ oral health knowledge affected children’s oral health practices mediated by caregivers’ oral health attitudes and practices” (p.2), this statement is not easy to read and may need to rewrite.

6) SEM model itself is not a causal model and cannot establish causal relationship (without appropriate research design). So caution should be excised when talking about the causal process or causal model. For example, on p. 4, when it is stated that “However, such a complex causal model has not been
tested in Chinese preschool children”, I had an impression that this study intended to test a causal model by using SEM.

7) On p. 4 “… a multi-structural model (Fig. 1) was hypothesized based on the theoretical frameworks and literature…” it is not clear for me what the theoretical frameworks are. In the discussion part, KABP model and KAP model (p.8) were discussed. Are these the theoretical frameworks the authors referred to? If relevant, it would be very helpful to introduce this theoretical background earlier.

8) The discussion (p. 7) on removal of children’s dental care utilization from the model (figure 1) makes sense since it “was not an appropriate influence on children’s dental caries…” (p.7) in this population. My question is: given what is said, why even bothering to test it in the model (figure 1). In addition, why was children’s dental insurance also removed from the model? Is it possible that children’s dental insurance may be directly linked to children’s caries? Is it possible that caregivers’ oral health knowledge/attitude may be related to dental insurance, which in turn, links to children’s caries? [these are more substantive related, I am just curious here]

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests