Author’s response to reviews

Title: Oral health status and oral health knowledge, attitudes and behavior among rural children in Shaanxi, western China: a cross-sectional survey

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Dear Editor and Reviewers:

Thank you for your response regarding our manuscript entitled “Oral health status and oral health knowledge, attitudes and behavior among rural children in Shaanxi, western China: a regional survey” (ID: 4983006991311231). Your comments have been very helpful in improving our paper. We have read the reviewers’ and editor’s comments carefully and have made revisions based on their suggestions. We hope that this revised manuscript will meet your approval and be acceptable for publication in its current form. Point-by-point responses to the reviewers’ and editor’s comments are summarized below.

Reviewer #1:
1. The authors would need an English editor. Please do think of using Edanz, the editors recommended by the BMC. There are major grammatical corrections needed.

I recommend that the authors consult the STROBE on reporting for a cross sectional study to help strengthen this section. This section is poorly written.

Thank you for your careful reading and thoughtful suggestions. We have consulted an English editor (Edanz) and have referred to STROBE in revising the article.

2. Abstract: There is no evidence in the study to suggest that the recommendation to conduct oral health education programs in the 73 rural schools in western China would address the issues raised in the conclusion piece of the abstract. I would suggest that this recommendation be deleted.

Thank you for your suggestion. In this survey we found that oral health knowledge and oral health behavior were very poor among rural children in Shanxi, so we feel that education to improve oral health knowledge and enhance the frequency of tooth brushing should be carried out. We apologize for our
ambiguous presentation of this subject and have edited that section of the manuscript.

3. Background 1. Line 85: please can you provide a reference? 2. Line 91: please can you provide a reference for the statement on growth for the rural economy?

Thank you for your careful reading and we have added references in line 85 and line 91.

4. Method 1. Line 118: Three out of how many townships? 2. Line 118 - please can you move the statement on ethics approval to a different section? 3. Line 120: did you select all the schools in the townships? If not, how was the sampling done? 4. what does cluster selected mean? This was used throughout the section on sample? 5. What was the sample size for this study? How did you determine it?

Thank you for these important points. The sample size was calculated using the prevalence of dental caries reported in a recent survey in Yunnan Province, western China (73.6% for 5-year-olds and 53.5% for 12-year-olds), error margin of 10%, 95% confidence interval and a design effect of 1.5. The estimated sample size was 207 for 4- to 6-year-olds and 501 for 12- to 15-year-olds.

The sample was selected from township schools. Until 2012, there were 90 townships in Shanxi Province. With education reforms from 2006 to 2010 in Shanxi Province, there are generally one or two primary schools and one middle school in each township. Each primary school has approximately 150-200 students and each middle school has approximately 200 students. To obtain our sample, we chose three major counties of Shanxi Province, mainly based on their geographic location. Secondly, by simple random cluster sampling, one rural township in each region was selected. Thirdly, all 4- to 6-year-olds in the key kindergarten and key primary schools of each township were recruited, and all 12- to 15-year-olds in key middle schools were selected. This information has been added to the Methods section.

We apologize for our ambiguous use of the term “cluster selected.” Our intended meaning is that all 4- to 6-year-olds in the key kindergarten and key primary schools of each township were recruited, and that all 12- to 15-year-olds in the key middle schools were selected. We have clarified this information in the revised manuscript.

We have moved the statement on ethics approval to the first paragraph of the Methods section, according your suggestion.

5. Questionnaire - can the questionnaire be described in details. Was this an adopted, adapted or newly developed questionnaire? If it was newly developed, how was it tested for content and face validity? Where were the questionnaires administered? How were the students helped to understand the questions? Where the questions all developed in English or was there an translated version? Why is there a difference in the instrument used for the adolescents and the care givers?
We have added some details about the questionnaires. The structured questionnaire had been used in the third National Oral Health Survey in China in 2005 and is a Chinese language version. In the questionnaire, the instruments used for adolescents and for caregivers were different. Subjects were interviewed face-to-face by trained interviewers and the completeness of questionnaires was checked by interviewers at collection.

6. clinical examination: no reference for the WHO criteria given. What criteria was used for the assessment of the periodontal health
   
   Thank you for pointing out our omission. The clinical examination of dental caries and periodontal health was based on WHO methods. A reference had been added.

Reviewer #2:

1. The English writing is not totally acceptable. Please consider consulting with a native-English speaking medical writer to assist in a revision.

   Thank you for your careful reading. We have consulted an English language editor and have revised the article.

2. Within Method Section Clinical Examination: should provide information for the within and between observer reliability of the scoring systems used to examine dental caries and periodontal condition.

   Thank you for your suggestion. We have added information on inter-examiner reliability to the revised version of our Methods section.

3. How did the authors arrive at the sample size of 424 for 4-to 6 year-olds and 564 for 12-to 15 year-olds? Please provide a power analysis. 4 Should state the limitation of the study.

   Thank you for your insightful questions. The sample size was calculated using the prevalence of dental caries reported in a recent survey in Yunnan Province, western China (73.6% for 5-year-olds and 53.5% for 12-year-olds), error margin of 10%, 95% confidence interval and a design effect of 1.5. The estimated sample size was 207 for 4- to 6-year-olds and 501 for 12- to 15-year-olds.

   The sample was selected from township schools. In 2012, there were 90 townships in Shanxi Province. With education reforms from 2006 to 2010 in Shanxi Province, there are generally one or two primary schools and one middle school in each township. Each primary school has approximately 150-200 students and each middle school has approximately 200 students. To obtain our sample, we chose three major counties of Shanxi Province, mainly based on their geographic location. Secondly, by simple random cluster sampling, one rural township in each region was selected. Thirdly, all 4- to 6-year-olds in the key kindergarten and key primary schools of each township were recruited, and all 12- to 15-year-olds in key middle schools were selected.

   We apologize for our ambiguous use of the expression “cluster selected.” Our intended meaning is that all 4- to 6-year-olds in the key kindergarten and key primary schools of each township were recruited, and all 12- to 15-year-olds in
4. Suggest revising “oral status” in title to: “oral health status”. 2 The Results Section of the abstract, line 61: revise “relatively” to “respectively”. It would be useful to report whether there were any statistical differences between male and female subjects when reporting data.

Thank you for your careful reading and insightful suggestions. We have edited our manuscript in accordance with your suggestions.

5. Should acknowledge in the Discussion what is the difference between the current data found in the rural subjects and those found in subjects residing in the economically developed areas in the world, and what suggestions could be drawn from the comparison for future prevention strategies in the current research area?

Thank you for your good suggestions. We have found related references and included them in the revised version of the manuscript, in accordance with your suggestion.

Reviewer #3:

1. The authors should provide the specific figures in the results section and not just use phrases such as "more than half" Provide a structured result in line with the outlined objectives. This will give the reader a better understanding. The following suggested outline may assist the authors: -Profile of children -Caries experience -Oral Health Knowledge/Oral Health Behavior -Correlates of dental caries and periodontal

Thank you very much for your insightful suggestions. We have added information to our Results section based on your recommendations.

2. The following articles may be of help to the authors


Change the phrase 'baby teeth' to primary teeth

Thank you very much for your insightful suggestions. We have read the recommended references and edited the article accordingly.

Thank you very much once again for your comments.
Best wishes,

Sincerely yours,

Jianghong Gao