Author’s response to reviews

Title: Dental caries among children visiting a mobile dental clinic in South Central Kentucky: a pooled cross-sectional study

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Author’s response to reviews: see over
Dear Dr. Foote,

Thank you very much for your e-mail dated March 12, 2013 regarding our manuscript entitled, “Dental caries among children visiting a mobile dental clinic in South Central Kentucky: a pooled cross-sectional study” (MS: 1264071579923313). We very much appreciated constructive comments from the three reviewers.

We took all comments seriously and responded to all comments from each reviewer. The details of our responses are provided below. The most important changes we have made are to: (1) explain the school selections and types of children included in our study; (2) provide clinical procedures in detail; and (3) compare and contrast our results with other existing studies and make our discussion more compelling.

We have also made minor changes suggested by each reviewer. We believe that the quality of our revised manuscript has greatly improved.

Thank you, again, for providing us with helpful comments in a timely manner and reconsidering our manuscript to be published in *BMC Oral Health*. We look forward to hearing from you soon.

Sincerely,

Aki Michimi, Ph.D.
Research Assistant Professor
Department of Public Health
Western Kentucky University
Reviewer: Catherine Binkley
Reviewer's report:
Minor Essential Revisions:
1. In Results section, p. 4. Spell out numbers (for percentages) when they are placed at the beginning of a sentence.
   - Since it is hard to spell out the percent with decimal, we rephrased each sentence so that sentences do not start with a percentage.

2. Throughout Results, replace "were" with "are" when stating the results are presented in Tables or Figures.
   - All relevant parts were corrected.

Discretionary Revisions
1. This reader would like to where the majority of the non-white children resided - urban or rural?
   - The majority of non-white children (72%, 247 out of 342) lived in urban areas (the Bowling Green metro area). We added a sentence noting the percent of non-white children living in urban areas and attempted to make our argument more compelling in contrast with the national norm. (p.6, last full paragraph)
   - The number and percent of non-white were revised in Table 1. Previously, ‘no response’ was included in ‘non-white’.

2. Dentist participation in Kentucky is generally low. This reader would like to know if there are fewer dentists participating in Medicaid in the rural areas of the study than in the Bowling Green area because this could impact access to care for the children enrolled in Medicaid.
   - This information is hard to obtain from reliable sources, although this information is important in the context of our study. According to the Kentucky Dental Provider Workforce Analysis: 1998-2006 (source: http://chfs.ky.gov/nr/rdonlyres/7988e4fd-e33e-4bd5-b912-3739ec00374c/0/28070dentalworkforcebrochuresmall1.pdf), about 51% of survey respondents from dentists in the Western Kentucky region served Medicaid/K-CHIP patients, which was about the state average. This report, however, did not provide breakdowns by county. Others reported the dentists-to-population ratio by county where metropolitan counties had generally higher ratio than non-metropolitan counties (Saman et al, 2010; J Public Health Dent, 70(3), 188-196). This study, however, included all practicing dentists regardless of Medicaid participating status. We decided not to make a statement regarding fewer dentists participating in Medicaid in our rural study areas. This may have an impact on access to care, but it was difficult to justify due to the lack of evidence to support this notion. Instead, we expanded our discussion to explain poor oral health in rural areas due to poverty, low income, lack of fluoridated water, and dentist shortages. (p. 6, 3rd paragraph)

Reviewer: Wael Sabbah
Reviewer's report:
Major Compulsory Revisions:
The authors need to describe the criteria for coverage by the mobile dental unit. It is not clear whether the service is provided to all schools, or provided in selected schools based specific markers related to students SES or availability of insurance. Secondly, within the selected schools, is the service preceded by dental screening to select eligible students? If it was, what are the clinical criteria for inclusion of students in the programs. The authors need to elaborate on the criteria for selecting schools and students, if any. In other states, similar preventive programs usually target high risk students at school
with high percentage of students with low SES. If this was the case in Kentucky, the results definitely are not representative of the population, they rather reflect disease pattern among high risk, poorer sectors of the population, which should be discussed in the paper. It would also explain some of the findings especially in relation to the lack of differences between different ethnic groups in dental caries.

- We added a paragraph explaining school selections and eligibility of children to participate in the program with greater details. (p.3, last full paragraph)
- All children underwent oral exams prior to receiving dental sealant. (p.3, last full paragraph)
- The IRH primarily targets medically underserved children in the service area. However, all second and seventh grade children in participating schools were eligible to receive services regardless of their socio-economic status. Thus, our study subjects were drawn from a convenience sample of children whose parents had agreed to have their children receive services in the schools, which were provided at no cost to the participants. Thus, all types of children from social, economic, and cultural backgrounds were possibly included in our study. We emphasized these points in the method and limitation sections. (p.3, last full paragraph, last paragraph in the limitation section)

Minor Essential Revisions
In the stated conclusion in the abstract and in other parts of text, the authors stated that dental hygiene education is important to prevent dental problems, this statement is not supported by the findings of this study, and should not be included in the abstract. If the authors want to keep the statement in the text it should be clear that the statement is not supported by findings from the study.

- We deleted the notion of dental hygiene education from our abstract and conclusions. We replaced this notion by emphasizing our main results.

The title of the manuscript should reflect this is a low SES population.

- Children included in the program were recruited from medically underserved areas in South Central Kentucky or predominantly rural communities. However, due to the nature of the program provided in school-settings at no cost, a wide spectrum of children regardless of their socioeconomic status may have been included. Thus, we believe it would be incorrect to categorize all children into the ‘low SES’. One limitation in our study is the lack of information about family income, which the IRH did not collect from the study subjects. We decided to keep the title as it is because of these reasons.

The analysis did not include any indicator of SES other than urban/rural and dental insurance, this should be reported as a limitation.

- Insurance status and rural location were used as surrogates for income, which was not collected from the study subjects. We noted this in the limitation section. (Limitations, 1st paragraph)

Reviewer: Leonard Crocombe
Reviewer’s report:
This is interesting cross-sectional study of dental caries a convenience sample of children who visited a mobile dental clinic in South Central Kentucky. I have a few suggestions to make which will improve this paper.

Major Compulsory Revisions:
- The Conclusion to both the abstract and the paper itself mentions the importance of dental hygiene education and improving access to dental care, these two factors are not conclusions or findings from
this study. These two issues may be important, but if so, they should be mentioned in the discussion section and not in the conclusions or at the start of the discussion section as they currently are.

- This was pointed out by the other reviewer. We deleted the notion of importance of dental hygiene education from our conclusions. We replaced this notion by emphasizing and reiterating our main results.

- The readers need to be informed of what type of clinical examination was undertaken, what instruments were used, whether X-radiographs were regularly always or never used, and whether the two examiners were calibrated.

  - More detailed information is provided in the data collection procedure. Oral exams were part of the dental sealant program and IRH’s dentist and registered dental hygienist performed the exams with a dental mirror, explore, and air/water syringe in the fully equipped mobile dental unit. X-radiographs were not utilized and dental hygiene students assisted the clinicians during exams. (p.4, 1st full paragraph)

- In the discussion section, other than mentioning it could be a result of shortcomings in your study, you do not conjecture on why rural children may have more untreated dental caries than metropolitan children, e.g. Water fluoridation is less common in rural areas than capital city areas, differing attitude to health, more likely to be of lower socioeconomic status.

  - We expanded by adding one paragraph in the discussion section which summarized factors associated with dental health problems in rural areas. We cited several key articles. Some of these factors are dentist shortages, lack of fluoridated community water supplies, and sociocultural determinants of dental health, which may have contributed to higher caries prevalence in rural areas. (p. 6, 3rd paragraph)

- You have not compared your results with results from other studies, and conjectured on why they may be different, in the discussion section.

  - In addition to our comments above, we discussed poverty and low income as contributing factors to higher dental caries in rural areas. (p.6, 1st paragraph) The lack of transportation and parental availability to take children to dentists were also discussed in the introduction section. Thus we provided additional insights as to why rural areas had poor oral health.

Minor Essential Revisions:

- The study uses odds ratios rather than prevalence ratios. The former are less accurate with small sample sizes. Why odds ratios was used should be explained in the limitations to the study.

  - We added a few sentences to justify the use of odds ratios. Although we acknowledge that prevalence ratios may be preferable over odds ratios in some cases, reporting odds ratios is a standard practice in epidemiological studies. Fewer assumptions are required in odds ratios than in prevalence ratio, and odds ratios provide maximum likelihood estimates with better model convergence. We explained these points and justified the use of odds ratios with citations. (p.7, 2nd full paragraph)

- The first two paragraphs in the data analysis section are difficult to read. The classification into caries and non-caries groups and then into three caries groups should be handled at the same time.
• We clarified some sentences in both the first and second paragraphs in the Data Analyses section. The dichotomous and multiple caries categories were more explicitly explained. (p.4, 1st and 2nd paragraphs under Data Analysis)

- The OMB definition of metropolitan and rural status would not be known to many readers and should be explained.
  • More explanations about the metropolitan and nonmetropolitan areas were added. (p.3, 3rd full paragraph)
  • We updated Figure 1 noting ‘urban’ and ‘rural’ in the map legend.
  • We used the term “BRADD” (Barren River Area Development District) in the figure and through the paper to be consistent. The BRADD is officially recognized term in Kentucky.

Minor Essential Revisions

- Two sentences in the second paragraph of the background section could be better phrased. For example, to some people having missing teeth may not be seen as a problem, and rather than a solution to an aching tooth, in the third sentence I would have the phrase “reaching the age of five years (not 5)” after the phrase “early childhood dental decay.
  • We view persons missing all of their teeth as having poor dental health. Generally, if left untreated, dental caries may lead to total tooth loss (Beltran-Aguilar, et al. MMWR Surveill Summ. 2005, 54(3), 1-43). Thus dental caries precedes edentulism as dental problems. We noted the highest level of edentulism to reflect poor dental health in Kentucky. (p.2, 2nd paragraph)
  • We corrected the sentence by changing ‘5’ to five.

- In the fifth and six paragraphs of the background section, the authors mention lower or no cost when obviously someone has to pay. I suggest it be made clear that it is at lower or no cost to the parent, carer or guardian.
  • We clarified the sentence by adding “… no cost to the user” and “… or no cost to their parents or guardians …” in appropriate sections. (p.2, 5th and 6th paragraphs)

- In the fifth paragraph of the background section, the authors use the word “ideal” to describe the school-based mobile dental program. I suggest that very little in the real world is ideal and that it may be wise to tone down this word.
  • We replaced this with ‘viable’ solutions.

- In the first paragraph of the methods section, use second and seventh instead of 2nd and 7th.
  • These were corrected as suggested.

- Sentences shouldn’t begin with a number. There are a few such sentences in the first paragraph of the results section.
  • This was pointed out by the first reviewer as well. We rephrased each sentence so that sentences do not start with a percentage.

- In second paragraph of the results section, the authors note that the age, insurance status and sex were significant but not for what (dental caries). I suggest also using the terminology of statistically significant.
• We rephrased the statement with the consistent terminology as suggested.