Author’s response to reviews

Title: Could giardiasis be a risk factor for low zinc status in schoolchildren from northwestern Mexico? A cross-sectional study with longitudinal follow-up

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Could giardiasis be a risk factor for low zinc status in schoolchildren from northwestern Mexico? A cross-sectional study with longitudinal follow-up.

Luis Quihui-Cota, Gloria G Morales-Figueroa, Johanna G Leyva-Perez, Mauro E Valencia-Juillerat, Julian Esparza-Romero and Rosa O Mendez-Estrada

Dear Dr Quihui-Cota

Your revised manuscript has now been re-reviewed by our Associate Editor and the comments are pasted below:

1) Ask them to replace prevalence rate by prevalence proportion throughout the text (a prevalence is a proportion, not a rate).
   Answer: You are right. The term “prevalence” is referred as a number of the exposed population divided for the number of the exposed population plus the number of non-exposed population and multiplied by 100. However, we never used the term “prevalence” in the section “Results” (Giardia-infected and Giardia-free groups) to describe quantitatively the presence of giardiasis in our study population or study sites. In addition, every figure or data of “prevalence” through the text has been taken as it is provided by the corresponding source of reference.

2) Ask the authors to clearly state the inclusion criteria for the participating children.
   Answer: In the sub-section “Study population” of the “Methods” section, the study criteria were remarked from lines 12 to 14.

3) Ask the authors to clarify how the children were initially sampled i.e. were all children in grades 1-6 in 7 schools invited to participate? It seems odd that there were only 293 children invited to participate. In other words, please ask the authors to provide a description of the sampling strategy within each school.
   Answer: You are right. Current redaction is given a wrong picture about our subject recruitment. The real sampling strategy was redacted again from lines 8 to 14 in the sub-section “Study population” in the “Methods” section.

4) Ask the authors to explain why 20 of the 114 did not participate in the measurements of height and weight.
   Answer: The software EPI-INFO-2000 can estimate the Z score for weight/height up to 138 months and less than 145 cm for males, and up to 120 months (10 years) and less than 137 cm for females. Therefore, data from schoolchildren showing those characteristics could not be estimated.

5) Ask the authors to mention if the interviewers and mothers were blind to the infection/zinc level status of their child when the socio-economic interview and dietary zinc took place. If they were not blind, ask the authors to discuss the potential impact of measurement error on the results.
Answer: Mothers and interviewers were not informed about the zinc status of the children until the ending of the study. Interviewers were also blind to the infection status of the children. However, mothers were informed of the infection status of the children immediately after the coproparasitological analysis because of ethical reasons and to justify the administration of the antiparasitic treatment when required. Therefore, if exchange of information was given about the infection status of the children between mothers and interviewers that could affect data collection, particularly dietary records, it might be probably. However, our results provided evidence about the consistency in the nutrients intakes through six month period such as those from previous unpublished studies carried out in similar local low socioeconomic populations.

6) Even though the authors have used a linear regression, it is not described in the methods. Also, the authors should interpret the beta coefficient of the regression. Also, the authors may want to consider exploring the presence of an interaction between baseline zinc levels and giardia infection, where the infection could have a differential impact on the follow-up zinc levels with varying baseline zinc levels in giardia infected vs non infected children.

Answer: In the sub-section “Statistical analysis” of the “Methods” section, use of the linear regression analysis is properly explained from lines 17 to 21.

In the section of “Results” beta coefficient is explained from lines 38 to 43.

In the section of “Results” the interaction between baseline zinc levels and Giardia infection was also explored. Results of the analysis are included from lines 43 to 44.

7) It may be worth checking the association between the dietary zinc questionnaire and the serum levels to check if the dietary questionnaire is a valid method to measure zinc intake.

Answer: Some studies have investigated the relation between the nutrient intakes by 24 h recalls and the serum nutrients levels. These studies have revealed that the estimated energy and macronutrients intakes are in the range from 5% to 10% of those clinically analyzed in the study population. Brennan et al. (1993) published a 3.6% of difference between daily zinc intakes and serum zinc levels (variation coefficient = 0.81) in 22 pregnant women.

8) Make sure that the authors always use the same number of decimals.

Answer: Two decimals for the p values, dietary zinc and serum zinc concentrations were considered. Although some numbers without or in the parenthesis suffered slight changes or total changes (re-analysis were carried out to check for the decimals), final result of the study remained unchanged.

In the “Results” section:

In the line 10, the number in the parenthesis (p = 0.1) was replaced by the (p = 0.12),
In the line 12 the numbers in the parenthesis (8.3 mg vs. 6.0 mg) were replaced by (8.30 mg vs. 6.01 mg).
In the line 13 the number in the parenthesis (p = 0.2) was replaced by (p = 0.19),
In the line 19, the numbers in the parenthesis (p = 0.9) and (p = 0.47) were replaced by (p = 0.51) and (p = 0.94) respectively.
In the line 20, the numbers in the parenthesis (p = 0.6) and (p = 0.9) were replaced by (p = 0.77) and (p = 0.22) respectively.
In the line 23, the number 14.4, the number in the parenthesis (1.4), the number 13.8, and the number in the parenthesis (1.9) were replaced by 14.46, (0.79), 13.78, and (1.33) respectively.
In the line 29, the numbers in the parenthesis (13.9 vs. 19.2 µmol/L) were replaced by (13.78 and 19.24 µmol/L) respectively.

In the line 33, the numbers in the parenthesis (14.4 µmol/L vs. 16.9 µmol/L) were replaced by (14.46 µmol/L vs. 16.98 µmol/L respectively).

In the line 38, the numbers in the parenthesis (CI= 0.97-4.12, p = 0.002) were replaced by CI= 1.02-4.15, p = 0.001 respectively).

In the Fig 2, two decimals of the geometric means of the serum zinc concentrations were considered to re-build the figure. Fig 2 remained the same.