Author's response to reviews

Title: Nutritional status and HIV in rural South African children

Authors:

Elizabeth W Kimani-Murage (lizmurage@gmail.com)
Shane A Norris (san@global.co.za)
John M Pettifor (John.Pettifor@wits.ac.za)
Stephen M Tollman (Stephen.Tollman@wits.ac.za)
Kerstin Klipstein-Grobusch (Kerstin.Klipstein-Grobusch@wits.ac.za)
Xavier F Gómez-Olivé (xavier@agincourt.co.za)
David B Dunger (dbd25@cam.ac.uk)
Kathleen Kahn (Kathleen.Kahn@wits.ac.za)

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Author's response to reviews: see over
Responses to Reviewers’ Comments

MS: 7161101933339497
Nutritional status and HIV in rural South African children
Elizabeth W Kimani-Murage, Shane A Norris, John M Pettifor, Stephen M Tollman,
Kerstin Klipstein-Grobusch, Xavier F Gómez-Olivé, David B Dunger and Kathleen Kahn

Dear Editor,

We have carefully considered the useful comments from the reviewers. We have revised the manuscript according to the reviewers’ comments. Revisions made in the manuscript are systematically indicated in the table below and also highlighted in yellow in the manuscript. We would like to resubmit the revised manuscript, MS: 7161101933339497 “Nutritional status and HIV in rural South African children” for consideration for publication in the BMC Paediatrics Journal.

We hope that these revisions will be satisfactory and look forward to hearing from you in due course.

Yours Sincerely,

Ms Kimani-Murage
### Table: Response to Reviewers’ Comments

<table>
<thead>
<tr>
<th>Reviewer’s Comments</th>
<th>Response</th>
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<tbody>
<tr>
<td>Reviewer #1</td>
<td>No specific comments</td>
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<tr>
<td>Reviewer #2</td>
<td>Major Compulsory Revisions:</td>
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<tr>
<td></td>
<td>1. The authors present p-values for differences in Z-scores between the total sample and the HIV free population, but it is not clear how these p-values were obtained. These two samples are not independent of each other.</td>
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<td></td>
<td>The aim was to test if means for Group A differed significantly from means for Group B. Group A=Total sample including HIV negative, HIV positive and those not tested; Group B=HIV free (HIV negative). We used unpaired t-test to test the difference in means of these two samples. This was because despite the fact that the HIV negative children are in both groups, it would not be possible to do a paired test (for dependent samples) as the HIV positive children and those not tested are only in Group A, hence no matches in Group B; while tests for dependent samples assume that there are similar data points in the groups in question (which is not the case in our groups). We consulted a few statisticians on this and they were in agreement. We hope our response is satisfactory.</td>
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<td>No change was done with regards to the analysis but more details on the test used were given in the methods section.</td>
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<td></td>
<td>(See Methods section, data analysis subsection, Page 8, Paragraph 3; and Results section, Page 10, Paragraph 4)</td>
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<td>2. Can the authors comment on the appropriateness of using the WHO 2006 standards for calculating the Z-scores? Are there more local references that could be used?</td>
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<td>We consider the 2006 WHO standards most appropriate for the purpose. The 2006 WHO standards were developed using data collected internationally among healthy breastfed children that were raised in conducive environments that enhance full growth potential. They are therefore recommended for international use by the WHO. Earlier studies indicate that the growth of young children (&lt;10 years) is</td>
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3. Related to the above point, is it possible that one reason for the higher prevalence of stunting in children living in villages mainly inhabited by people of Mozambican origin could be a genetic predisposition to being shorter? Therefore, the use of a different reference standard may remove the observed differences?

As stated earlier, studies have indicated that the growth of young children (<10 years) is similar across different ethnic backgrounds. Therefore the possibility of genetic predisposition being the reason Mozambican children were shorter would be limited. It is much more likely to be due to poorer environmental factors as already noted in the text.

4. To what extent is the lack of association with food security in this study due to the lack of using a sophisticated tool for measuring food security? The authors state that Food insecurity was defined as not having reported enough food to eat either in the last one month or in the last one year. Was this based on only one question? There are several measurement tools available that rigorously measure food insecurity with multiple questions addressing multiple dimensions.

Tips for pointing out this. Yes it is possible that lack of association with food security may have been due to limitations of the tool used.

This limitation was included in the discussion section.

Discretionary Revisions:

1. The authors state that “Children who were not tested had seemingly better nutritional outcomes generally than both HIV negative and HIV positive children”. Do they have an explanation for this? Do they suspect there was some bias in sampling or uptake of testing?

The main reason for non-participation in the test was because decision-makers were not available to give consent; largely because they were migrant workers and worked away from home.

This has been specified in the results section.
2. At the end of the fourth paragraph in the Discussion section, the authors state that the poorer outcomes related to WHZ in older children may be associated with weaning practices. They provide a reference for this, but it would be helpful to elaborate on this point for readers that are not familiar with weaning practices and how they might affect nutritional status. **Thanks for pointing this out. Some explanation has been included.**

3. In the 9th paragraph of the Discussion Section, the authors should further elaborate on the point they make regarding the small proportion of HIV-positive children biasing the strength of the associations. What direction do they expect this bias to be in? Do they think that if the sample size were larger, the differences in HAZ and WAZ might go away? **Due to the small proportion, we may have failed to detect significant association of nutritional status and HIV status based on proportions, which may have existed. We however do not expect that the differences found in HAZ and WAZ were due to the small proportion of HIV positive children. More explanation has been added**

4. Figure 1 does not add much, particularly since there are no significant differences by HIV status. The authors might consider incorporating this information into Table 1. **Data in Figure 1 was incorporated in Table 2**

5. Consider dividing Table 1 into two tables – the first including just the nutritional outcomes (including binary stunting, underweight, and wasting variables) and the second including the other characteristics. **Table 1 was divided into Table 1 and 2**