Reviewer’s report

Title: Association of nutritional support programs with zinc deficiency in Colombian children: a cross-sectional study

Version: 0 Date: 15 May 2018

Reviewer: Frank Tammo Wieringa

Reviewer's report:

I have reviewed the manuscript "Association of nutritional support programs with zinc deficiency in Colombian children: a cross-sectional study" by Pinzón-Rondón and colleagues. The manuscripts is based on data collected during the 2010 Colombian National Nutrition Survey, and explores associations between zinc deficiency, socio-economic status, food security and nutritional support programs.

The paper is well-written and easy to follow.

Major concern.
There are 2 major concerns I have with the manuscript as it currently stands.

1. My first major concern has to do with the diagnosis of zinc status (or zinc deficiency) in individuals. It appears that the authors are not fully aware of the issues surrounding the determination of zinc status. In contrast to many other nutrients, such as iron or vitamin A, the human body doesn't have any stores for zinc, and the concentration of zinc in the circulation is maintained, even in a deplete status. Several years ago, Michael Golden has introduced the term 'type II' nutrients to indicate the issues surrounding these type of nutrients (other examples are essential amino acids). The IZINCG has recommended using plasma zinc concentrations for determining zinc status of populations, but not of individuals.

Hence, the main objective of the paper, determining associations between plasma zinc concentrations (zinc 'status') and socio-economic factors and nutritional support programs is absolutely fine. However, in the discussion, the authors propose measuring individual zinc 'status' for targeted interventions, which is unfortunately impossible. So I would like to propose to delete this paragraph (lines 9 - 21, page 11), and instead insert a paragraph highlighting the difficulties in measuring zinc status.

2. My second major concern is the lack of information on the nutritional support programs. The authors find that inclusion in a nutritional support program does not give protection against zinc deficiency (even the opposite). The authors propose in the discussion that the nutritional support programs might have been preventing an even worse prevalence of zinc deficiency. However, if the nutritional support programs have not included any means to improve zinc status (for example, if the nutritional support programs have provided only basic commodities such as white rice), then one cannot expect an impact
of the programs on zinc status. Hence, if feasible, more information on the nutritional support programs should be made available.

Minor comments
Only in the discussion it became clear to me that the authors are disproving another paper on the same database, that reported that ethical background contributed to zinc deficiency. In the current study, ethical background was included, but was no longer significant associated with zinc status, after inclusion of nutritional support programs and socio-economic status. This is an important point, that should be mentioned in the introduction, with a reference to the earlier study.

Page 5. Line 21. Please change 'growth stunting' to either 'retarded growth' or (perhaps even better) 'growth retardation and stunting'.

Stunting is the condition when a child falls below -2 SD on the growth chart, most often the result of a long process of sub-optimal growth, or growth retardation. But 'growth stunting' as term doesn't exist.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

No

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

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