Reviewer’s report

Title: Effect of micronutrient powder supplementation for two and four months on hemoglobin level of children 6-23 months old in a slum in Dhaka: a community based observational study

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Reviewer: Sant-Rayn Pasricha

Reviewer's report:

This study compares the impact on anaemia prevalence and Hb concentration of 4 vs 2 months MMP supplementation in young children living in Dhaka, Bangladesh. This has been done as part of a large programme. The authors have found evidence that 4 months intervention has a larger impact on haemoglobin concentrations and on anaemia prevalence compared with 2 months, and may reduce the risk of some infections.

My concern with this paper is the risk of confounding in this observational study, as there are some differences at baseline between children whom received 2 vs 4 months iron in terms of variables which could directly influence anaemia, iron status or risk of infection - the 4 month duration children seem better off in terms of stunting, risk of wasting, baseline Hb, and food security. Thus, I think it is crucial for the authors to look at confounding variables; although they report the infection model accounts for covariates, these would need to include the key variables which are different between the groups (as above). For example, it is plausible that younger children would respond less well to iron in terms of Hb whereas older children might respond better because of slowing growth. So I'd suggest both age stratified reporting of Hb response to MMPs, and also a multivariate approach to adjust for these factors in the analysis. So for both the Hb response and infection analysis, I'd suggest incorporating multivariate analyses to adjust for baseline confounders, to see if MMP duration remains a significantly associated variable.

Comparative data are provided from a non-intervened cohort for the infection data. Are Hb data likewise available? This would be useful to determine the efficacy of even 2 months Hb. It is possible Hb is declining in this group without intervention.
It would be useful to have iron biochemistry. With collection of venous blood, this should be achievable.

AML doesn't cause brain 'metastases' - was this leptomeningeal disease?

Bangladesh is known to have an unusual anaemia epidemiology situation with high levels of groundwater iron perhaps influencing iron deficiency rates and contribution to anaemia - this is not discussed here - do the authors feel this may influence impact of MMPs?

**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.

No

**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

**Quality of written English**

Please indicate the quality of language in the manuscript:

Needs some language corrections before being published
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