Reviewer’s report

Title: Effect of Multiple Micronutrient Supplements for Improving Anaemia of Young Children in a Rural Area, Lao People’s Democratic Republic: a Randomized Trial

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Reviewer: Philippe Dr Donnen

Reviewer’s report:

Effect of multiple micronutrient supplements for improving anaemia of young children in a rural area, Lao people’s democratic: a randomized trial

Major compulsory revisions

-The text should be reviewed by an English native speaker;
-There are quite a lot of methodological weaknesses (see below);
-Discussion is not enough developed;

Title
The title is confusing as all children included are not anaemic;

Abstract

P2
L6: Stop the sentence after “recommended” and start a new one with “However”.

P3
L1-2: The improvement of Z-score WFA is very small and not SS !

Background

P3
-L1: The authors should first present the problem at the world’s level and in a second time for Laos.
-L1-4: it is contradictory! 10.8% from 40.9% is about a quarter, it seems not to be the major cause;
-L4-5: a major risk factor is also infection and especially parasitosis;
-L7: “decreased interaction with the environment”: what does this means exactly?

P4
-L5: “micronutrient supplementation”: the article is about home fortification not supplementation;
-L7: individual status of what?
L12: 2 sachets per week: it is not clear if both sachets should be taken the same
day or one sachet at two different days;
L13: MMP should be written entirely the first time it appears;

The authors should explain why they gave multiple micronutrient home
fortification and not only iron;

Nothing is said about the epidemiology and control of malaria in this region
though it has been recently demonstrated to be an important factor to take into
account when dealing with iron supplementation;

Materials and methods

P5

L2: why is the production of other foodstuffs not sufficient? no data on
consumption of food potentially rich in iron?
L3: food supplement is not a right term; complementary food is better;
L10-13: it is necessary to increase the number to compensate the lost to follow
up; what is the evaluation of lost to follow up?

P6

L1: how was children’s age established?
L2-3: exclusion criteria: what if the children had received iron or other
micronutrient supplementation before the study? What if baseline Hb levels were
very low?
L9-11: This is an unusual way of doing randomization; could the authors provide
a reference?
L16: it should be immediately precised that the sachets will be given at two
separate days during the week;

P7

How were the doses of micronutrients calculated? The age of the children varies
considerably and for examples, iron needs are very different for children between
6 and 12 months compared with children older than 12 months. The authors
should justify their choice.

Why did the authors not used a placebo controlled group? It is not difficult to
manufacture sachets of powder without micronutrients? Why was the study not
double blind?

P8

L8: NIOPH should be written entirely the first time it appears;
The way the supplements were given to the mothers and children should be explained before;
- How exactly was the compliance measured? Following what mothers said? Counting the empty sachets? Other?

Results

P11
-L3: having diarrhoea is a reason to drop out?
-L4: is this reference 28 really essential?

P12
-L11: what does this means?
L12-14: why not indicating the SD for baseline measures?

P13
-L5: The means and changes of anthropometric Z-scores between baseline and week 24 are shown in table 3;
-L6-7: Weight for height Z-scores decreased in all groups!

Discussion

P14
-L5-7: in the result section, the authors present evolution of anaemia and haemoglobin for the groups as a whole but without statistical tests. It is thus not possible to conclude that the interventions were effective;
-L8-9: this affirmation corresponds to which results?
-L10-12: the authors do not comment the fact that for severely to moderately anaemic children haemoglobin changes were similar for TWS and control groups;

P15
-L1-2: was the change statistically significant?
-L2-5: what does this means?
-L9-12: this sentence is unclear; if we talk about compliance, it was much higher in the TWS group; if we talk about efficacy in reducing anaemia, DS might be better; but the authors should not give program implications as their work is not enough strong in its methodology to give valid results;
-L13-16: these subgroups analysis may give unvalid results because of confusion and the sample size of the subgroups may be too small;

The authors don’t at all discuss the eventual benefits of multiple micronutrients compared with iron alone (interactions between micronutrients absorption and
utilization). They also don’t discuss about the doses of micronutrients given.

Figure 1
-Why did the randomization led to unequal groups in terms of number of children? (110/111 and 115)

Table 1
-The n for the variables in the 3 groups should be removed; they can be calculated from the total n in the subtitle. Ex: Sex, male in the control group: 34.5% of 110 make 38;
-“mothers working outside” was not defined in the methodology section;
-High SES2 the footnote 2 does not refer to SES;
-Breastfeeding status: what represent the %? Tahe breast fed infants?, exclusive?
-What is the interest of presenting weight and height as WHZ, HAZ and WAZ are presented?

Table 2
-Title is incomplete;
-What is the significance of AB joined?
-The problem with these subgroups analysis is that they may be confusion factors so as nutritional status, age, etc. Interpretation of these results should therefore be prudent;

Table 4
-It is table 3;
-The line with the n should be placed at the right position;
-b: which tests have been performed? When Anova is SS, comparision 2 by 2 can be done but using correcting factors (ex Bonferroni). Was this done?

**Level of interest:** An article of limited interest

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.