Reviewer's report

**Title:** Incidence and course of child malnutrition according to clinical or anthropometrical assessment

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**Reviewer:** Michel Garenne

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The study is a re-analysis of longitudinal data on child malnutrition collected in Bwamanda, Zaire, in 1989-1990. A sample of some 5657 pre-school children was monitored over a 15-months period by visits every 3 months. At each visit a clinical assessment was made, and anthropometric measures were taken. Malnutrition could be defined as either clinical (moderate, marasmus, kwashiorkor) or by anthropometry (<-2 Z-score for moderate and <-3 Z-score for severe wasting or stunting). The analysis focuses on incidence and duration of malnutrition episodes. The study was well conducted, the data are sound, the analysis is straightforward, and the paper is clearly written. The study is important, because it is one of the rare studies measuring incidence and duration of malnutrition (as opposed to numerous prevalence studies).

**General comments:**

1) Visits every 3 months capture only some of the very short episodes (on average half of those lasting less than 3 months). This point could be mentioned.

2) Durations of episodes are measured only from incident cases followed from 3 to 12 months. This procedure shortens the real average duration of episodes, since episodes which started earlier and those which had not recovered by the end of the follow-up are not counted. This deserves to be said. This procedure does not provide an unbiased estimation of the duration of all episodes. This is particularly important for the comparison with other data (such as Ref # 4 in Public Health Nutrition 12:1974). A mean value of 3 months is abnormally small for untreated episodes.

3) Clinical malnutrition (associated with a pathology) does not measure the same parameters as anthropometric assessment (which includes normally short or light children). This could be said from the beginning.

4) (Optional) Authors might be interested in running a multivariate analysis of incidence and assessing the effect of age group, gender (sex), and season. This might give a better idea of the patterns of moderate and severe malnutrition, and proper P values for significant variables. If this is the case, they could simplify Table 1 and 2, and provide more details on age specific incidence in the tables (rather than only in Figure 2).

**Detailed comments**

5) The title could include a geographical reference, either “Bwamanda” or “Congo”
6) Titles for tables are abnormally complicated, and sometimes incomplete. I suggest to remove the case definitions, already well explained in text. Authors could add “age standardized” for incidence.

7) Headings for tables could be simplified and re-organized. For example, in Table 1, the first row could say: “Age standardized incidence rate per 1000 child-month, (95% CI), the second row being the season, and the third the gender (boys/girls).

8) Table 2: (optional) authors could repeat “clinical malnutrition” and “anthropometrical malnutrition” as in Table 1. They could also explain (in footnote, or in text) where are the remaining children for adding up to 100% (probably dead or out-migrated); or add an extra column.

9) Figure 1 and 2: series labels are hard to read, in particular the solid lines and the dotted lines. I suggest to add a symbol (square, diamond, cross, etc.)


11) The discussion of the meaning of the various measures (clinical, wasting, stunting) could be expanded. These do not measure the same things, and it is normal to find very different values for incidence and duration.

12) There is no real gold standard for defining ‘malnutrition’. I doubt that one can define absolute “sensitivity and specificity” of any test. Only an independent criterion (such as mortality or severe morbidity) allows to compute sensitivity and specificity of typical screening methods.

13) Authors do not provide any details on treatments. I guess that severe cases (e.g. marasmus, kwashiorkor) were treated, which is likely to shorten the duration of the episode, or natural course of the disease.

14) Results section could start with a description of overall prevalence (average Z-score for instance), and incidence by diagnosis, and possibly an assessment how important was the malnutrition problem compared with other sites in Africa (in a few words). Then, continue with incidence age patterns, gender differences and variations by season.

15) Seasonal effect: my reading of Table 1 and Figure 1 is different from what is said in text page 9 (first paragraph of Results section): more clinical malnutrition in January to June, more wasting in July to September (rainy season), more stunting in January to March (dry season). These effects could be better explored, and linked to diseases (diarrhea, malaria), food shortage, or other causes of malnutrition.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

None declared