Reviewer's report

Title: Nutritional status of children under 5 years of age in the Brazilian Western Amazon before and after the Interoceanic Highway paving: a population-based study.

Version: 1 Date: 9 June 2013

Reviewer: Kaleab Baye

Reviewer's report:

This is an interesting study with lots of data generated and the authors should be commended for this. The questions to be addressed are well posed, the title conveys the message, and the data are sound and the discussion and conclusion, except in some cases (see below), are balanced and supported by the data. Published as well as unpublished works on which the authors are building up are clearly acknowledged. However, there are certain limitations in the methods used and in the form of reporting that make interpretation difficult. Some of the limitations of the study are also not clearly stated. The writing could be improved both in the language and organization. Reviewing would have been much easier if the lines were numbered.

Major Compulsory Revisions

1. Two cross-sectional data were used to evaluate changes in nutritional status that might have occurred as a result of the construction of the interoceanic highway. Some of the parameters used to evaluate possible nutritional changes are short-term variables (WH, WA, etc.) and are likely to be affected by the situation prevailing during data collection. For instance, the number of children having diarrhea 15 days prior the survey in 2003 and 2010 is significantly different. Therefore, it cannot be excluded that the higher prevalence of low WA may be due to a possible epidemic during the survey in 2003, and hence the changes in WH and WA prevalence cannot be ascribed to the construction of the interoceanic highway. Preferably, the comparison should be made only on long-term variables (i.e. stunting). If data on short-term variable are to be included the limitations associated with it should be clearly stated.

2. The following sentences presume that there has been a dietary change as a result of the construction of the interoceanic highway; however data on dietary patters have not been collected. These arguments are not backed by adequate data and thus if need for stating it, it should be clearly indicated that these are hypotheses to be tested.

§13: “It appears that the convenience and “novelty” factor may have influenced the mother or guardians…., which replaced everyday foods”…..

“It is suggested that this unforeseen dietary change, made possible by the interoceanic highway maximized the nutrition transition phenomenon”
Similarly, §14: states that there is increase in sedentarily, this is not backed by data.

3. In the statistical analysis part, the authors stated that: “the distribution of the independent variables was identified using student’s t-test to compare means”. This statement is not clear. It is evident that the normality of the data (distribution) cannot be assessed using t-test, but the comparison of means can be. This sentence can preferably be separated into two. The first indicating the test used for normality (distribution) of the data and the second, the method used for comparison of means (presumably t-test).

4. Regarding the form of writing, the manuscript can be made more concise by removing some less important details. This will make the conveying of the essential message to the reader easier. Table and figure captions can be made clearer. Standard terms in describing nutritional parameters should be used. i.e. Low weight-for-age, low weight-for-height… and not low weight-per-…. BMI and not IBM… More standard abbreviations for Z-scores of height-for-age, weight-for-height and weight-for-age (HAZ, WHZ, and WAZ) should be used. In addition, some paragraphs that belong to the results section are found in the methods section and vice-versa.

5. The absence of information on the number of years of maternal residency in 2003 is a limitation and should be stated. The cross-sectional nature of the study limits the comparison between 2003 and 2004, in particular for short-term nutritional parameters. Thus caution on interpreting short-term variables should be noted.

Minor and discretionary revisions per section
A- Abstract

Minor Essential Revisions

Background:
5. …to analyse the prevalence of extreme nutritional conditions and associated factors…

Would read better if stated as: ‘… to analyse the prevalence of undernutrition and overweight…

The term extreme nutritional condition is somewhat odd.

6. “Population-based cross-sectional study in children under 5 years of age … Assis Brazil.” This should be moved to the methods section of the abstract.

Methods
7. The prevalence of underweight (instead of nutritional deficits) was obtained.…

8. Z-scores were calculated relative to WHO 2006 reference data…. Instead of “all indicators were obtained from the WHO 2006 reference data” as currently stated.

9. More standard abbreviations for Z-scores of height-for-age, weight-for-height and weight-for-age (HAZ, WHZ, and WAZ) should be used. This comment
applies to the rest of the paper as well.

Conclusion

Minor essential revisions:
10. “… the arrival of people in search instead of searching…”

Discretionary Revisions
11. “The growth of overweight within this malnutrition scenario reveals the nutritional transition in the country.” This study can only tell us that nutrition transition is occurring in the municipality of Assis and thus the current findings should not be generalized for the country.

B- Background

Minor Essential Revisions
12. 2nd paragraph: “The Brazilian Northern region, where the state of Acre is located…” preferable to rewrite it as: The Northern region of Brazil…
13. On the same sentence: … showed twice the prevalence of low height and weight values…

Low height and weight value does not mean anything unless put in relation to age or height; this part of the sentence should be removed or corrected.

C- Methods

Minor Essential Revisions
Study area
14. In 2000 had a total … authors should specify, i.e. In 2000, Assis had…

Comparisons of city characteristics before and after the interocean inc road
15. This section is misplaced and may be well placed in the results section.

Study design and population
16. “Principal component analysis (PCA), carried out using the XLSTAT software… this statement is misplaced and should be moved to statistical analysis
17. Results of the principal component analysis should be moved to the results section and should not be part of the methods section.

Statistical analysis
18. The authors stated that: “the distribution of the independent variables was identified using student’s t-test to compare means”. This statement is not clear. It is evident that the normality of the data (distribution) cannot be assessed using t-test, but the comparison of means can be. This sentence can preferably be separated into two. The first indicating the test used for normality (distribution) of the data and the second, the method used for comparison of means (presumably t-test).
19. “The factors associated with DHA…” abbreviation not defined
20. “No statistically significant interaction terms were identified. No important influential points were identified for any of the …” Not clear, these two sentences
Discretionary Revisions

21. In my opinion, the study area section has too much detail unlikely to add any essential information to the interpretation of the results of this study. This section can be shorted for the sake of brevity.

D- Results

Minor Essential Revisions

22. The first paragraph of this section belongs to the methods section.

Parental and child socio-economic characteristics in 2003 and 2010

23. “… the average age was 2.43 years in 2003 and 2010…” should specify the average age in 2010

24. §4: “Table 3 shows the characteristics of children under 5…” what characteristics? please specify. This comments also applies to the table caption (table 1).

Prevalence of anthropometric extremes

25. “Table 4 shows the prevalence of anthropometric indicators of malnutrition and overweight…”

Overweight is also a form of malnutrition. The word malnutrition should be changed to undernutrition.

Low height-for-age

26. Last §: “Also, no important differences…” should be replaced by “No significant differences….

27. Low weight-per-height should read as low weight-for-height

E- Discussion

Minor Essential Revisions

29. 1st §: “However, the population growth in the period from 2003 to 2010 was better than usual”

Odd sentence formulation; the population growth cannot be better but higher….

30. “The municipality did not ….resulting in increased areas of invasion”

The word invasion is of negative connotation, can use illegal settlements if relevant.

31. “Longitudinal studies could better elucidate whether there is any recovery process in relation to linear growth after the three first years”. It is already established that reversing stunting past the age of two is difficult if not impossible.

32. The second and third paragraph should be merged into one and the same paragraph

33. §9:=…”although the reduction in the prevalence….Brazilian Northern region…” Clarify, rewrite.

34. §10= “Obesity occurs more often in the first year of life, between 5 and 6 years of age, and adolescence”
May be rewritten as: “obesity occurs more often in the first years of the life cycle or in the first stages of the life cycle…”

35. §13: 1st sentence requires reference

36. §17: Souza et al – referencing should be consistent. This reference is missing.

37. §18: “In the study, for the year 2003, each new pregnancy increased the chance of a low height-for-age in children under 5 years by 35%”
Is it the pregnancy that increases the chance of a low height-for-age?
Can be restated as: Gravida was associated with a 35% increase in low height-for-age in children under 5 years of age.

Level of interest: An article whose findings are important to those with closely related research interests

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

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests