Reviewer's report

Title: Low birth weight: comparison of two birth cohorts in Sao Luis, Northeastern Brazil, 1997/98 and 2010

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Reviewer: Cynthia Ferre

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Manuscript: Low birth weight: comparison of two birth cohorts in Sao Luis, northeastern Brazil, 1997/98 and 2010

Overview: This manuscript compares low birth weight (LBW) rates and changes in associations of LBW risk factors with LBW at two time points in Sao Luis, Brazil using two local cohort studies (convenience samples). The authors also utilized data from the Brazilian Nation Birth Registry to assess changes in stillbirth (fetal death) rates and LBW rates from 1996 to 2010.

Major Compulsory Revisions

1. Please clarify the research question, study design, and choice of data in the Methods section. Since the SINASC data show increasing and then decreasing trends, and the 2 cohorts show stable, non-significant changes in LBW rates at only 2 time points, the cohort datasets cannot provide appropriate information about the SINASC trends. This is a major flaw in this study. I suggest doing a paper solely on the SINASC data and a separate one on the comparison of the 2 cohorts. Otherwise it is confusing and misleading the reader. Analyses of the SINASC data should utilize 3-year moving averages or assessment of yearly variability in the rates (e.g. trend modeling via Joinpoint or other similar software).

2. Please provide a comparison of maternal demographic factors, including maternal race or ethnicity, and perinatal outcomes in the cohort data and the SINASC data. It is unclear how comparable the cohort data is to the SINASC data. In Figure 2, the 2010 cohort has a LBW rate lower than the rate in the SINASC data. It is not clear in the manuscript how representative the cohorts are of the Sao Luis births.

3. Methods, paragraph 12: What was the reference curve used in the calculation of the IUGR measure? Was it a standard national curve, a local curve, or one generated from the subjects in these cohorts? Also, please clarify what “with or without restriction” means.

4. Methods, paragraph 4: It is unclear what the procedures were for selecting cohort participants. Was it a stratified random sample? What does “order of birth” mean here? Is it referencing a date? To a U.S. reader who works with perinatal vital statistics, “order of birth” refers to parity – what number of birth is this to the mother? For example, her first birth, second birth, third birth? It is not clear what “control cards” are. This is probably not necessary to describe in detail. Not clear
why the interval between births and interview was relevant here or how this was used to select mothers to participate, especially since it is stated in paragraph 6 that the interview was conducted within 24 hours of delivery.

5. A sensitivity analysis should be conducted to examine the effect of imputation of gestational age on the findings reported. This can be done by taking out the imputed cases and reexamining the findings where this variable is used to see if there are substantial differences in the findings. This data doesn’t have to be presented but should be commented on in the discussion.

6. Regarding the 2 cohort comparison, there were mixed findings on risk factor changes. Similar to other published reports of perinatal trends, some adverse risk factors decreased and some increased. Some factors thought to be protective remained stable or increased. However the reader cannot assess if these changes are in the population or are due to selection biases in the cohorts’ construction.

7. Any information on maternal body mass index?

8. If Items 1, 2, and 7 above cannot be addressed, then these issues should be discussed as study limitations. The limitations should also discuss other variables which were not available for analyses, such as maternal race/ethnicity, antenatal and chronic diseases and nutritional factors.

Minor Essential Revisions

1. Please clarify the definition of “cohort” in this study. Do you mean a prospective or retrospective cohort? 2010 seems to be a stratified convenience sample.

2. Please clarify that the SINASC data were from Sao Luis and not all of Brazil. This needs to be explicitly stated in the methods.

3. Methods, paragraph 7: Which data was abstracted from medical records?

4. Methods, paragraph 8: Clarify if the baby was weighed at delivery or at interview.

5. Methods, paragraph 10: Type of delivery should be “vaginal” or cesarean. This needs to be corrected here and in the rest of the paper.

6. Methods, paragraph 11: It is unclear what the reference time period for the comparison of minimum wages between Brazil and the U.S. In the U.S., this is usually a dollar per hour amount. As written in this paragraph, it is unclear what the “per” is.

7. Methods, paragraph 13: Please replace the use of the word “Ignored” with “Unknown” or “Missing” here and in the rest of the paper.

8. Discussion, paragraph 12. It is not clear how better dating would influence cesarean section

Discretionary Revisions

There are a lot of spelling and phrasing issues that need to be addressed by the authors or an editor.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

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

Declaration of competing interests:

I declare that I have no competing interests.