Author's response to reviews

Title: Incidence and determinants of severe maternal morbidity: a transversal study in a referral hospital in Teresina, Piauí, Brazil

Authors:

Alberto P Madeiro (madeiro@uol.com.br)
Andrea C Rufino (andreacrufino@gmail.com)
Erica ZG Lacerda (ezg.lacerda@yahoo.com.br)
Lais G Brasil (lag.brasil@bol.com.br)

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Author's response to reviews:

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Dear Editor,

The comments of the reviewers were very valuable. We thank you very much. Our responses to the reviewers’ comments are presented on the following pages. All requests have been addressed, with corresponding changes made directly in the manuscript where appropriate (highlighted with red color). We hope you will find the manuscript of interest to readers of BMC Pregnancy and Childbirth.

Sincerely,

Alberto Madeiro, M.D.
Research Center and Extension Center in Women’s Health
Piauí State University
Rua Olavo Bilac, 2335
Teresina, Piauí
Brazil

EDITOR’S COMMENTS

1. I’m confused as to how you’ve done your analysis. It seems that you’ve just analysed associations between categorical variables as risk factors only among those with the outcome rather than comparing those with the outcome to those without it? For example in Table 2, in the first line, you show an OR (95%CI) of 0.8 (0.4-1.5) for being age <20 compared to age >20 for NM+death cases only. What does this mean? That the odds of being >20 is 0.8 that of being <20 among NM+death cases? Is this useful? Why not calculate the odds of NM or death given you are <20? And why not treat age as a continuous variable in logistic regression? Same goes for other continuous variables.
Table 4 would be much better if you added the % of “normal” (i.e. not SMM or NM or Death) that had each of the categories? Then, as just stated, calculating OR of having each risk factor in relation to these non-severe cases? surely this would be of more interest? i.e. exposure is the risk factor (categories into yes or no) and outcome is: 1) SMM relative to no SMM 2) NM relative to no NM; and 3) death relative to no death.

We agree with the reviewer’s comments and we modified Table 4.

Despite of superiority of the continuous variables regarding categorical variables in logistic regression, we adopted categorical variables to facilitate comprehension of the model.

Unfortunately we do not have information on “normal” cases. We included only women that presented potentially life-threatening cases, near miss cases or deaths.

2. Page 11, first paragraph: good discussion of the possible two-way association with Caesarean section. It would be greatly enhanced if you went into detail about the specific cases you analyse i.e. how many were emergency C-section? And why were they done? The same goes for the other associations you’ve found e.g. hospital stay. Any more useful details to add here?

We added more details about cesarean section and hospital stay (Results section, page 7, lines 154-161).

3. HELLP syndrome should be added to the list of acronyms

We added HELLP syndrome to the list (page 13, lines 312-313).

4. Lines 191-194: shouldn’t it be per 1000 for the NM does this also apply to the other studies you quote?

This was corrected (page 9, lines 206-209).

5. Line 195: 0.34 and 4.93 per what? (also 1000 live births?)

We added “%” (page 9, line 210).

6. Line 199 ? what is the confidence interval around the MMR of 171.2 per 100,000? Given the small sample is it statistically different from the national rate of 64.8 per 100,000?

The confidence interval was insered (page 7, line 164-165).

7. Line 234: “morbimortality” is this a word?

“Morbimortality” was changed to “morbidity and mortality” (page 10, line 249).

REVIEWER 1

1: Discussion, paragraph 4; “...haemmorhagic complications CONTRIBUTED to 39.5%......” Changes made (page 10, line 236).
2: Introduction Paragraph 4: "Also a research group STANDARDIZED diagnostic criteria...." Changes made (page 4, line 91).

3: What is the time period of the study, October to February inclusive, as stated the "design and location" section of the "methods" section, OR "6 months" as stated in the "results" section? The time period of the study was September to February inclusive (6 months).
We corrected this (page 5, line 114).

4: "Patients were excluded in the case of maternal death" is stated in the "case selection" section of the "method", yet clearly such cases are reported. (I suspect the authors are referring to the fact that cases of death are excluded from the consideration of criteria for "severe morbidity" or "near miss", but this requires clarification in my view.)
We thank the reviewer for his comment.
We clarify this point (page 5, lines 129-130).

5: The "Introduction" section could be reworded. The authors confound the confusion between the concepts of "severe maternal morbidity" and "maternal near miss" rather than clarifying the issues. For example note the 5th paragraph, beginning, "The prevalence of severe morbidity....." In addition, although the authors stress the difficulty of death ascertainment as an issue in studies of maternal mortality they do not discuss the fact that the rarity of maternal death (although all too common still!) detracts from its utility as a measure of access, timeliness and appropriateness of obstetrical care. Indeed it is just such considerations that have been in the forefront of reasoning behind consideration and analysis of "severe maternal morbidity", however defined! The Introduction section was reworded.
We clarified the concepts of severe maternal morbidity and near miss as well as we added more information about maternal mortality.

6: "Inclusion of Subjects" requires clarification, as it is stated at the end of the "case selection" section of "methods" that "All the women who remained pregnant or in hospital at the end of the study were excluded." Normally the denominator for similar studies is the number of live births in the time period, thus it would be appropriate to exclude women who were undelivered but would it be appropriate to consider a woman, who having delivered, remained in hospital, whether severely ill or not? This requires clarification and justification.
We removed this sentence. Our data review showed that no woman was excluded by these criteria.

7: A "questionnaire" is mentioned in the "case selection" section. To whom, and when was this questionnaire administered? And was the pregnancy information abstracted by direct case record review, "verification with health professionals" or from the questionnaire returns from women, or from health professionals?
Indeed, we used a form, not a questionnaire. The form was filled by direct record
review. We corrected this information (page 6, line 132).

8: "Discussion, paragraph 3": The discussion about the progression of cases of hypertensive diseases suggests that "...a delay in the prevention of convulsions..." might have occurred. This may well be true but it MIGHT have been other things as well, including, delayed disease recognition, delayed access to care, delayed first line treatment, delayed or inadequate hypotensive therapy etc etc...!

We agreed with the reviewer and we changed this sentence (page 9, lines 227-228).

9: "limitations": This is a small series on which to draw conclusions about antecedents of severe maternal morbidity and this is most likely why no variables of statistical significance were found to be associated with maternal near miss or death, a point that perhaps requires emphasis.

We mentioned this point (page 12, lines 285-288).

10: Table 1: identify the total number of live births on the table.

We identified the number of live births on the Table 1.

REVIEWER 2

1. Provide definitions for the terms: maternal death, near miss, severe maternal morbidity and mortality index.

We provided definitions for maternal death, near miss and severe maternal morbidity as a footnote in the Table 2 (page 22). The definition for mortality index was inserted as a footnote in the Table 1 (page 1).

2. Calculate the percentages of the maternal death and near miss cases. This can be included in the results section, lines 151-152.

We calculated these percentages (page 6, lines 153-154).

3. Calculate the mortality index for the different disease categories. This can be included in Table 2.

We calculated the mortality index for the different disease categories (hypertensive, hemorrhagic and infectious disorders). The mortality index for these categories was included as a footnote in the Table 2 (page 22).

4. What was the cesarean section rate for the general population, near miss cases and maternal death cases?

The cesarean section rates were included in Results section (page 6, lines 154-156).

5. Describe the cases of maternal death in more details. We describe more details in Results section (page 7, lines 169-173).