Author’s response to reviews

Title: Delays in receiving obstetrical care and poor maternal outcomes: results from a national multicentre cross-sectional study

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Author’s response to reviews: see over
Campinas, 26th March 2014

Dear Ms Janelyn Ann Cruz

BMC Pregnancy and Childbirth

Ref.: MS 1693460491118743

Title: Delays in receiving obstetrical care and poor maternal outcomes: results from a national multicentre cross-sectional study

First of all I would like to thank very much the reviewers for their careful review of the article which certainly will help to improve a lot the manuscript. Below you will find, just after each comment or suggestion from the reviewers, the correspondent information regarding the topic and the changes we did in the text. All these modifications appear in track changes in the new file of the manuscript uploaded. These answers in this letter are in red bold.

Thank you very much indeed for your attention.
Sincerely yours

Prof. Jose Guilherme Cecatti

Reviewer's report 1

Version: 1
Date: 17 February 2014
Reviewer: Roopa PS

Reviewer's report:
1. Major compulsory revisions:
   a) Methodology not clear. In the 1st paragraph on method the goal was not to establish the prevalence of near miss prospectively. **OK, you are right. The objective for this analysis is stated in the last paragraph of introduction session (to evaluate delays). These goals here highlighted were originally for settling the network. This is now explained in the correspondent text.**
   b) In the study size: why near miss incidence between adolescence and adult population was taken to calculate the study size? as this was not the aim of the study. **Well observed. In fact the research call from where we got sponsorship for the whole network asked for a study where maternal morbidity could be assessed specifically for adolescent mothers. Therefore we needed to have a sample size that would be big enough to make possible conclusions on that. In fact this specific point was addressed in another article recently published also in BMC Preg Childb (Oliveira FC Jr et al. Severe maternal morbidity and maternal near miss in the extremes of reproductive age: results from a national cross-sectional multicenter study. BMC Pregnancy Childbirth 2014: 14(1):77). Now this is explained in the text.**
   c) Reference for Box 1
      **Reference 14 was now included for Box 1.**
   d) In results total cases were 9555, & information data not available in 839 cases. Of these how many were in PTLC, MNM & MD groups.


Well, indirectly these numbers can be derived from the tables. They are 748 for PLTC, 77 for MNM and 14 for MD, a mean of 8.7% of missing data on delays. This information is now in the text.
e) In table 1 the n is changing and is not clear
In this table we included all the information we have in the database. For each factor evaluated we included a footnote (a, b, c…) on the total amount of cases with information for that specific factor. We judged this was necessary because the factors are not mutually exclusive (the percentage with any delay is not the sum of percentages each individual factor) and therefore this would be much more detailed.
f) In table 3, health service accessibility, the subtitles not clear like difference between problems in transportation and geographical difficulty in accessing health service
Here the subcategories are compounded under the concept of the three delays model from Thadeus and Maine. For doing that factors used came from different parts of the questionnaire which used a mix of ways and questions for assessing delays as already used before in other studies. Some of these questions are of course overlapping, depending on the specific situation. In the case you pointed out, problems with transportation refers more specifically to a lack of transport mainly between health units from the same local whereas geographical difficulty refers to real geographical barriers like rivers, forest or even long distances to reach a referral center in the capital city from the province for instance. Anyway, this approach was used in order to try to capture the majority of situations where some related constraint was present. This is the reason why we did not put emphasis on each individual factor, but instead only to the three subcategories and to any delay, where overlapping is not considered.
h) Table 5, 6, 7 too elaborate & these were not the aim of the study.
We agree that these tables are too elaborated, but we do not agree that they are not under the aim of the study. They represent the bivariate analysis of all factors possibly associated with any delay/substandard obstetric care. We could for instance to delete the left half of each of these tables. However we would miss, according to my understanding, the important information that, although the delays related to the quality of medical care are the most prevalent, they are generally not influenced by the categories of other predictive variables studied, unless those related to the access to the hospital and gestational age. This information is absolutely innovative and there are very, very few published studies deeply going into such details. There is a lot of people working in the field and looking for such information.i) Is table 8 required?
Well, we think so. This is the reason why we included it. It refers to the results of the multiple regression analysis showing, for this group, the factors independently associated with any identified delay/substandard care. This was one of the purposes of this study.
j) Can few of the tables be combined so that the n of tables can be reduced.
Well, I think we addressed this point in the two previous answers. If you think this would be absolutely necessary, we could do that. But we think the article would be missing important information. In fact we knew that we had a lot of information to report (and in fact we choose the most important, not all information we had!) and this was exactly one of the reasons we choose to submit this article to BMC Preg and
Childbirth. Taking into account it is an online journal, space and length are not always considered to be a limiting factor.

2 Minor essential revisions:
   a) Reference 3 & 22 not accessible. Both references are correct and they are available in PubMed. The first one is free.
   b) There is no reference 16, & 17 in the text. Reference 16 is in the first paragraph of Method session (subheading Design and setting). Reference 17 is in the second paragraph of Method session (subheading Study size).
   c) Few grammatical errors to be corrected
   Thank you. We went through the whole manuscript with a native English speaking and corrected these errors.

Discretionary Revisions:
Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.
Declaration of competing interests: I declare that I have no competing interests

Reviewer's report 2
Version: 1
Date: 26 February 2014
Reviewer: Maria Small

Reviewer's report:
This is a multicenter prospective study of the contribution of maternal delays to severe maternal morbidity (‘near misses’) and maternal mortality in Brazil, using the ‘three delays’ model. This is an important topic and article strengths include the large, multicenter, multiethnic nature of the population as well, as the importance of the research question—contribution of different levels of delays to adverse maternal outcomes.
Thank you!
Authors need to revise several sentences to account for subject/verb disagreement and syntax. I have highlighted some of these changes:

BACKGROUND
Paragraph 2, last sentence, “around 99% of all maternal deaths......direct obstetric causes (hemorrhage, sepsis, complications of abortion and hypertensive disease) authors can delete ‘obstructed labor, ruptured uterus and ectopic pregnancy as the above causes are inclusive and represent leading causes of maternal mortality in low and mid income countries.
OK, done.
Paragraph 3, first sentence: “to improve medical care in obstetric emergencies appropriate timing for women care is extremely important. (delete ‘women’) third sentence: Based on this statement, Thaddeus and Maine.... (delete ‘based on this statement’)
OK, done.
Paragraph 4
Revise last sentence (compound sentence) for clarity.
(Possible change: These women, who escaped death by luck or by receiving timely appropriate care after a severe complication during pregnancy constitute a proxy for maternal death. In addition, they may provide direct information after the event and professionals and institutions may better accept the discussion and evaluation of these cases than maternal deaths.)
OK, done.
Paragraph 5
Sentence 1, Barriers may play an important role on the outcomes (replace ‘on’ with ‘in’)
OK, done.
METHODS
Procedures for selection of subjects and data collection
Paragraph 2: ‘data were collected’ not ‘data was...’
OK, done.
It is not clear how researchers planned to analyze interrelated/multiple delays. Did they designate one of the delays as primary and others as secondary? Many patients experience a combination of delays. How did they determine a single delay was the primary contributor to the adverse outcome?

Researchers did not designate any of the delays identified as primary or secondary. The questionnaire was built using several questions and topics that have already been used for the purpose of identifying delays/substandard obstetric care for the three delays (user’s factors, health service accessibility, and quality of medical care). Of course many women experience a combination of delays. This is the reason why in the tables we reported the isolated prevalence for each factor investigated and the final “any delay” does not correspond to the sum of all individual factors, of course. Instead of identifying primary or secondary delays, we tried to identify all of them and then to check against the three levels of severity of the obstetric complication to see each ones would be more important for determining the final maternal outcome.

Authors should describe how race/ethnicity are assigned—by patient or by provider? If this determination is not clear, authors should state this fact in methods and as limitation in discussion since study findings demonstrate increase in adverse outcomes by race/ethnicity. Does nonwhite include Asian and Indigenous populations or primarily Whites and Afro Brazilians? A better description of the population will allow for more cross national comparisons as multiple studies globally (eg. confidential inquiries in maternal mortality, Lewis et al) demonstrate ethnic differences in near miss maternal deaths.

Thank you. You are absolutely right. The information on each patient was collected from clinical records immediately after the discharge of the woman. Therefore the information on her race/ethnic group/skin color was obtained from the records according to the provider assignment. Yes, the non-white population here includes also Asian and Indigenous individuals, but their proportion is so small that it was not possible to analyze as an individual category. This is the reason why they were
joined. The great, great majority of this category is Afro Brazilians and mixed. We included, as suggested, this information in the methods and also discussion sessions.

RESULTS
First sentence, “During a 12 month” (not 12 months) period...

OK, done.

In the 5th paragraph, 4th sentence, authors state, ‘When antenatal care was performed at the same facility and privately sponsored, the prevalence of any delay was significantly lower.’ The analysis of outcomes facility was not clear in the analysis. If this analysis is not shown, authors should state this point at the end of the sentence. The information here stated is clearly showed in Table 6, in the two first subheadings “antenatal care in the facility” and “antenatal insurance”.
It would be helpful to have authors state the maternal mortality ratio for the time period of the study. 
Maternal mortality was not the focus of the present analysis. This was reported in another manuscript derived from the same study. Anyway, we are studying a sample of women of third referral obstetric centers and this is not therefore a population study. To derive estimates of maternal mortality ratio may be misleading in this case.

DISCUSSION
Authors should revise term ‘near miss women’ to refer to this population as ‘women experiencing near misses’. The former term appears to objectify the women described in the study.

OK, done

The discussion can be shortened; the statement related to limitations in determination of first delay is repeated. The paragraph related to development of maternal severity index model can be shortened or deleted. The authors report treatment based on MOH guidelines—does this index provide a level of care higher than or clearer than the MOH guideline standards that authors apply in the article to determine appropriate level of care.

OK. It was very difficult to select some parts from the discussion to delete, however we did that as suggested by the reviewer. I hope that now it is acceptable.

Authors describe limitations of study well (bias involved in having research coordinators/study team members identify causes of delay—study would be strengthened with independently assigned reviewers determining causes of delay—if this process was performed, the methods should more explicitly state this fact).

No, this ideal process was not performed; otherwise it would have already been included in the manuscript.

Another limitation is the collapsed variable of preexisting maternal conditions. It would be helpful to know the contribution of conditions such as maternal obesity, cardiovascular disease, or DM independently contributed to delay—associated adverse outcomes.

Yes, we do agree. However one of the problems for this analysis/manuscript is the length. If we would be assessing each one of the preexisting maternal conditions, the analysis and consequently the tables and the manuscript would be much longer. However, this association between the preexisting maternal conditions and the
maternal outcome is being explored in a more detailed specific analysis to be published soon.

Table 1—authors note number of cases with information available—should also include total number of cases of obstetrical complications—the table may be clearer if these numbers are included in the description rather than as footnotes

OK, we included the total number of obstetrical complications in the title. We think this is better and clearer than adding the information of number of cases with available information for each category in each line of the table.

Table 2 - Do patients fall into more than one category? It is more appropriate to state this table represents level of care when the delay was identified rather than ‘recognized’? Did caregivers at this level recognize the delay and act or did investigators assign the levels of delay? The later, appears most consistent with the objectives of the study, as study objective was for investigators to assign cause of delay rather than to determine whether institutions/providers determined reason for delay.

Yes, women may fall into more than one category which are not mutually exclusive.

OK, we changed to “identified”. The caregivers did not recognize the delays at the specific level or act accordingly. This information, as already stated, was collected by investigators at the third level referral center where the women were finally cared and AFTER they were discharged. And yes, investigators assigned the type of delay present in each case.

Table 3 - Can authors describe why ‘absent or inadequate’ prenatal care was not a significant contributor to adverse outcomes in table 3 but significant in the regression analysis. Is the difference ‘no pnc’ vs. ‘no and inadequate pnc’?

They are two different variables. Absent or inadequate prenatal care is in Table 3 and how it was defined is in the methods session. What appears in the regression analysis is “prenatal care at the same facility” (original number in Table 6). The latter is much more related to the fact that a third referral center was responsible for prenatal care of the case who were a high risk pregnancy and also perhaps avoiding the problems with transfer of women to another higher level health facility.

The description of the quality of care/availability of treatment in table 3 is informative and excellent. This description is relevant to many health care systems worldwide.

Thank you again.

Figure 1 could be deleted

OK, we agree that it could, considering the data is included in the tables. However please do not do that. We found it so clear, informative and causing a visual impact that we strongly think it helps the article for the better understanding of audience.

Table 5 - “skin color’ should be replaced by ‘maternal ethnicity’ (consistent Table 8 and as better understood terminology). If, however, this terminology is specific to the population, this term should be defined in the methods section and should be identified as a limitation to generalizability of the study. Other studies related to maternal mortality/near misses in multiethnic populations provide clearer definitions of race/ethnicity). Since this disparity is a significant findings in the study, the term should be defined more clearly.

OK, done.