Reviewer's report

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

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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, multienthic nature of the population as well, as the importance of the research question—contribution of different levels of delays to adverse maternal outcomes.

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.

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’)

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.)

Paragraph 5
Barriers may play an important role in the outcomes (replace ‘on’ with ‘in’)

METHODS

Procedures for selection of subjects and data collection

Paragraph 2: ‘data were collected’ not ‘data was…’

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?

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.

RESULTS

First sentence “During a 12 month” (not 12 months) period…

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.

It would be helpful to have authors state the maternal mortality ratio for the time period of the study.

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.

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.
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)

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

Some of the tables could be combined to shorten them.
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

Table 2
Do patients fall into more than one category? Is 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.

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’?

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.

Figure 1 could be deleted

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.