Reviewer's report

Title: High proportion of maternal near-miss and death associated with caesarean section complications: a cross-sectional study at a university hospital and a regional hospital in Tanzania

Version: 3
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Reviewer: Ellen Nelissen

Reviewer's report:

Review regarding "High proportion of maternal near-miss and death associated with caesarean section complications: a cross-sectional study at a university hospital and a regional hospital in Tanzania" by Litorp et al.

This is a cross-sectional study monitoring the proportion of maternal near misses and maternal deaths in two hospitals in Dar es Salaam. The authors explored in depth the proportion of maternal near misses and maternal deaths with complications due to CS.

The article is interesting and uses the WHO near miss approach to explore the CS related complications. The literature that has been used is relevant and complete. The only document that I maybe miss referring to is the WHO maternal near miss approach document "Evaluating the quality of care for severe pregnancy complications. The WHO near-miss approach for maternal health" published in 2011.

A general comment is that there is a lot of information in the article, which makes it a bit overwhelming, and your message gets a bit lost.

Major Compulsory Revisions:

Methods, participants paragraph:

You have included all maternal near misses as defined by WHO. Could you specify the criteria that you have used? As I noticed from Table A1, you have used slightly different criteria than the WHO. You have to mention these differences in the methods section as this influences your results.

This especially applies to the inclusion criterion "fits" that you have used. In the WHO near miss criteria this inclusion criterion is "uncontrollable fit/total paralysis", and defined as "a condition in which the brain is in a state of continuous seizure." In the WHO near miss approach for maternal health (2011) total paralysis is further defined as: "The complete or partial paralysis of both sides of the body. Usually, an extreme neuromuscular global weakness associated with critical illness. This conditions is also known as critical illness polyneuromyopathy". Uncontrollable fit is defined as "Refractory, persistent convulsions. Status epilepticus." Several authors have concluded that this does
not include fits from eclampsia (Nelissen, vd Akker). As they account for 42% of all your MNM and MD, this will have a significant impact on the results, especially when you want to compare them with other studies. If you decide to keep your definition of fit, you should also state this also in the limitations of the discussion.

The definition of shock as described in the legend of Table A1 is not correct I think. Also other definitions differ slightly from the WHO criteria (urine output). Make sure your definitions match the WHO MNM criteria, or make a note in the methods section that you have changed them. You cannot simply state that you have included all women with maternal near miss as defined by WHO, whilst they differ.

Another interesting finding that you could mention in the methods section and discussion is the fact that you couldn't use several inclusion criteria. I would be really interested to know which inclusion criteria you couldn't use for both hospitals.

Minor Essential Revisions (and some Discretionary Revisions)

General:
I have noticed you use US (e.g. labor) and UK spelling (e.g. haemorrhage), please be consistent in your spelling and stick to UK spelling.

Numbers above 999, such as 1000, should be written as 1,000 (changes should be made in text and tables, please check yourself).

Background:
Second paragraph: "Assessing the risks.... confounded by indication": I don't understand what you mean with confounded by indication?

Last paragraph: "The aim of this study.... latest WHO criteria": Be specific and name Tanzania as the low-income country. There is only one set of WHO criteria, I would be specific and write: "by using the WHO near miss criteria".

Methods:
First paragraph:
How did you retrieve potential near misses and maternal deaths that were not admitted to the obstetric and gynaecological wards? I am thinking of pregnant women admitted with severe malaria for example. Did you screen the other wards? Were any women potentially admitted to ICU that could have been missed?

How and who reviewed the maternal death files? Was it an audit?

Second paragraph:
"These are secondary.... medicine and surgery." Long sentence! Would maybe flow better if changed to: "These are secondary.... and write prescriptions. Later they do two years of .... medicine and surgery."
Fourth paragraph:
What's the difference between a specialist obstetrician and consulting obstetrician? Both seem to be consultants and specialists.

Fifth paragraph:
You use registrar and resident interchangeably in the fourth and fifth paragraph. In the UK a registrar is a medical doctor in training to become a specialist. Resident is mainly used in the US.

I think you mean there is conspicuous lack of electricity instead of "no electricity"?

Seventh paragraph:
"Among the near-miss ... implied a CS complication." This sentence is not correct and does not flow, as a result I don't understand what you mean.

Eight paragraph:
Could you include an example to help understand a strong, moderate, and weak association?

I fail to understand the sentence "Cases where complications.... considered moderate associations". Can you rephrase this sentence?

Ethics approval paragraph:
"data base" = database

Did you get informed consent from patients to use the information from their hospital file? Please mention.

Results
First paragraph:
Please mention the number of births in that time period in the two hospitals. That will put the number of near miss events and deaths in context.

Second paragraph:
Women with maternal near miss sounds strange to me, better replace it with maternal near misses or women with maternal near miss events.

Later in the second paragraph you refer to women only (induction, chronic disease), are that all women that delivered in that period, or just the maternal near misses and maternal deaths?

Sixth paragraph:
"We identified 107 women .... a CS complication": I don't understand this sentence. Are these the women with CS related complications, or just maternal near misses and maternal deaths who had had a CS? Please rephrase and consider the use of commas.
Seventh paragraph:
In this paragraph the strong, moderate, and weak associations are explained. Is it possible to link the complication with a near miss criterion? For example, the cases with severe infections of the scar, did they have sepsis? In a more general perspective, did the woman become a MNM or MD because of the CS?

Discussion
General:
I miss a paragraph with limitations of the study: the influence of poor record keeping, the fact that not all near miss criteria could be used, the modification of the near miss criteria (fits, see my comment earlier). Please follow the STROBE guidelines.

Third paragraph:
"As we strictly followed the WHO criteria...": You cannot state this, because your definitions differ and there were several criteria you could not use.

Sixth paragraph:
"To our knowledge... may be compared". Doesn't read well this sentence, maybe change to "...there are no studies from low-income countries that can compare with our estimated proportion of MNM and MD attributed to CS complications."

Table 2:
Long title, you have already explained the definition and the abbreviation in the methods section. I would keep it short here. The WHO group calls these variables "outcome indicators".

Table 4:
Long title again, lot of repeated information that can be omitted in my opinion (hospitals, time period, explanation of definition). I find it difficult to read and understand this table, while these are your most important results. There is a lot of information in this table. Is there a way to condense it, and just keep the most important results? Do you need the distinction between MD and MNM? Or will just the row with MNM and MD together be enough?

The number of MNM and MD associated with CS is 47 here. Before you mentioned that there were 51 cases. What happened with the remaining 4 cases?

Proportion, maternal deaths, delivered at other institutions: CI has % (51%), which should not be there.

Additional file A1:
Make sure your definitions match the definitions of the WHO criteria. The definition of shock does not make sense.
Level of interest: An article of importance in its field

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

Statistical review: No, the manuscript does not need to be seen by a statistician.

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