Author's response to reviews

Title: Maternal Mortality at Muhimbili National Hospital in Dar-es-Salaam, Tanzania in the year 2011

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Author's response to reviews: see over
Dear Editor,

On behalf of my co-authors, we thank the reviewers for their valuable comments and suggestions to help improving our manuscript. We have incorporate reviewers suggestions and below are our responses.

Dr. Andrea B. Pembe
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Reviewer 1
Major Compulsory revision

Comment: Data collection p.5: what classifies the women as stable or sick

Response: We agree with the reviewer that most “sick” patients are also stable. We have combined the stable and sick patient into one group “not critically ill”. We report only the critically ill patient in the results and rephrased in the method section. Now it reads “Seventy seven (54.6%) women were critically ill on admission.

Comment: line 120: Is it implied that if a woman delivered at home in the absence of past bad obstetric history, it will not be regarded as patient's substandard care?

Response: Yes, home delivery in low risk pregnancy was not considered to be substandard care.

Comment: line 122: what do the authors refer to as insufficient antenatal care?

Response: Focused antenatal care of less than 4 visits for women with no risk or complication and those women with complications who did not attend according to schedule recommended by health providers were considered to have insufficient antenatal care. This has been added to the methods section to make it clearer.

Comment: Data Analysis: Please acknowledge the manufacturers of EPI Info and SPSS software.

Response: The Epi Info and SPSS are acknowledged by inserting “CDC, Atlanta, Georgia, USA” and “SPSS Inc., Chicago, IL, USA” respectively after each.

Comment: Why do you need to export from Epi info to SPSS??

Response: The data were exported to SPSS because the authors were more familiar in data analysis with the software than the Epi info.

Comment: What statistical analysis were the data actually subjected to?

Response: The data subjected to descriptive analysis. We have added a sentence to the data analysis section to make it clear “Frequency distribution and measure of location were used to summarize data” and deleted the sentence “Results are presented as frequencies”.

Comment: Results: p.6:
Mean should always be accompanied by +/-2SD. Please add these for all mean values.

**Response:** We did not use the “mean”. We used the “median” and “range” as the distribution women age was skewed.

**Comment:** p.7 line 166: Were anemia and HIV primary causes of dearth? were there no other factors operational? Does it imply the women died from anaemic heart failure or terminal stages of AIDS in pregnancy? Confirm that the women did not have any form of haemorrhage the effects of which were accentuated by the anaemia etc.

**Response:** Anaemia and HIV/AIDS were the only causes of maternal deaths in those women. If haemorrhage aggravated the death then the causes of death was taken as haemorrhage.

**Conclusion p 10:**

**Comment:** That anaemia accounted for two thirds of the causes of maternal mortality has to be re addressed after clarifying issue raised above.

**Response:** In the manuscript we did not say anaemia accounted for two thirds of maternal deaths but direct causes as a whole accounted for two third of maternal deaths. Anaemia accounted for 11.3% of all maternal deaths. We have added of “all maternal deaths” to make it clearer.

**Table 2**

**Comment:** Re classify abruption placenta and placenta praevia correctly under haemorrhage - and this should change a lot of your percentages on your result section.

**Response:** Abruptio placenta and placenta praevia have been grouped together into “antepartum haemorrhage”. This has not changed much of the results but it has hidden the contribution of abruption placenta into maternal deaths. Making a distinction between antepartum and postpartum haemorrhage is important from a clinical point of view.

**Minor essential revisions**

**Table 1**

**Comment:** In assessing the level of education - were these completed or attempted primary or secondary schools? Classification using Socio economic classes would be more informative.

**Response:** The levels of education were retrieved from the files. It was not specified whether is completed or not.

We would have been happy to have the economical classes but this information is not collected at the hospital. We have acknowledged the limitation of the retrospective studies in our discussion.

**Discretionary revisions**

p5. line 112/116

**Comment:** Remove BM and JR as well as ABP and CP. Rather use their designations eg Principal investigator etc.

**Response:** The abbreviation of the names of authors have been deleted and the position of the authors in the manuscript used.
Reviewer 2

Major Compulsory Revisions

METHODOLOGY

a) Study design – ok

Response: Thanks.

b) Study site:

Comment: This section is grossly inadequately written. It is good to know how many beds are available in MNH for deliveries and how many staff are available at a given shift. This is necessary because we are also looking at the standard of care in the said hospital. Availability of beds and personnel will surely have impact on the quality of services.

Response: We agree with the reviewer and we have provided details of the hospital. We have added the following “Women with pregnancies or having delivered pregnancies of 28 weeks or more are admitted in the maternity block. Maternity block has seven wards. Four wards are reserved for admission of women with antenatal and postnatal complications and women with sick children. Additionally there is a ward for neonatal admissions, a labour ward and a postnatal ward for women with uneventful spontaneous vaginal deliveries with normal babies. This postnatal ward has an area reserved as intensive care-like unit for patients with severe preeclampsia and eclampsia. The labour ward has 20 delivery beds and a total of 25 nurse midwives. Everyday there are three shifts of nurse midwives each with an average of five. Admitted women are attended by a team of doctors on duty including intern, registrar or resident doctors, and obstetrics and gynaecology specialists. The hospital has a theatre with two operating rooms adjacent to labour ward where about 8 to 12 operative deliveries both emergences and elective are performed each day. The number of deliveries per day is between 20 and 40.

There are two gynaecological wards, each with 32 beds. The gynaecological wards admit women with pregnancies of less than 28 weeks of gestation who have developed complications together with non pregnant women with gynaecological conditions. Emergency operations are conducted either in the Emergency medicine operation theatre or a gynaecological operating room at the main theatre.”

c) Data Collection

Comment: The authors should specify the guide/criteria for the review done by ABP and CP? In case i want to replicate similar study in another hospital, what are the review guidelines?

Response: The following words and reference have been added “Guided by the WHO recommendation for the audit of the maternal deaths [9] a criteria for identifying substandard factors was created” and the explanation for the substandard factors have been expanded to make it clearer in the data collection subsection.

Comment: Line 122. When did the authors consider that antenatal care visit was insufficient? How many visits?

Response: “Focused antenatal care of less than 4 visits for women with no risk or complication and those women with complications who did not attend according to schedule recommended by
health providers were considered to have insufficient antenatal care.” This has been added to the methods section to make it clearer.

Comment: Lines 124, 125 & 126 states that “Moreover delay in seeking care such as admission in the hospital while in critical condition like shock, coma, gasping stage or HIV/AIDS stage four was considered to have experienced a delay in seeking care”. That is NOT always true. Take examples of pulminant preeclampsia/eclampsia which usually developed and progress rapidly, also abruption placentae can develop and progress rapidly and even postpartum haemorrhage may present in critical condition not necessarily due to delay in presentation.

Response: In our setting there will always be substantial delay in reaching the facilities, also when acute emergencies occur outside hospital.

Comment: Lines 129/130 indicated that “In some of the cases women had more than one substandard care factor identified”. But this is Not shown in the result section.

Response: The sentence rephrased to make it clearer “In some of the cases, women had a patient and a medical substandard care factor identified”. Furthermore, in the results section a sentence has been changed to reflect this. It reads “A total of 116 (82.3%) of the deceased women had substandard care factor identified, among these 28 had patient factor only and 71 had medical care factor only. Seventeen cases had both patient and medical care factors”.

d) Line 135 - Methodological consideration.

Comment: This is better called “Ethical considerations

Response: We agree with the reviewer. The caption has been changed into “ethical considerations”.

Minor Essential Revisions

RESULTS

Comment: Table 1. Under Occupation – The word “Employed” is broad. What type of employment? See my sticky note

Response: We used the term employee for someone who had a paid contract for her occupation. This is the term commonly used. But the reviewer wants it to be more defined we have added words “paid contract” after the word “employee”.

Table 4.

1) Poor compliance to treatment

Comment: Where does the poor compliance to treatment happen? Is it in the MNH? Or the referral hospitals?

Response: The poor compliance to treatment occurs on all levels, from the community and health facilities up to MNH.

2) Insufficient antenatal care

Comment: How many visits do you consider insufficient?

Response: Focused antenatal care of less than 4 visits for women with no risk or complication and those women with complications who did not attend according to schedule recommended by
health providers were considered to have insufficient antenatal care. This has been added to the methods section to make it clearer.

3) Poor management

Comment: Is it non-compliance to protocol or poor knowledge of the management of the conditions?
Response: Mainly involved the care provided to the woman was inadequate despite a correct diagnosis. Elaboration has been added in the methods section.

4) Delayed investigation

Comment: How does this contribute to maternal death? Does it mean that the service providers wait for lab. results before commencing medication/resuscitation?
Response: Investigations may be ordered but not followed up and delay further management.

5) Delayed diagnosis

Comment: How does this contribute to maternal death? Does it mean that the service providers wait for lab. results before commencing medication/resuscitation?
Response: No, there may be misdiagnosis which later a correct diagnosis is reached.

6) Lack of medications

Comment: Lack of medication or lack of funds? No medication in MNH?
Response: There is lack of supplies now and then. It is indicated in the file as “out of stock”. We could not study the administrative issues in this study as we reviewed the files and in very rarely circumstances the administrative issues are indicated.

Discretionary Revisions

Comment: The statistics is insufficient as it does not show any relationship between maternal death and the substandard care factors.
Response: We agree with the reviewer on the observation. In this kind of the study it is difficult to establish the said relationship but it identify areas of intervention to reduce maternal deaths.

The data are not presented as a statistically important issue, but merely as a clinically important issue. Our goal is to prevent as many as adverse outcomes as possible.

Reviewer 3

Major Compulsory Revisions

Comment: There is a discrepancy in the definition of substandard care as specified by the author (process of medical care) and that of the findings where patients causes is concluded.
Response: We have made the definition clearer by including the patient factors into it. Now it reads “A substandard care factor in this study was defined as deficiencies in the medical care (process) that may have contributed to maternal death including the patient factors. In much of the literature patient factors are also considered to be substandard care.”

Comment: In table 4 the total is 133 and not 117. This needs to be corrected.
Response: We revisited the data and found the number of maternal deaths with substandard care is 116. Agreed with the reviewer and replaced 116 with 133. The 45 and 88 are patient and medical substandard care factors respectively. To make it clearer we have added a subscript to the table which reads “substandard care factors occurred in 116 maternal deaths”. In the methods and results section we have rephrased the statement to show that some cases had patient and medical substandard care factors.

Comment: - In table three, it is better to show another column with the percentage of the direct causes only and indirect cause only.

Response: Though it makes the table difficult to understand a column has been added according to the reviewer’s suggestion. The total of the direct and indirect has been added as well in the rows below the direct and indirect variables.

- Minor Essential Revisions

Comment: The rationale of the study which is very specific to the hospital needs to be highlighted more in the discussion.

Response: We do not understand what the reviewer here wants us to do. The rationale of doing the study is given in the background information, that the audit committee has reviewed only 15 cases for the whole year. Furthermore, in the discussion we have reiterated this and the situation of maternal deaths in the hospital and the Dar es Salaam city with a reference.

Comment: Please add the year to the title.

Response: The year “2011” has been added to the title. Now it reads “Maternal Mortality at Muhimbili National Hospital in Dar-es-Salaam, Tanzania in the year 2011”

- Discretionary Revisions

Comment: It might be useful to show the findings for the cases that referred versus those originated in the hospital with the limitation that the numbers are low.

Response: We agree with the reviewer that comparing the women referred and not referred could have given a good picture. But we do not have a number of all women who were referred and those originated in the hospital. This is a good advice for another study on maternal deaths at the institution.

Comment: Also is advised to explain why submitting the work which was done in 2011 quite late.

Response: Maternal deaths occurred in 2011, review of case notes and analysis was done in late 2012 to 2013 after obtaining ethical clearance and permission. We think that it is not late as suggested by the reviewer but rather early.