Author's response to reviews

Title: Use of antenatal services and delivery care in Entebbe, Uganda: a community based survey

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Author's response to reviews: see over
Dear Dr da-Silva,

Re: MS: 1372661644134415 - Use of antenatal services and delivery care in Entebbe, Uganda: a community based survey

Thank you for your interest in our work. We are pleased to submit a revised version in keeping with your recommendations.

Our responses to your, and your reviewer’s comments are itemised below. Changes made in the manuscript as a result of these comments have been identified by section, page, paragraph and line/sentence for clarity.

Thank you for forwarding on these useful and informative comments that we believe have led to an improved version of the paper.

Yours sincerely
Carolyn Tann

Reviewer 1: William Stones

1. The analysis and how it relates to the research questions relevant to this setting. Actually ANC usage is extremely high in the area and the quality appears to be not at all bad overall. Rather than splitting the scores by median would it not be more relevant to use the statistical tools to try to identify marginalized/underserved groups who perhaps should be the main focus for health interventions?

The marginalized and underserved groups identified by our study are now more clearly stated along with the important factors that contribute to why these women find it more difficult to access care and how future health interventions and policy needs to focus on targeting these groups. This is now clarified in the results (page 8, paragraph 1, lines 3-4 and paragraph 2, lines 2-8), the discussion (page 10, paragraph 2, line 12-18) and the conclusion (page 11, paragraph 2, line 5-9).

2. The manuscript is insufficiently related to the setting. The usual references about NMR and MMR are cited but we are given no information about the actual NMR and MMR in Uganda or local area.

A statement has been added to the background section (page 3, paragraph 1) stating the national NMR (line 8), PNMR (line 10) and MMR (page 3, paragraph 2, line 13) from the Ugandan DHS. A statement has been added to the background with regard to perinatal mortality rates at the local governmental hospital (page 3, paragraph 1, line 11). Further reliable local mortality data are not available. National data on unskilled delivery rates has now been added to the discussion (page 10, paragraph 2, lines 6-10). Two further references have been added (references 13 & 14) of other population surveys looking at antenatal care and delivery practices in East Africa that have shown high rate of antenatal attendance, varying quality in the antenatal services received and low
levels of skilled birth attendance at delivery. These are discussed in the text (discussion, page 10, paragraph 2).

Is the local hospital reporting lots of deaths or admissions of sick neonates? Is there a problem in this area?
A statement has been added to the background section on local/national mortality rates (see above). The PNMR for hospital born infants is high (56 per 1000 births) although it is possible that this represents a subsection of pregnancies and deliveries that are high risk and it may be that PNMR in the community as a whole is much lower (comment in the text on page 3, paragraph 1, line 11-13). Unfortunately it was not within the limitations of this study to examine mortality rates since this would have required a much larger sample size.

We do see a fair number of admissions of sick neonates, but you could expect these to be an under representation of the true burden of neonatal morbidity and mortality in the community (comment in the text page 3, paragraph 1, lines 13-17)

The current policy focus on reducing the number of ANC visits to e.g. 4 and making them richer in content somehow escapes mention. Why not include the distribution of number of visits in the univariate table?
The distribution of the number of visits has been added to table 1.

A comment has been added to the discussion on how this compares to national figures on antenatal attendance (page 9, final paragraph, line 1-2) and states local policy on the number of recommended antenatal visits, which is indeed 4 (lines 4-6). We go on to discuss however that attendance for care does not necessarily reflect the quality of care received (page 10, paragraph 1) and that this is an important aspect of our findings.

There are a number of publications from Uganda cited but the actual findings and implications of these studies are not seriously discussed. Overall the manuscript fails to give a convincing rationale for the study in this setting or draw out really useful policy messages, such as how some of the unnecessary ANC effort can be redirected into targeting vulnerable subgroups and strengthening delivery care.
The rationale for the study has now been clarified in the ‘background’ section of the manuscript and describes the high burden of perinatal/neonatal mortality and our desire to understand how attendance levels and quality of antenatal and delivery care may be contributing to that burden.

The useful policy messages from our studies findings have been clarified and are:
1. Although, in communities such as this, antenatal attendance may be high, there are disparities in the quality of care received and this has an important effect on the standard of care received. In addition, we have shown that women are willing and able to travel to health centres offering the highest quality antenatal care and this has important implications for future antenatal health policy and planning.
   This is now clarified in the discussion (page 9, final paragraph) and the conclusion (page 11, line 1-5).

2. Despite high levels of hospital attendance for delivery, access to skilled birth attendance remains difficult for the most vulnerable of women, with finance and transportation limitations important factors in women’s inability to access skilled delivery care. These vulnerable women need to be the focus of future efforts to strengthen delivery care.
   This has been clarified in the discussion (page 10, paragraph 2) and in the conclusion (page 11, line 5-9).

3. Several simple but important delivery and post delivery practices were commonly neglected, increasing the risk of morbidity and mortality to mothers and their newborn infants. Community-based strategies and participatory interventions through facilitated women’s groups, have been found to be effective in implementing behaviour change in other communities and further research
is needed as to the effectiveness of these interventions in Africa (discussion, page 10, paragraph 3, and conclusion, page 11, line 9-14).

Reviewer 2: Jennifer Moodley

**Major compulsory revisions**

1. **Abstract**

   **Results section.** The third sentence is confusing. Based on the results the overall antenatal services varied by type of health service facility. No results on variation of HIV testing, haematinics and IPTp by health facility are provided. It would be useful to present the services most frequently reported as well as those least frequently reported. The most and least frequently reported services are now presented in the results section of the abstract (lines 2-3) and more clearly in the results section of the main manuscript (page 7, paragraph 2, line 3-4). The score system was designed to presents how the quality of antenatal service, i.e. the range of services available, varied according to health facility and shows that hospitals significantly outperforming public clinics (table 2). In addition, figure 3 shows how the availability of the different services has changed with time. The texts clarifies how the services varied by health facility (i.e. all services were less likely to be offered by public clinics except IPTp and haematinics) in the main results section (page 7, paragraph 2, final sentence).

   The authors need to clarify that the statement ‘a highly significant improvement in antenatal services was observed by year’ refers to an improvement in the reported quality of antenatal care received over time.
   
   This sentence has now been changed to ‘A highly significant improvement in the reported quality of antenatal services received, was observed by year’

   **Conclusion.** Last sentence ‘this study was conducted in a semi-urban area’. However the conclusion mentions that access to essential skilled birth attendants in rural areas remains difficult. No results on access in rural areas were presented. The word rural, which we had used to described women who lived in the poorer, less accessible regions of the study area, has been removed. The text now clarifies what is meant is that access to skilled birth attendants is most difficult for those women affected by financial difficulties and poor transportation links (page 10, paragraph 2, line 14).

2. **Results**

   **Paragraph 2.** The authors need to present the socio-demographic profile of the respondents.
   
   This has now been added to the results section (page 6, final paragraph, lines 1-6).

   **Were there any neonatal or maternal deaths reported?**
   
   A much greater sample size than that used for our survey would be required to examine maternal, perinatal and neonatal mortality rates and this was not within the limitations of our study. Maternal mortality would not have been noted, since information was obtained from surviving women. Some perinatal and neonatal mortality was noted; the limitations of this information are discussed below (reviewer 3, point 1).

   The proportion of mothers booking at antenatal care in the first trimester for the most recent pregnancy is low (16%). Do the authors have any information on changes in the proportion of mothers booking by trimester over time?
   
   There was no significant change over time. A sentence has been added to the results section to clarify this (page 7, paragraph 3, final line).

   In table 1 it is reported that 11% of women delivered at home with no trained assistance. What are the characteristics of these women? Is there any information on the reasons for the home delivery?
Less educated, poorer mothers were more likely to be assisted by a TBA or have no trained assistance at delivery (results section, page 8, paragraph 1, line 5). A short paragraph has been added to the results section on the reasons why women stated they delivered at home with no trained assistance (page 8, paragraph 2). This important point has also been added to the discussion (page 10, paragraph 2, final three sentences).

Paragraph 3 – first sentence ‘Antenatal services were variable, with provision of HIV-testing, haematinics and antimalarials being least frequently reported.’ See comment above
The score system was designed to present how the quality of antenatal service varied according to health facility and shows that hospital significantly outperforming public clinics (table 2). In addition, figure 3 shows how the availability of the different services has changed with time. The texts now clarifies how the services varied by health facility in the main results section (page 7, paragraph 2, final sentence)

Paragraph 4 page 6 – last sentence insert the word ‘ward’.
This has been inserted.

Please use the standard abbreviation for intermittent presumptive treatment for malaria-different abbreviation used on page 4.
The standard abbreviation, IPTp, has now been used throughout the text for intermittent presumptive treatment of malaria in pregnancy.

3. Discussion
The authors note that antenatal care services are well utilized. However there is no discussion on the fact that few mothers are booking early i.e. in the first trimester.
A sentence has been added to the discussion on when women book for antenatal care (page 10, paragraph 1, first sentence).

4. Conclusion
See earlier note on access to skilled birth attendants in rural areas.
As stated above the word rural, which we had used to described women who lived in the poorer, less accessible regions of the study area, has been removed. The text now clarifies what is meant is that access to skilled birth attendants is most difficult for those women affected by financial difficulties and poor transportation links.

Minor essential revisions.
Please mention whether the antenatal quality measure that was used in this study has been previously used elsewhere or whether it was developed for this study.
The words ‘for this study’ (page 6, under statistical methods, line 11) have now been inserted to clarify that this system of quality measure was developed for this study.

Please label the x-axis on figures 2 and 3
All x-axis now labelled.

Reviewer 3: Albrecht Jahn

Major compulsory revisions

Methodology
1. It appears that women with unfavourable pregnancy outcomes are grossly underrepresented. Were there specific exclusion criteria? Assuming that poor outcomes are related to poor services, poorly attended women may have been excluded from the study. Along the same lines, the authors should explain why they did not present data on early and late neonatal survival.
No exclusion criteria were applied and all women who had experienced a pregnancy during the study period were invited to respond (clarified in the text page 5, sampling strategy paragraph 2, line 2-4). As discussed earlier a much larger sample size would have been required to assess mortality rates in this community and so was not within the limitations of this study. In addition there was some difficulty for the interviewers and respondents in differentiating between miscarriage, stillbirth, early and late neonatal death. A sentence has been added to clarify that the study was not able to give accurate survival/mortality data (page 9, paragraph 3). In fact, if we include all reported pregnancy/delivery losses from our data set we get a perinatal mortality rate of around 30 per 1000 births, which may be close to what we might expect for this community but this has not been included in the manuscript because are study is not really qualified to comment on mortality.

2. Recall bias and variables: It is well established that life events such as death are remembered for a long time, but the circumstantial events like use of gloves and soap etc may not be properly recalled even after 2 weeks....The authors refer to this in the discussion....However this general statement ignores the fact that recall is different for different types of event and that there has been previous research in the recall problem. Asking for details such as offered to breast <1hr years after the event is a borderline approach in the first place. If the authors decide to present these data they should a) clearly state the limitations and b) interpret them with outmost caution. The issue of recall bias and the implications of this on interpreting our results is now much more extensively discussed (page 9, paragraph 3) to include all the points raised.

I strongly advise to restrict the scores (if not going back to key variables) to a shorter list, including only the ones for which some recall potential can be reasonably expected. I do not see this type of variables in the section on delivery practices, I assume that place and caregiver during birth is the only reliable information here. The important relationships between place/care-giver at delivery, such as the association between less educated, poorer mothers delivering with no trained assistance, have now been made more clear in the results section (page 7, paragraph 1, lines 4-6) and the discussion (page 10, paragraph 2). The scores have now been restricted to the postnatal practice variables that may be most reliable (page 6, stat methods, lines 12-14) and we have added to the discussion the limitations of interpreting these results due to recall bias as above (page 9, second paragraph).

There is a big chance that women reported what they assumed to be the desired practices by the interviewers.

This has now been discussed in the text (page 9, paragraph 2, last sentence).

3. To my knowledge, women are told to keep their antenatal cards and many do so. This would provide an opportunity to crosscheck information from the interviews. Were antenatal cards and delivery records used for validation purposes? If yes, results should be presented; if not there should be an explanation. In the study area women do have patient hand-held antenatal records but these are usually retained by the hospital for women delivering there. Women delivering outside hospital do not routinely keep their antenatal cards after delivery and often if women have been recruited to a research study their cards will be held after delivery by researchers. Therefore we felt that it was unlikely that sufficient women would still be holding these records so this method was not used to crosscheck information. This has been clarified in the method section (page 5, paragraph 3, line 8-11).

4. Following the above comments, the validity of the scores should be re-visited; I suggest dropping table 3 and summarizing the observations in this field in a written text, as the underlying data are likely to be severely biased by the above mentioned recall problem. The scores have now been restricted to the postnatal practice variables that may be most reliable (i.e. excluding delivery practices such as use of gloves and soap (page 6, paragraph 2 (stat
5. If there are relevant data available from records (e.g. ANC cards) these should be presented. Please see response to point 3 above.

6. If available add survival data. Please see response to point 1 above.

Discussion
7. The discussion lacks context data e.g. DHS data on antenatal and delivery care. Among others, the authors refer to the 11% unskilled deliveries in their study area, without mentioning that this is way below the national data (above 50%). There are also a range of studies of antenatal and delivery care quality and coverage from East Africa, which could allow the authors to compare their findings. National data on unskilled delivery rates has now been added to the discussion (page 10, paragraph 2, lines 6-10). Two further references have been added (references 13 & 14) of other population surveys looking at antenatal care and delivery practices in East Africa that have shown high rate of antenatal attendance, varying quality in the antenatal services received and low levels of skilled birth attendance at delivery. These are discussed in the text (discussion, page 10, paragraph 2).