Author's response to reviews

Title: Factors Associated with Adoption of Beneficial Newborn Care Practices in Rural Eastern Uganda: a Cross-sectional Study

Authors:

Michael Odoi Owor Dr (owormichael@gmail.com)
Joseph KB Matovu (jmatovu@musph.ac.ug)
Daniel Murokora Dr (murokora@gmail.com)
Rhoda K Wanyenze Dr (rwanyenze@musph.ac.ug)
Peter Waiswa Dr (pwaiswa@musph.ac.ug)

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Author's response to reviews: see over
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The Editor,
BMC Pregnancy and Childbirth

Dear Editor,

Re: Response to Reviewers Comments for Manuscript#: 1261033346145405

We remain very grateful to the reviewers’ who read and provided comments and guidance to our manuscript mentioned above.

We thank you for providing us, yet another opportunity to improve the manuscript in the light of the reviewers’ comments.

In this version of the manuscript, we have addressed some of the reviewers’ comments and rebuffed others. We have also corrected the date of data collection (which is November to December 2011 rather than September to November 2011, as earlier reported).

Below is a point-by-point response to the comments raised.

We look forward to receiving your further guidance on this subject.

Regards,

Owor Michael Odoi
Corresponding Author
### POINT-BY-POINT RESPONSE TO REVIEWSER’S COMMENTS

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<td><strong>Reviewer 1</strong></td>
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| #1 | Several of the references are not appropriate for the data they are presenting and are not the most up to date. For impact data present data from the many systematic reviews. The authors need to re-review the background literature and insert more relevant references. For example the 2014 Lancet series would be a good start.  
**Response:** We are grateful to your advice. We have partaken of it and improved our background with recent literature. Please refer to lines 68, 70, 71, 92-94,107,108 on page 5 for details. |
| #2 | The methods need expanding to include information on sampling probability sample, cluster design, stratified by districts? Paper or electronic data collection? etc. They also need to include response rates. Without the sample design it is not possible to comment on whether the data should have been weighted or adjusted for clustering.  
**Response:** Thank you for this comment. We have improved the methods section. We have also made a correction i.e. Instead of reporting health sub-district, we reported district in the earlier versions of the manuscript. This has been corrected. We have also included materials used for data collection i.e. paper based. For details see line 117/118 page 6 and line 136/139 page 6. About sampling and sample size determination, refer to line 124/133, page 6 for details. We are unable to provide information on response rates because we analyzed data that was already collected. |
| #3 | The methods need to include how the explanatory variables were selected for inclusion in the survey and for inclusion in the analysis.  
**Response:** We have also added this information. See line 124/132 page 6. |
| #4 | The data collection procedures and measures section includes a lot of repetition – this should be eliminated and rather a more detailed description of the variables should be included, for example what is a clean instrument - new? Boiled? Washed with soap?  
**Response:** We have revised the data collection procedures and measures section and eliminated the repetition. See sections below line 136, and 142 on pages 5 and 6. |
| #5 | The measures section should be divided into outcome measures and explanatory variables.  
**Response:** We have divided the measures section into Outcome measures and Explanatory Measures. See lines below 143 and 158 page 7. |
| #6 | It is unclear if the survey collected knowledge of ENC (e.g. a question asking about practices good for health) or whether they just asked about awareness of the practice (e.g. a question asking about whether they know what was used to cut the cord). This is confusing and should be rephrased. As knowledge is not included in the analysis I assume it actually refers to asking women about practices done? |
| #7   | It is unclear why when building the SES index they did not consider all variables i.e. land and animal ownership. There should be a clear rational for excluding these.  
**Response:** We are thankful for pointing out this. We apologize for the error made in missing out agricultural land ownership (earlier referred to as land) and animal ownership. We have revised this error and it now reads as follows “…agricultural land, and farm animals (chicken, goats, cows, pigs, sheep)...” See line 172, page 7. |
| #8   | Could the authors clarify what they mean by ‘improve reporting’ in line 154 page 8? Related to this, in the tables it looks like they merged low and middle groups not low and lowest.  
**Response:** What we meant is that the category of lowest socio-economic status had very few variables. We also thought that there might not be very big differences between lowest and low socio-economic status. On this basis, we merged the two groups. We however did not merge low and middle socio-economic status as referred to by the reviewer. We have clarified this. Please refer to the text lines 179/180 page 8. It reads “…We merged the 'lowest' and 'low' quartiles into “low” because lowest had very few values while “middle” and “high” were left intact…” |
| #9   | The analysis needs to be reviewed by a statistician. For example on page 8 line 170 it is not clear to me that they did use a LR test. In table 3 they do not present statistics for variables as a whole but for each dummy variable. Also I think the term correlates is wrong- I think they mean covariates. Cronbach’s alpha should be done on the final index not on the variables before the PCA.  
**Response:** We thank the reviewer for the above-mentioned observation. It is important to note that we used the likelihood ratio test as a chi square-based test initially. In response to the reviewer’s observation, we have revised the statistics and provided Pearson Chi2 based statistics instead. We have included the statistics (p-values) for the individual variables as a whole. We have also used Fischer’s Chi2 test for variables in which cell values were less than 5, for example Delivery mode. Although, we think the statistics for the dummy variables are equally important; we have opted to retain them too. See table 3 for details. |
| #10  | The authors have a cut off of <0.1 for inclusion in the multivariable- unclear why marital status is included and why delivery mode is excluded.  
**Response:** We regret indicating inclusion of marital status in the multivariable analysis yet its p-value 0.112 is greater than 0.1. Actually, it was not included in the final multivariable analysis. We are also sorry to have recorded an incorrect value (0.07 instead of 0.036). We have since revised all the statistics and made both corrections in the text and the table. See page 8, line 192/194 and Table 3. |
| #11  | I think the authors could format the tables so the prevalence, unadjusted and adjusted odds were all presented in the same table. At the moment they present unadjusted odds twice.  
**Response:** We have formatted Table 3. We have presented unadjusted and adjusted associations with care practices. See Table 3 for details. |
| #12 | I am confused by the power calculation, is this to detect a single OR or to compare two ORs.  
**Response:** The power calculation is to compare two Odds ratios i.e. that of Buyende health sub district and Luuka sub-district. |
| #13 | Page 10, paragraph 2, some of the variables listed have positive and some negative associations with care practices, these should be separated out so the reader understands the direction of the effect.  
**Response:** We have separated variables with negative and positive effects. Please refer to page 12, line 239/246 for details. |
| #14 | Information on trimester of ANC is inconsistent with the data in table 3. The results of the adjusted analysis on page 11 are also not consistent with the table.  
**Response:** The results have been revised. See page 11, line 252 and refer to table 3 for details. |
| #15 | There is a high prevalence of facility births, the first paragraph of the discussion assumes that it is the mother that does the care practices. For facility birth immediate newborn care (including thermal care and weighing) are likely to be done by the health staff. This should be acknowledged.  
**Response:** We have revised this. Please refer to page 12, line 285/287 for details. |
| #16 | Limitations should include if there could be residual confounding explaining any of the associations.  
**Response:** We are thankful for this insight. We have included this in the discussion section. See line 355/356, page 15. |

**Minor Revisions**

| #1 | The title does not adequately reflect that they are looking at factors associated with care practices, this should be revised.  
**Response:** We have revised the title and it reads as follows: “Factors associated with adoption of beneficial newborn care practices in rural eastern Uganda: a cross-sectional study”. We have also used the term “Adoption” in the entire text instead of “Utilization” in the earlier text so as to be consistent with our message. |
| #2 | In the Abstract line 32 it should read `including` rather than `i.e.` – the list they give is not exhaustive.  
**Response:** We have changed the statement in line 32. It now reads: line 32/33, page 2 “…socio-demographic and economic characteristics, antenatal care visits …”  
We have done this to observe the word limits in the abstract. |
| #3 | In the abstract they say that the survey was for people who delivered in the last 2 years but in the methods on page 5 they say in the last one year  
**Response:** We do not have this kind of information in the abstract. Please refer to the following lines: 30/31 pages 2 and 117/118, page 5. Women who had given birth within a year were interviewed. |
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<td>#4</td>
<td>The article needs to be proof read. E.g. Cord is spelt ‘chord’ throughout, and the authors refer to their analysis looking at the uptake of any beneficial care practice when they mean uptake of all practices</td>
<td><strong>Response:</strong> We have proof read the article and corrected the highlighted mistakes.</td>
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<td>#5</td>
<td>Authors need to be consistent with the number of decimal places they present results to.</td>
<td><strong>Response:</strong> We have revised the number of decimal places we have reported, including for p-values. For p-values, we have used three decimal places and for Odds Ratios and 95% confidence intervals we have used two decimal places. For proportions, we have used one decimal place. Refer to the tables and the text for details of the changes made.</td>
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<td>#6</td>
<td>The authors need to be consistent and accurate with their terminology. E.g. At times the authors say health facility attendance and at other times ANC attendance; sometimes number of children ever born and other times parity; sometimes fuel material for lighting and cooking and sometimes lighting source and fuel materials and sometimes exclusive breastfeeding and other times no food supplements. There are subtle differences between these. It makes reading the tables difficult when the language is different.</td>
<td><strong>Response:</strong> We have clarified the terms used. For example, ANC visits has been used instead of ANC attendances in the entire text. We have changed phrases &quot;Materials for lighting and cooking&quot; to &quot;materials for fuel, lighting&quot;. See line 170/172 page 7. We have also defined parity as number of pregnancies carried beyond 28 weeks. See line 161/162, page 7.</td>
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<td>#7</td>
<td>On page 7 line 116 they say that data were collected on maternal socio-demographic factors, but then include in the list non SES factors and non-woman related data such as husband education. This also occurs later in the paper.</td>
<td><strong>Response:</strong> We have revised the section and excluded non-maternal demographic factors. See section below line158, page 7.</td>
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<td>#8</td>
<td>Page 6 line 125- better to call these household assets than household materials. In the abstract you call them possessions- be consistent.</td>
<td><strong>Response:</strong> We have changed the terminology from household possessions to economic characteristics. See line 33, page 2. It reads “…economic characteristics…” and line 171/173, page 7. It reads “…floor material, roof material, wall material, fuel used for cooking, source of light and other household possessions (i.e. radio, type of bed, table refrigerator, television set, sound cassette player, and telephone), agricultural land, and farm animals (chicken, goats, cows, pigs, sheep)…”</td>
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<td>#9</td>
<td>Page 7 lines 139-140 do not belong in this section. The statement is not correct as reference 17 concludes that ‘delayed bathing and putting nothing on the umbilical cord were neither acceptable to parents nor to health providers’.</td>
<td><strong>Response:</strong> We have excluded this statement from the text.</td>
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<td>#10</td>
<td>Page 7 line 143 should read ‘none’ not ‘neither’ and line 148 should be</td>
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<td>11</td>
<td>Page 8 line 159, it is unclear what they are referring to when they talk about trimester- assume this is in relation to time of first ANC visit? Reference 1 does not seem to fit in this paragraph.</td>
<td>Response: We have revised the statement and removed the misplaced reference 1. Please refer to page 7, line 162/165, which reads “…while Trimester at first ANC was categorized according to weeks of gestation when the mother had her first ANC visit as follows: trimester 1 &lt;13 weeks, trimester 2=14-26 weeks and trimester 3=27-40 weeks. Number of ANC visits was categorized into …”</td>
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<td>12</td>
<td>Page 8 under statistical analyses husband education is listed twice. It would help the reader if the order of the variables in the text matched the order in the tables.</td>
<td>Response: We have revised the sited section on page 8 and re-arranged the order of the variables as presented in the table. See page 8 line 193/195. It reads, “…number of ANC visits, skilled delivery, husband’s education status, education; occupation, delivery mode, trimester at first ANC visit, socio-economic status, and health sub-district …”</td>
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<td>13</td>
<td>Some issues with English language, for example it would be better to say the proportion of mothers who adopted a practice rather than who used a practice</td>
<td>Response: We are thankful for pointing out this language problem. We have revised it and it now reads as follows, page 10, line 228 “…Overall, adoption of all beneficial newborn care practices…” Indeed, we have decided to use “Adoption” instead of “Utilization” of beneficial newborn care practices in our entire manuscript.</td>
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<td>14</td>
<td>Reference list contains errors such as first names- this needs to be thoroughly reviewed.</td>
<td>Response: We have updated our entire reference list and corrected all errors relating to first names.</td>
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**Reviewer 2**

**Major Revisions**

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<td>1</td>
<td>It would be readers to understand a bit more about the women included in the study. How did researchers find study participants? How many women were approached? Did all approached women consent for the interview? How many of the approached refused study participation? Who interviewed the women? Did interviews take place in the home or at a health facility?</td>
<td>Response: Thank you for raising this issue. We have availed this information in the methods section. See line 117/118, page 5.</td>
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<td>2</td>
<td>Were all children at least 1 month old at the time of the interview? If not, the definition of “good feeding practice” needs to be altered, as it currently requires that the child be fed only breast milk for the first month of life</td>
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**Response:** Thank you for this comment. We would like to clarify that interviews were conducted among women who had delivered within one year. This was irrespective of the age of the child. Furthermore, this data was collected retrospectively. Although exclusive breastfeeding with milk is the recommended standard of practice for the first month, it does not prevail as such due to local beliefs and different cultural practices. By “good feeding practice”, we meant that the mother gave no other feed to the baby in the neonatal period (first 28 days) other than breast milk.

#3  
Socio-economic status has a slightly mixed set of findings that would be helpful for authors to describe. Middle versus Low was significantly correlated with behavior but High versus Low was not. Can authors discuss this?

**Response:** We have discussed this in the text. Refer to page 14, line 310/315. It reads “…The mixed findings we see among women of middle socio-economic status compared to low socio-economic status and high compared to low socio-economic status could be because women of high socio-economic… economic status through quality ANC services at fixed health facilities (both private and public) they…”

#4  
Authors focus on district differences in practices; however, there are little differences between the two districts other than socioeconomic status (SES) and education levels. SES, education, and district may be collinear variables and thus inclusion of all in the final model may be inappropriate. Did authors assess collinearity among these variables?

**Response:** Thank you for raising this issue. We assessed all variables for possible collinearity (the Variance Inflation Factor (VIF) was 1.23) and did not find any collinear variables. We also would like to make correction to the said “Districts”, which are actually health sub-districts.

### Minor Revisions

**#1**  
Authors interchange “cord” and “chord” for umbilical cord treatment. Please correct throughout the manuscript to “cord”

**Response:** We have corrected the word ‘chord’ to read as ‘cord’ throughout the entire manuscript.

**#2**  
How is skilled delivery defined? Please add to lines 118/119.

**Response:** Having had birth with a qualified medical worker midwife, doctor clinical officer or nurse at a facility. See lines 167/168, page 7.

**#3**  
Line 148 should be Cronbach’s alpha not “Cornbrash’s alpha.”

**Response:** We have corrected Cronbach’s alpha. See line 174, page 8.

**#4**  
Parity definition: does this include deliveries or pregnancies? Is this live-born only? Or was this defined as the number of children living at the time of the interview?

**Response:** The definition of parity included deliveries and pregnancies not carried to term irrespective of the status of the baby (alive or dead) at the time of interview. See line 161/162, page 7 which reads “…(number of pregnancies carried beyond 28 weeks)…”

**#5**  
Line 167 should read testing of correlation, not association.
**Response:** Testing for correlation involves two continuous variables only. Our variables are categorical and therefore testing for “correlation” does not apply in this case. It is testing for association.

**#6** Was consent written or verbal? Please add to lines 186-188.

**Response:** Informed consent was written. We have added this to lines 117/118, page 5

**#7** Combine tables 3 and 4. Crude odds ratios data is duplicated in the two.

**Response:** We have combined both tables. Please refer to table 3 for details.

### Discretionary Revisions

**#1** What corrective measures were taken if data was incomplete (line 129)? Did women get revisited to gather the data or was data considered missing? How was missing data treated?

**Response:** Women were revisited to collect the data in the field. Data that were missing even after corrective action, were excluded from the final analyses.

**#2** “Peasants” may mean many things to different reader audiences. Is this the same as unemployed? Maybe consider using unemployed instead?

**Response:** By peasants we mean individuals who practice subsistence farming (produce for home consumption and sale surplus for income) it does not necessarily mean being unemployed.

**#3** Table 3. Inclusion of “distance to facility” needs to be bolded to keep with the format as presented.

**Response:** This has been corrected. Refer to Table 3 for details.

**#4** Define “assisted delivery” in Table 1. Is this c-section only or use of forceps as well?

**Response:** Assisted delivery is defined as delivery that included use of operative procedures such as C-section or episiotomy. Forceps delivery was not considered as it not a practice in our country setting.

### Reviewer 3

**Discretionary Revisions**

**#1** Not sure references #40-41 really supports their assertion that mother’s retrospective self-report is valid for newborn care practices, since they’re focused on childbirth pain. They should refer to Stanton et al’s Plos One article from May 2013.

**Response:** We have reason to believe that References #40-41do support mothers retrospective reports, though their accuracy is not provided. As such, we have opted to retain them. Nevertheless, we recognize that childbirth and labour pains are memorable and vivid experiences for mothers (at least those in low-income countries) so much so that mothers will usually remember the challenges, and issues they went through during birth to get a baby (whatever the outcome of that baby). Few studies have measured accuracy of mother’s self-reports. We are grateful for the suggested reference: “Measuring Coverage in MNCH: Testing the Validity of Women’s Self-Report of Key Maternal and Newborn Health Interventions during the Peripartum Period in Mozambique”. It brings another dimension of remembrance other than pain. We have included it in
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| #1 | This line in the abstract needs to be clarified: “Uptake of any beneficial newborn care practices was 11.7% overall”. What they mean is ALL beneficial practices.  
Reponses: Thank you for this clarification. We have revised the statement and it reads (line 43): “...Uptake of all beneficial newborn care practices was 11.7%” |
| #2 | Be sure to correct the use of the word “chord” for cord – referring to umbilical cord.  
Response: Thank you indeed for pointing out this mistake. We have revised the word “chord” and replaced it with cord in the entire document. The revisions are highlighted in yellow. |
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| #1 | I’m a bit skeptical of the idea of having an outcome measure that’s a composite of several composite variables and would like the authors to provide evidence to justify that decision. Specifically, I would like more information about how the individual behaviors contributed to the coverage of each of the five individual categories of behavior. Two practices – optimal thermal care and good feeding practices – seem to be dragging down the average, but even so it’s surprising that the total coverage is so low. It would be helpful to understand more about why that’s the case. For the multivariate analysis, did the authors look at the predictors of each of the five behaviors separately? It’s plausible that different behaviors would have different predictors. Although there is not room to present all these findings, they could mention that this was done as a sensitivity analysis; this would make readers more willing to accept an outcome that’s a composite of composite variables.  
Response: Indeed, there were differences in how individual characteristics affected each composite newborn care practice. However, the objective of the paper was to describe how all these individual characteristics of composite variables demonstrated adoption of all beneficial newborn care practices. Now it is essential to note that any breach in the composite variables for all beneficial newborn care practices has catastrophic outcomes for the newborn. It therefore remains our prerogative to demonstrate all this in this paper irrespective of any form of sensitivity analyses for individual composite variables. |
| #2 | The authors conclude, “The independent factors associated with use of beneficial newborn care practices were skilled delivery attendance, middle-level socio-economic status and attending ANC for 3-4 visits. These findings suggest a need for increased promotion of ANC and skilled delivery attendance as well as the need to improve targeting for women of low socio-economic status.” In fact, a majority of women already receive ANC skilled delivery, yet coverage of all practices was low; just improving coverage is insufficient – improving quality is also necessary.  
Response: We are thankful for this insight into our conclusion. We have refined it and it reads as follows (line 53-56): “…all beneficial newborn care practices was low, although associated with higher ANC visits; middle-level socio-economic status and skilled delivery attendance. These findings suggest a need for interventions to improve quality ANC and skilled delivery attendance as well as targeting of women with low and high socio-economic status with newborn care health
educational messages educational messages…”