Author's response to reviews

Title: Postnatal Care by Provider Type and Neonatal Death in Sub-Saharan Africa: A Multilevel Analysis

Authors:

Kavita Singh (kavita_singh@unc.edu)
Paul Brodish (brodish@unc.edu)
Erica Haney (haney.eric@gmail.com)

Version: 3
Date: 18 August 2014

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

Thank you for the opportunity to revise our paper MS: 697853711329174 now titled “Postnatal Care by Provider Type and Neonatal Death in Sub-Saharan Africa: A Multilevel Analysis”. Please find below a point-by-point response to each of the reviewers’ comments and attached a revised paper. Comments from the reviewer were extremely helpful and have enabled us to greatly improve our manuscript. We hope you will now find our paper suitable for publications.

Best wishes.

Sincerely,

Kavita Singh

Reviewer 1

Discretionary Revisions:

Comment 1: Page 6 “left censoring of the data” is a term unfamiliar to this reviewer which is explained in the succeeding paragraph…suggest it would be clearer to the general reader if the term succeeds the explanation not precedes it.

Response 1: This is a helpful suggestion. We now explain the term left censoring before introducing it.

Comment 2: Page 7 likewise…”In order to correct for right censoring”

Response 2: We also now explain the term right censoring before introducing it.

Reviewer 2

Major Compulsory Revisions:

Title:

Comment 1: Authors might want to make the title more specific and informative, e.g. by including the source of data (DHS) or method of analysis used in the study

Response 1: We have now changed the title to “Postnatal Care by Provider Type and Neonatal Death in Sub-Saharan Africa: A Multi-level Analysis”.

Abstract:
Comment 2 a1: The objective of the analysis should be placed in the Background not in the Methods Section.

Response 2 a2: We have moved the objective to the Background.

Comment 2 a2: Please be cautious with using the word “effect”. My suggestion is to keep “the association” rather than effect considering this is a cross-sectional study.

Response 2 a2: This is a good suggestion, and we now consistently use the term association.

Comment 2 a3: Please clarify the type of PNC provider. Authors mentioned in the text that it is PNC within the first 7 days of life, not PNC provided on day 7 as stated in the Abstract. Please check throughout the manuscript to ensure its consistency.

Response 2 a3: We define skilled and unskilled providers in the abstract and note that it is PNC within first 7 days of life.

Comment 2 a4: Please include the year of DHS used in the analysis.

Response 2 a4: We have added the years for the DHS.

Comment 2 a5: Is the multilevel regression analysis multilevel logistic regression analysis?

Response 2 a5: Yes. This is now clarified in the abstract.

Comment 2 b1: Authors might want to include the OR and 95% CI for factors significantly associated with the outcome.

Response 2 b1: We have now done this.

Comment 2 b2: Other factors associated with study outcomes apart from the PNC can be included briefly here.

Response 2 b2: We have now added in a sentence about other factors that were significant.

Comment 2 b3: Please be cautious and revisit the conclusion part to avoid misinterpretation that SBA is not required and only unskilled providers can enable sub-Saharan African countries to save newborn lives.

Response 2 b3: We have now clarified our conclusion to avoid any misinterpretation.

Background

Comment 3a: The background is too lengthy. Although it is good to have good literature research about the topic discussed in the analysis, authors can select only the most relevant ones related to the objective of the study. Some references can be used in the discussion section when comparing between the result of the present analysis and the previous literature.
**Response 3a:** The background section has now been cut back to reflect only the key literature.

**Comment 3b:** Authors might want to include information about the changes in the % of newborns receiving PNC by different skilled providers in sub-Saharan Africa.

**Response 3b:** Because PNC is a new focus area for the global health community, trend data are not available.

**Comment 3c:** The objective of the manuscript can be mentioned clearer. Please make sure the objective is consistently stated in the paper, including its association for each type of provider.

**Response 3c:** The objective has now been shortened and more clearly stated.

**Comment 3d:** There are some data requiring references e.g. Paragraph 1 line 3 and line 5; paragraph 2 line 5, etc. Please check the manuscript again.

**Response 3d:** Appropriate references have been added in the proper positions.

**Comment 3e:** Authors need to define the outcomes clearly, and please clarify if those “two study factors” are mutually exclusive or not? Then, are the “two outcomes” mutually exclusive? Please clarify.

**Response 3e:** PNC on day 1 and PNC within the first seven days are not mutually exclusive. Likewise the two outcome variables – neonatal death on days 2 to 7 and days 2 to 28 are not mutually exclusive. This is now explained more clearly in the text.

**Methods**

**Comment 4a:** Source of DHS is required.

**Response 4a:** The appropriate reference has now been added.

**Comment 4b:** 1st sentence, suggestion to revise it into: ..."were pooled from ten "sub-Saharan African” countries - ....."

**Response 4b:** This change has been made.

**Comment 4c:** Authors mentioned 31,799 samples across ten countries. What was the distribution by countries? A table might help.

**Response 4c:** We now include the breakdown by country as Figure 1 in the Results Section.

**Comment 4d:** Did the main study variables refer to the “first” PNC? Please state it clearly.

**Response 4d:** Yes, we are looking at first PNC check. This is a helpful suggestion, and we have made the clarifications in the text.
Comment 4e: Please define the inclusion criteria clearly. Is this only woman’s most recent delivery within the last 5 years? And what was the reason for selecting this group of women? Authors had the information but they are all mentioned separately and might lead to some confusion.

Response 4e: This information is now mentioned in one place. We looked at recent births to reflect the current state of PNC provision and neonatal death.

Comment 4f: In the last sentence under “Outcome variable”, authors mentioned that “…all neonates who aged one month or less were dropped from the analysis.” I agree for this exclusion for neonatal deaths in the first 1 month. However, if this happens when examining neonatal deaths in the first week outcome, authors may had left out numbers of neonates born in the last 1 month who were still alive after their first day of lives.

Response 4f: We now explain that only neonates less than one month were dropped for the deaths on days 2 to 28 outcome. For the outcome on deaths on days 2 to 7 we kept newborns who were less than one month. We did not have information on birth day, just birth month and year and could not exclude newborns less than 7 days for that outcome. The numbers of newborns less than 7 days would likely be small. This is now explained in the text.

Comment 4g: Furthermore, authors mentioned that “only women whose babies survived the first day of life were included in the analysis.” This might be the best way to go for examining the association between neonatal deaths within the first week (0-7 days) and PNC on the first day. However, authors might want to consider this for examining the association between neonatal deaths within the first week (0-7 days) and PNC visit within the first week (0-7 days, if this is what the authors meant). This is similar to the second outcome (deaths in the 1st month”.

Response 4g: We actually need to exclude deaths on the first day of life, because we would not know if the newborn died before he or she would have been eligible for a PNC visit. The DHS does not record deaths on the first day by hours. Thus our two outcomes are neonatal deaths on days 2-7 and days 2-28. This is now clarified in the text.

Comment 4h: One page 7, the first sentence authors wrote, “The dependent variables were survival status in the first week of life (early and late neonatal mortality. Please clarify this definition with all the outcomes, does “first month of life” man 0-28/0-30 days, meaning this does not refer to early neonatal mortality. Authors need to define all outcomes and key independent variables.

Response 4h: We now clarify that we are looking at deaths on days 2-7 as one outcome and deaths on days 2-28 as a second outcome.

Comment 4i: There are several parts that can be put in the Results section, such as the last sentence of the “Other independent variables”. Please check the manuscript again.
Response 4i: We have now ensured all results are in their respective place in the results section.

Comment 4j: Authors used “wealth quintile” as one of the independent variables. Was this variable available in the dataset or did authors construct a new wealth index variable? If authors constructed a new variable, how was it constructed.

Response 4j: We used the wealth quintile that is presented by the DHS. We explain this and how the DHS constructs the variable under the section on Control Variables in the Methods Section.

Comment 4k: Did the authors use any elimination methods to come up with only several covariates showing significant results. This should be mentioned clearly. What was the level of significance used for the elimination?

Response 4k: We only had a few covariates from the DHS that were relevant for our analysis. Because these covariates were so limited we included all. Our selection of the covariates was based on theory and the literature.

Comment 4l: Were all analysis weighted by sampling probability?

Response 4l: Yes, and this is now explained in the text.

Results

Comment 5a: Authors do not need to explain all variables in Table 1. Authors can just mention the most interesting findings about Table 1.

Response 5a: We have condensed the description of the variables in Table 1.

Comment 5b: In table 1, please correct the parity categories, should be “#4” or “4+”.

Response 5b: This correction has been made.

Comment 5c: In table 1, please provide a footnote for the definition on “skilled” and “unskilled” birth attendants.

Response 5c: This has been done.

Comment 5d: Authors might want to change the title “Bivariate” to better reflect the content of Table 2.

Response 5d: We have changed this sub-heading to “Neonatal Death by PNC”.

Comment 5e: The finding showing that PNC by skilled attendance had higher death rate than unskilled needs to be discussed later in the Discussion Section.

Response 5e: This finding is now carefully explained in the Discussion Section.
**Comment 5f:** For the multilevel modeling results, authors might want to write ORs and 95% CI to make the presentation clearer.

**Response 5f:** We have made this change.

**Comment 5g:** Why are there only few covariates presented in the multilevel models? Were other variables not significant? Please make sure the process is mentioned clearly in the Methods Section.

**Response 5g:** We now explain this process clearly in the Methods Section. We just present the key independent variables – PNC and maternal health variables. We have a footnote at the bottom of Table 3 that indicates we also control for the sociodemographic variables. Because the sociodemographic variables are not our key area of interest, we control for them but do not discuss them.

**Comment 5h:** What about the results of the country level variance as shown in Table 3?

**Response 5h:** This is a random intercepts multilevel model in which the intercepts for each country are allowed to vary. The significance for the random effect means that the intercepts for the regression model are significantly different across the countries and therefore a multilevel framework in which this clustering by country is accounted for is appropriate. A brief explanation is included at the beginning of the Multilevel Modeling Results section.

**Comment 5i:** Authors wrote there was “unskilled delivery in a facility”; why were unskilled attendants working in a facility?

**Response 5i:** This is not common but sometimes happens in very crowded or short-staffed facilities. This is now explained in more detail in the text.

**Discussion:**

**Comment 6a:** I think the first paragraph is unnecessary since it is duplicating what was written in the Results section.

**Response 6a:** We now have removed the duplication and revised the discussion.

**Comment 6b:** What can be potential programs that can improve the involvement of traditional birth attendants and/or community health workers?

**Response 6b:** This is a helpful suggestion. We have included some program recommendations in the discussion and in the conclusion.

**Comment 6c:** Are there any previous studies with similar findings as what authors found in this present study? If yes where they different? Why authors think they are different?
Response 6c: Based on own literature review, there were no studies very similar to ours. PNC is a new focus area for global health. This is now more clearly explained in the discussion and conclusion.

Comment 6d: What are the strengths of the study?

Response 6d: Strengths include being able to differentiate between PNC provided by unskilled versus skilled providers and the newness of the topic. It is also a topic of great programmatic relevance. This is now explained in both the discussion and conclusion.

Comment 6e: Please be cautious in interpreting the results of breastfeeding variable. There might be inverse causality occurred, e.g. infants might be too sick to be breastfed and he/she later died because of the sickness rather that, infant death due to absence of breastfeeding.

Response 6e: We now explain this as a limitation to our analysis.

Comment 6f: Authors might want to include discussion in other factors significantly associated with both outcomes, e.g. antenatal care and breastfeeding, briefly.

Response 6f: We have explained these factors briefly.

Reviewer 3

- Minor Essential Revisions

Comment 1: In the abstract it mentions on day one and seven of life, but the last para of the background day one and within seven days of life- changed to “within seven days”

Response 1: We have now revised the abstract. We are looking at PNC on day 1 and within the first seven days of life.

Methods

Comment 2: In order to correct for right censoring, all neonates who were age one month or less were dropped from the analysis of deaths in the first month of life.” Do you mean one month or more?

Response 2: If neonates have reached the first month of life or beyond, we know their mortality status at one month, so right censoring would not occur. Right censoring in this context is where the status on the outcome neonatal death within the first month of life is unknown because the study was “terminated” (i.e., data were collected) before the child reached age one month. We have edited our explanation of censoring in the text for clarity.

Comment 3: Dependent variable- neonatal “death” is more appropriate in this context than mortality.
Response 3: This is a helpful suggestion, and we have made the appropriate changes throughout the paper. We also clarify that we are looking at deaths during days 2 to 7 and days 2 to 28.

Comment 4: First para- the sum of the percent for the PNC check within the first week by the two categories of service providers should be 32%.

Response 4: This was a rounding error and the correct figure has been reworded in the text.

Comment 5: First para.. “Forty six respondents were aged 25-34” did you intend to write 46 percent?

Response 5: Yes, this has been changed.

Comment 6: Table 2- the heading is not correct.. infant mortality rate is not part of your study

Response 6: This has been changed.

Discussion

Comment 7: Infant mortality is erroneously mentioned again in the discussion section.

Response 7: We have corrected this error.

Comment 8: Need for references to support arguments in the first sentences of the second para in the discussion.

Response 8: We have revised the discussion and added in appropriate references.

Comment 9: The results that indicate a higher neonatal mortality among newborns delivered in health facility and assisted by a skilled attendant needs a more convincing argument- this might as well be due non-inclusion of those who died in the first day of life.-

Response 9: This is a key limitation of our analysis. It could be true that skilled birth attendants might have been able to prevent some of the neonatal deaths on the first day of life, but other studies have indicated that in real settings they lack the training and skills to do so. These studies are referenced, and the limitation is now explained more clearly.

Limitation

Comment 10: Limitations of the study are correctly mentioned the critical variables that were not available for analysis (BW, gestational age and omission of children who died in the first day of life). However inclusion of multiple births could potentially bias the results. Conventionally, multiple births could be more likely attended by a skilled care provider.

Response 10: The issue of multiple births has now been added to as a limitation.
Comment 11: Reference no 20 is better suited for quality of care than skilled birth attendant as quoted in the paper.

Response 11: The placing of this reference has now been changed.

- Major Compulsory Revisions

Comment 12: Dropping those children who died in the first day of life has a potential for distorting results and considering that a high proportion of neonatal deaths happen in the first day of life then the mortality rates are hugely underestimated and are not actually neonatal mortality rates. Although the authors correctly mention this as a limitation it has substantial impact in estimations of neonatal mortality and effect of PNC care in the newborn survival.

Response 12: Throughout the paper we now clearly define our outcomes as neonatal death on days 2 to 7 and neonatal death on days 2 to 28. It is unfortunate that we could not include deaths on the first day of life. We hope future studies will allow for a classification of deaths on the first day by hours. We explain this in our limitations and recommendations.

Response 13: Need to state how the denominator was adjusted to account for omission of those who died in the first day of life.

Comment 13: The denominator was not adjusted, and our outcome variables are neonatal death on day 2 to 7 and day 2 to 28. We now explain this clearly in the text.