Author's response to reviews

Title: Levels and determinants of continuum of care for maternal and newborn health in Cambodia—evidence from a population-based survey

Authors:

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Version: 5 Date: 30 December 2014

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

Thank you very much for the helpful comments of the reviewers concerning our paper “Levels and determinants of completing the continuum of care for maternal and newborn health in Cambodia-evidence from a population-based survey”.

With the help of these suggestions we have been able to revise the paper and are submitting it again for your review. Each of their suggestions and comments has been addressed, and our response follows.

Thanks,
Wenjuan Wang, Rathavuth Hong

Reviewer 1

Title: Levels and determinants of completing the continuum of care for maternal and newborn health in Cambodia-evidence from a population-based survey

Version 4 Date: 24 March 2014

Reviewer: Saifuddin Ahmed

Levels and determinants of completing the continuum of care for maternal and newborn health in Cambodia-evidence from a population-based survey

Review comments:
Antenatal care (ANC), delivery care from skilled birth attendants and postpartum care are the three major interventions in the motherhood initiative programs for reducing maternal and perinatal mortality. The vast majority of studies on maternity care, however, are focused on ANC or delivery care only, with little attention to postpartum care. This is an egregious failure considering that in many settings most maternal deaths occur due to hemorrhage and sepsis during the postpartum period. This paper has significant potential to advance our knowledge base to better understand the individual and contextual factors that affect the continuum of maternity care seeking behavior - from ANC to PP care - in Cambodia.

This manuscript is succinctly well written and clearly presented.
1) However, the literature section may be improved further to reflect the earlier study deficiencies, justifications for the rationale of the study, including the conceptual frameworks on maternity care, which served as the analytical basis of the paper.
Because the focus of the paper is the identification of the barriers to care, the authors may consider briefly discussing inequity and reasons for no or limited maternity care as illustrated from the other DHS countries.

**More literature and justification of the study have been added to the Background section.**

I present below my major comments to improve the paper.

2) In maternal health literature and by the World Health Organization, the postpartum period is designated as the first 6 weeks after delivery (PP is not formally defined by the WHO). The authors decide to use 48 hrs cutoff periods, which needs justifications. Women delivering at health facilities, especially after CS, are likely to be seen during the 48 hrs pp period and thus highly correlated. This may attenuate the effects of the covariates that may increase propensity to deliver at a health facility. PP sepsis is unlikely to develop during this very early period and care seeking for such causes may be ignored. WHO recommends that women who have delivered in a health facility should receive PP care for at least 24 hours after birth. If a birth is at home, the first postnatal contact should be as early as possible within 24 hours of birth. Three additional PNC contacts are recommended on day 3, between days 7–14 after birth and 6 weeks after birth (see: World Health Organization. WHO Recommendations on Postnatal Care of the Mother and Newborn, October 2013).

**Our analysis focused on postnatal care for mothers within 48 hours after birth for two reasons, which are now included in the revised paper: 1) first 48 hours after delivery is critical to the management of postpartum hemorrhage, a leading cause of maternal deaths in developing countries; 2) postnatal care within 48 hours after birth is a Millennium Development Goal Countdown to 2015 indicator. We do agree with the reviewer that this cutoff may attenuate the effects of some covariates. This is now acknowledged as a limitation in the revised paper.**

3) The statistical analysis section needs more details. The paper used weighting in the descriptive analyses. Not sure whether the regression models were weighted.

**Sample weight was accounted for in both descriptive and regression analyses. This information has been added to the revised paper. An associated change made is reporting weighted sample sizes in Table 3.**

4) Modeling the continuum of care through three stages is not straightforward. The authors used three models: in the first model all data were used and the outcome was ANC; in the second model, the sample was limited to those who utilized ANC, and the outcome was delivery by SBA; and the third one was limited to those who utilized ANC and delivered with SBA and the outcome was PP care. As the Table 2 shows, some women delivered at health facility without ANC, and some women received PNC (postnatal care) without delivery care or ANC (approximately 12%). How the exclusion of such women may affect the study inference and results? A simpler approach could be the application of a “multinomial model” with “Table 2” outcomes (some categories with small n combined, providing such classifications as no
care; completed care; incomplete care in order, etc). This might show the “dose-effect” of wealth quintile/SES, which is the only variable shown to be significant across all the models.

We appreciate the suggested approach- running a multinomial model for an outcome with probably 3 categories as suggested by the reviewer: no care, incomplete care and completed care; or even more categories, for example received one or two services, but not all three. However, the key language to this study is continuum care and the analysis aims to identify factor(s) that may affect women from getting SBA after receiving ANC, and from getting PNC after having both ANC and SBA. We had these sequential models because 1) we believe factors predicting women’s continuation from ANC to SBA are different with those predicting their continuation to the next stage - PNC. This turned out to be true based on our results from Model 2 and Model 3; 2) it could be more programmatically useful to distinguish the barriers faced by women in different phases than lumping various care combinations into one “incomplete care” category.

In the revised paper, we have strengthened the justification for fitting such sequential models.

It is possible to run the analysis as per suggested by the reviewers and to present its results in a separate analysis. However, in this paper we would like to keep the analysis as is, which we think best served the objective of this study.

5) The type of provider and the type of health facility from which received ANC may affect subsequent care, which may be included in the model. Blood sample taken, BP measured, Urine sample taken may show the extent of the specific services received and thus may reflect the quality of the ANC. May consider to use a summative score with all the services received during ANC (e.g., TT, nutritional counseling, iron tablets received, etc) as a proxy for QOC.

Type of provider from which women received ANC has been added to Model 2 in the revised paper. Changes on other variables’ coefficients are negligible. We did not include type of health facility because more than 93% of women received care from a public facility. The content of ANC has been already included in the models.

6) The CDHS does not collect data on maternal complications. Many variables may have relevance to complications. For example, women with complications may receive multiple rounds of ANC visits and more likely to deliver at health facilities. So, 4+ ANC visits or giving blood samples may reflect the quality of care or the presence of complications. The authors may consider presenting these confounding issues, which the study could not address, in the limitations section.

This has been addressed in the limitations section.

Minor points:
May consider moving Table 1 from the Method section to the beginning of the Result section.

This has been addressed
Figure 2 may show with different wealth quintiles, including total.

*Figure 2 may show with different wealth quintiles, including total. A revised figure (Figure 1 now) has been added to show continuum of care by wealth quintile.*

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

One of the authors (WJ) is known to me while she was a student the JHU.
I declare that I have no competing interests.

**Reviewer 2**

Title: Levels and determinants of completing the continuum of care for maternal and newborn health in Cambodia-evidence from a population-based survey

Version 4 Date: 29 July 2014

Reviewer: Sayeed Unisa

Reviewer's report:

1. Is the question posed by the authors well defined? 3. Are the data sound?

Question posed by the author is relevant in the context of Cambodia. An in-depth study is required to answer the question of continuum of maternal. It based on DHS data of 2010 that is representative sample of Cambodia.

2. Are the methods appropriate and well described?

Table 2 and map are giving lot of details about the continuum of care. However, logistic analysis talks about the odd of taking second care when first is done or when first and second care are taken then what is the probability of having third care. In the title, determinants of completing the continuum of care is given and hence it will be better if authors do multi-nominal analysis with adjusted percentage to show completion by different characteristics of women.

Appropriate methodology to examine the continuum of care will highlight better than a sequential way of explaining the issue.
We appreciate the reviewer’s suggestion. As stated by the reviewers that our logistic analysis examines the odd of having the second care when first is done or the third care if only the first and second care are provided. This is the philosophy or concept of the term “continuum”. Reading the reviewers’ comments, we believe that the title is somewhat using repetitive languages and cause some confusion related to study objective. We propose to improve the title of the paper to the following “Levels and determinants of continuum of care for maternal and newborn health in Cambodia-evidence from a population-based survey. Also please see our response to the comment #4, by the first reviewer, regarding not using multi-nominal logistic regression.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition? Yes

5. Are the discussion and conclusions well balanced and adequately supported by the data? 8. Do the title and abstract accurately convey what has been found?

Moreover, this paper does not cover child health component and hence it can be dropped from the paper. Conclusion section needs to be strengthen.

We assume the child health component here referred to the “newborn health” in the title of the paper. Although we did not analyze care directly provided to newborn, antenatal care, delivery care and postnatal care are all important for both the health and survival of newborn and mother. If the reviewer/editor insists, we could delete the word “newborn” in the title.

6. Are limitations of the work clearly stated? Yes

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes

9. Is the writing acceptable? Yes

Research constitutes a useful contribution to the field. However, it should be published after the modification.

Reviewer 3

Title: Levels and determinants of completing the continuum of care for maternal and newborn health in Cambodia-evidence from a population-based survey

Version:4 Date:11 July 2014 Reviewer:

Berhanu Tameru Reviewer’s report:

1. In the abstract I did not see any inferential statistics except descriptive one! Why is the result not supported by inferential statistics as your objective is to infer from the survey about the country! “we analyzed data from the 2010 Cambodia Demographic
and Health Survey (CDHS) to examine where the country stands

……”

The Results section of the abstract has been revised by including more inferential statistics.

2. The research question is not posed specifically. What specifically do you want to address! May be you need to re-write the last sentence of the background in the abstract.

The background in the abstract has been revised and the research questions have been revised to be more specific.

3. The Data collection needs to be explained a little bit better, even if it is secondary data! The use of hierarchical regression is very good, however the reported result is not reflecting well the hierarchical structure, especially the multilevel nature of the data is not well explained. In the statistical analysis it will be easier for the reader to define and explain once again how the continuum of care is used (“in this analysis we apply a narrowed scope of continuum of care, focusing on women during the period from pregnancy to childbirth and after delivery.”).

In the revised paper, the description of the data collection has been added to the first paragraph of the Methods section; the hierarchical structure of the data has been explained; and the focus on the period of from pregnancy to after delivery has been restated in the statistical analysis part.

You indicated that “We first examine unadjusted associations between use of maternal health services and explanatory variables based on Chi-square test.” Where is the result? You are using a hierarchical model, what is the structure for it?

We did not present the results on unadjusted associations due to the limited space and the less important nature of these results. We did not show hierarchical formulas in the paper as it may be too statistical for the readers.

Result section: In the second paragraph the sentence “Almost all women who delivered at a health facility were attended by a doctor, nurse or midwife” give a specific number (%) after almost. Delete Figure 2 and just write a sentence.

The reviewer seems to refer to Figure 1 not Figure 2. We deleted Figure 1 as suggested.

4. In the discussion section (page 9), the first three paragraphs are more of results than discussion. I suggest you re-write them or move them to the result section.

We have revised these paragraphs to avoid repeating the results.

5. The ethics statement is a very serious thing and should be considered seriously! This research deals with Cambodia and I do not know its relation with Rwanda Demographic.

Thanks for pointing this out. The ethics statement has been corrected. Level of interest: An article whose findings are important to those with closely related
research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.