Author's response to reviews

Title: Influence of family members on utilization of maternal health care services among teen and adult pregnant women in Kathmandu, Nepal: a cross sectional study

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

Thank you very much for your valuable comments. We have performed point-by-point responses to the Editor and reviewers’ comments. The revised texts are shown in revised manuscript using track changes and as underlined text in the point-by-point responses as below. Additional revisions are shown herewith this cover letter.

**Response to editor’s comment**

1. One serious concern raised by the reviewers is regarding the English editing. The manuscript needs an English edition. I advise you to use the service of Edanz [http://www.edanzediting.com/](http://www.edanzediting.com/).

   Response: Thank you very much. The manuscript has been edited again by a native English speaker with expertise in epidemiology and statistics.

**Response to reviewer Angela M Bayer’s comments**

**Background**

1. Page 4, Lines 15-17. What are the MDG targets for Nepal? I think that it is important to mention and cite these, so that the readers have a point of comparison when you present the data.

   Response: We have now included and cited the MDG targets for Nepal in the background section on page 4.

   **Background on page 4**

   Although the government of Nepal implemented the safe delivery incentive program in 2005 and a national free delivery policy in 2009, Nepal has not achieved the Millenium Development Goal 5 (MDG5) targets for these indicators yet. The latest national data in 2013 showed that only 50% of women had achieved both MDG 5 targets while the target to meet by 2015 is 80% for four ANC visits and 60% for delivery attended by skilled birth attendant [15-17].

2. Page 4, Lines 17-19. What does the 50% refer to, at least 4 ANC visits, delivery by a skilled attendant or both? Please clarify. Also, please remove the second 70% in line 19.

   Response: The 50% refers to the percent of women who had both ANC coverage (four ANC visits) and births attended by a skilled birth attendant. To further clarify the line 17 has been rephrased in background section on page 4. The reference to 70% has been removed.

   **Background on page 4**
The latest national data in 2013 showed that only 50% of women had achieved both MDG 5 targets while the target to meet by 2015 is 80% for four ANC visits and 60% for delivery attended by skilled birth attendant [15-17].

3. Page 5, Lines 1-7. I would recommend separating out the Nepal study. For the four studies with only one, were these quantitative? Perhaps mention.

Response: The study conducted in Nepal has been separated from the other studies. Among the four studies that interviewed the influential person from just the women’s perspective, two were qualitative and two were quantitative. This information has been added to the background section on page 5.

**Background on page 5**
Six previous studies conducted in Nepal, Bangladesh, Burkina Faso, Thailand, Kenya and Pakistan determined the influential persons for making the decision to utilize maternal care; however, the study samples, methodologies and data analyses were different to ours [24-29]. The study from Nepal was qualitative and interviewed women, their husbands and their mothers-in-law [24]. Four studies interviewed only women among which two were qualitative and two were quantitative [25,27-29].

4. Page 5, Line 7. You mention that the techniques were “not explicit.” What does this mean? Please clarify.

Response: Sorry – our poor English. By explicit we mean that the methodologies applied to assess the most influential person were not clearly stated. This sentence, in the background section on page 5, has been modified.

**Background on page 5**
In addition, the methodologies applied to identify the most influential person were not clearly explained in the previous studies.

5. Page 5, Lines 7-9. I would recommend removing or clarifying this. I think that you’ve already mentioned the limitations of past studies and that this is confusing. For example, from what you mentioned before, the limitations of past quantitative studies (with sufficient sample sizes?) is that they only include women while the limitations of past qualitative studies is that they do include the three populations, but have smaller samples. Again, please clarify.

Response: As suggested we have chosen to clarify the information of the similar past studies in the background on page 5. We have also removed lines 7-9 to avoid repetitions of the limitations of the past studies.

**Background on page 5**
Four studies interviewed only women among which two were qualitative and two were quantitative [25,27-29]. The remaining one was also a qualitative study which interviewed both women and their husbands [26]. The findings of qualitative studies were limited by the small sample size.
6. Page 5, Lines 13-14. I would recommend moving “Additionally… associated with age” up to and of the previous paragraph, as one of the overall limitations of past studies. Here, it gets lost.

**Response:** The sentence presenting the association of household decision-making autonomy with women’s age has been included in the prior paragraph as recommended in the background section on page 5.

**Background on page 5**
In addition, the methodologies applied to identify the most influential person were not clearly explained in the previous studies. Additionally, previous studies on household decision making have revealed that the women's autonomy was positively associated with age suggesting that the influential persons might vary depending on age [30,31].

**Methods**

7. Page 6, Lines 9-16. This paragraph is very confusing. I would recommend streamlining the information.

**Response:** The paragraph from lines 9-16 has been rephrased in the study sample section on page 6.

**Study sample on page 6**
Women aged 34 or less, who delivered at PMWH or TUTH and were accompanied by both their husband and mother-in-law at any time of their hospitalization were purposively included. The sample also consisted of the accompanying husband and mother-in-law. Eligible women, their husbands and mothers-in-law were mostly identified at the postpartum ward by asking the women whether her husband and mother-in-law had accompanied her or would visit her at this admission. Some women were also identified when the woman’s husband or mother-in-law were waiting outside the labor room. All women, their husbands and mothers-in-law were informed that they had the right to agree or refuse to participate in the study and each of them was approached separately and independently.

8. Page 7, Lines 12-17. How was joint decision making measured? For example, you mention that the participants ranked the individuals involved in the decision making process according to their influence. However, what about two people who participated equally? How were these considered? Please explain. If individuals were “forced” to rank one above the other, please include in the limitations section.

**Response:** Joint decision making was not considered – we forced subjects to choose one person. Hence, this information has been included in the discussion section as a limitation on page 13.

**Discussion on page 13**
Furthermore, the study subjects were forced to select the most influential person. This might have understated the role of other people who could have been jointly involved in the decision.
9. Page 7, Lines 17-22. The characteristics considered for the husband and mother-in-law are not mentioned here. Please include.

Response: The paragraph explaining characteristics of women, husband and mother-in-law has been revised in the variable section on page 8. The details of independent variables, characteristics considered for women, husband and mother-in-law can be observed in Table 1a, 1b and 2 and the results section.

Variable on page 8
Independent variables included socio-demographic characteristics of the women, husband and mother-in-law and obstetric characteristic of the women.

Results

10. Page 9, Lines 18-20. This result is confusing, but the confusion may be mine. The authors state that “the woman and her husband were quite similar to be influential persons…” However, the authors (from what I have understood) “forced” participants to rank people in order, without allowing shared decision making or “equal rank.” This is similar to comment 8 above. Again, please clarify. Perhaps this needs to be rephrased?

Response: Lines 18-19 on page 10 describing the figure 1 has been rephrased to (hopefully) reduce the confusion. Figure 1 shows the proportion of persons who were perceived to be influential as assessed by each respondent. Respondents were allowed to select more than one influential person first, and then we later asked them to rank each person (ties not allowed). As figure 1 shows, both the woman and her husband were selected by the majority of respondents (~90%), so in this regards they were similar. However, figure 2 shows that husbands were more influential as assessed by the priority scores, which were calculated from the rankings.

Result on page 10
Approximately 90% or more of women and their husbands and mothers-in-law in all three age groups rated that the woman and her husband were influential persons in the decision to utilize both services.

11. Page 10, Lines 9-11. I think that the text here is incorrect. From what I understand, Table 3 refers to the factors associated with the woman being the most influential person, not the woman or others as stated here. Please clarify and correct.

Response: Sorry, that was our mistake. As suggested in the comment, the sentence has been corrected at lines 9-11 in the results section on page 11.

Result on page 11
Table 3 presents the factors associated with the woman being the most influential person in the decision to utilize ANC and delivery care.
12. Page 10, Lines 13-15. After each age group, please specify that these refers to the female participants, to ensure that the information is explicit. For example, “young adult females and adult females, compared to teen females.”

Response: Lines 13-17 has been rephrased in the result section on page 11 according to the comment.

Result on page 11
For ANC, young adult females and adult females, compared to teen females, perceived that they were the most influential person to make the decision (Adjusted odds ratio (AOR) 2.12; 95% Confidence interval (CI) 1.18-3.79 for young adults and AOR 3.14; 95% CI 1.76-5.63 for adults). For delivery care, adult females were more likely to perceive themselves to be the most influential person (AOR 2.9; 95% CI 1.56-5.38).

13. Page 10, Lines 8-16. I think that it would be helpful to include the key aspects of the other findings in Table 3 in the text, for ethnicity and referral status.

Response: The details of association of ethnicity and referral status to the woman being the most influential person in the decision to utilize ANC and delivery care has been added to the result section on page 11.

Result on page 11
For delivery care, adult females were more likely to perceive themselves to be the most influential person (AOR 2.9; 95% CI 1.56-5.38). Non-indigenous women perceived that they were the most influential person to make the decision for both ANC (AOR 1.77; 95% CI 1.11-2.83) and delivery care (AOR 1.71; 95% CI 1.04-2.8). For delivery care, those who were not referred from other hospitals were more likely to perceive themselves to be the most influential person compared to those who were referred from other hospitals (AOR 3.77; 95% CI 1.27-11.15).

Tables 1-2
14. Please use the same number of decimal places in the percentages.

Response: All percentages have been rounded to one decimal place in Tables 1 and 2.

Table 3
15. In the age groups, please include the ages in the column headers.

Response: Since age group of women is one of the factors associated with the outcome, it makes more sense to include it as a row header. We did not analyse each age group separately, since we wanted to determine its effect on the outcome.

16. For ethnicity and referral status, it is unclear which group is the reference group.
Response: The reference group for ethnicity is indigenous. The reference group for referral status is referred. The reference groups have now been included in Table 3 on page 27.

General

17. The English needs to be reviewed. Once it is reviewed, I think that the messages in the paper will be much clearer.

Response: The revised manuscript has been edited by a native English speaker with expertise in epidemiology.

Response to reviewer Narbada Thapa’s comments

Abstract

1. Last line of conclusion doesn’t reflect the research finding. It may be replaced by “thus husband’s involvement is crucial as a strategy to improve maternal health care utilization in Nepal”.

Response: The last line of the conclusion of the abstract has been modified as suggested.

Abstract on page 2 and 3
Both women and their husbands influenced the decision to utilize ANC and delivery care but husbands were more influential, especially in teens and young adults. Thus husband’s involvement is crucial as a strategy to improve maternal health care utilization in Nepal.

Background

2. No significant comment. The evidences provided are relevant and significance of the study is well described. Para 3, line 19, there is repeated percent. Omit (70%) at the end of sentence.

Response: Thank you. The extra 70% has been omitted.

Method

3. This section required clarification and much more detail than is provided.

Response: Thank you for your suggestions and valuable comments.

Study sample:

4. Describe the study sample more clearly. Since the study hospitals are central referral hospital in Nepal, there are different kinds of women who come to deliver in those two hospitals. By types of delivery (normal/ complicated pregnancy/delivery, caesarean section, preterm/ post term etc), By socio-economic status (women in special cabin, general wards etc), referral cases from other facility or self motivated.
Response: We have revised the study sample on page 6 to make it clearer. We were aware that the characteristics of women who came to deliver in these central referral hospitals may be varied on type of delivery, presence of complications, socio-economic status and referral status. We needed the mixture of different characteristics that may affect the influential persons. So, we conducted the study in these hospitals regardless of these conditions. This information has been added to the discussion section on page 13.

Study sample on page 6
Women aged 34 or less, who delivered at PMWH or TUTH and were accompanied by both their husband and mother-in-law at any time of their hospitalization were purposively included. The sample also consisted of the accompanying husband and mother-in-law. Eligible women, their husbands and mothers-in-law were mostly identified at the postpartum ward by asking the women whether her husband and mother-in-law had accompanied her or would visit her at this admission. Some women were also identified when the woman’s husband or mother-in-law were waiting outside the labor room. All women, their husbands and mothers-in-law were informed that they had the right to agree or refuse to participate in the study and each of them was approached separately and independently.

Discussion on page 13
First, the purposive sampling technique in our study may have reduced the representativeness of the study sample to the Nepalese population. Second, the samples were independent of type of delivery, area of admission (general ward or special cabin) and referral status, which might have influenced the woman’s decision to utilize the services.

5. The decision to utilize health services in big hospitals strongly influenced by indications and condition listed above. Author is suggested to write specifically who were the study samples?

Response: The influence of these conditions on the decision to utilize maternal health services has been mentioned in the discussion section on page 13. The study sample has been revised to make it more clear on page 6.

Study sample on page 6
Women aged 34 or less, who delivered at PMWH or TUTH and were accompanied by both their husband and mother-in-law at any time of their hospitalization were purposively included. The sample also consisted of the accompanying husband and mother-in-law. Eligible women, their husbands and mothers-in-law were mostly identified at the postpartum ward by asking the women whether her husband and mother-in-law had accompanied her or would visit her at this admission. Some women were also identified when the woman’s husband or mother-in-law were waiting outside the labor room. All women, their husbands and mothers-in-law were informed that they had the right to agree or refuse to participate in the study and each of them was approached separately and independently.

Discussion on page 13
First, the purposive sampling technique in our study may have reduced the representativeness of the study sample to the Nepalese population. Second, the samples were independent of type of
delivery, area of admission (general ward or special cabin) and referral status, which might have influenced the woman’s decision to utilize the services.

6. Were all those who came to hospitals for delivery included as the potential sample for study?

**Response:** No, not all those who came to hospital for delivery were included in the study. We had some inclusion criteria (age<34, and the presence of the woman’s husband and mother-in-law).

7. Page 6, Para 3, line 23-24 (last 2 lines), As mentioned sample size based on probability proportional to the number of deliveries in each hospital. How many cases were selected from each of those two hospitals?

**Response:** On the basis of the number of deliveries in each hospital the proportion was approximately 70% in PMWH and 30% TUTH which led to a sample size of 205 from PMWH and 110 from TUTH. This information has also been added to methods section on page 6.

**Study sample on page 6**
Sample sizes were determined for each hospital based on the probability proportional to the number of deliveries in each hospital. The proportion of past deliveries was approximately 70% and 30% in PMWH and TUTH respectively, which lead to the sample size of 205 for PMWH and 110 for TUTH.

**Data collection**

8. How did author select the samples from those huge numbers of patient flow? Was there any exclusion criteria applied?

**Response:** We selected the samples according to purposive inclusion on the basis of age of women who came for delivery and the presence of husband and mother-in-law. Yes, exclusion criteria were applied. However, none of the women we approached to participate in the study met our exclusion criteria: mental illness, admission to an intensive care unit and inability to communicate with an interviewer.

**Variables**

9. Rewrite the paragraph. Omit some non important variables they will appear in result section.

**Response:** The variables section has been revised on page 7 and 8. Only outcome variable has been described. The details of independent variables can now be observed in Tables 1a, 1b and 2 and the results section.

**Variable on page 7**
The main outcome variable was the person who had the most influence on the woman’s decision to utilize ANC and delivery care at the hospital. The question asked to all three persons was “When you/your spouse/your daughter-in-law needed ANC /delivery care for this pregnancy,
who were the influential persons on your/your wife’s/your daughter-in-law’s decision to utilize this care?” with four possible persons, namely the woman, husband, mother-in-law and others. If they responded multiple answers then they were asked to rank the priority of each influential person from the most to the least with no ties allowed. The person who was ranked the highest for each respondent was defined as the most influential person as either the woman or others.

Independent variables included socio-demographic characteristics of the women, husband and mother-in-law and obstetric characteristic of the women.

**Statistical Analysis**

10. Page 8, Para 3, line 8 – 13, suggested to rephrasing the sentences more clearly. Page 8, line 11, who were the “others”? Mother-in-law is missing, rephrase the paragraph 3.

**Response:** Others included husband, mother-in-law and other family members. Regarding comment about missing mother-in-law, we analyzed the agreement only between women’s and their husbands’ perspectives on the most influential person to the utilization of health care services.

**Results**

11. Suggested to break table 1 into two - “Table 1a” and Table 1b”. or as per journals rule. There is a missing digit after decimal in percent- Table 2, variable education, column 3 and 4. Maintain consistency.

**Response:** Separate tables, 1a and 1b, have been created by splitting Table 1. The missing digit after decimal in percent has been added in Table 2 for variable education. The consistency about the digit after decimal has been maintained throughout the manuscript.

**Discussion**

12. Since 2005, Nepal government implemented maternity incentive Scheme (later called the Safe Delivery Incentive Programme, SDIP), a cash incentive scheme to promote institutional delivery. This included an element of fee exemption at facilities, cash payments to women and health workers. Which may have greater influence on utilization of maternal health care service in Nepal. It is suggested to discuss in limitation of current study to give complete information.

**Response:** This information has been added as a limitation in the discussion section on page 15.

**Discussion on page 15**

Furthermore, the study subjects were forced to select the most influential person. This might have understated the role of other people who could have been jointly involved in the decision. The findings should be interpreted in the light of the context of Nepal where a safe delivery incentive program and national free delivery policy has been implemented which might have influenced the utilization of maternal health care services.
Additional revisions
1. Conclusion has been revised accordingly to the revision in abstract.

Conclusion on page 16
Husband involvement is thus crucial in developing strategies to improve utilization of maternal health care services. Further studies on the perception of influential persons should be expanded to community-based settings.

2. In result section the following changes have been made according to the split of Table 1 into 1a and 1b.

Result on page 10
The socio-demographic and obstetric characteristics of women are presented in Table 1a and 1b respectively.

Thank you for your consideration.
Respectfully yours,
Priti Upadhyay