Reviewer’s report

Title: Factors Associated with Utilisation of Postnatal Care Services among the Mothers of Nepal: Analysis of Nepal Demographic and Health Survey 2011

Version: 1 Date: 15 June 2013

Reviewer: Christiana Titaley

Reviewer's report:

General comments
The research question posed by authors are well-defined. The analysis used national representative data, Nepal Demographic and Health Survey, which has a standardized questionnaire that allows the comparison across countries. The findings are important to provide inputs to public health programs aim at increasing the uptake of PNC in Nepal. The title and abstract has generally conveyed what has found. However, some major revisions are required to ensure data were properly analysed and to enrich the discussion.

Minor Essential Revision
• Please check the spelling and grammar mistakes. There are few typos in each section.
• Kindly make sure the details of references used in the text are complete.
• Authors might want to improve the writing style with one main topic per paragraph, to avoid lengthy paragraphs.

Major Compulsory Revision

ABSTRACT
• In the methods section, please state information about subjects used in the analysis (e.g. last births within....)
• Be more consistent with decimal digits
• In conclusion part: PNC is important not only to prevent maternal mortality and morbidity but also "newborn deaths". This has not been highlighted in the manuscript.

INTRODUCTION
• Authors did not mention the current recommendation or practice on PNC in Nepal. Are there any recommendations about the PNC services, e.g. whether mother should receive a certain number of PNC services during postnatal period? Or home visitation by health professionals?
• First sentence, MMR should be 281 per 100,000 live births.
• First & second paragraph: the role of PNC in preventing neonatal deaths was not mentioned. This is one of the reasons, apart from maternal aspect, the
immediate 24h PNC should be conducted.

• How is the attendance rate against this recommendation? Is it below the target? It is also good to compare the rate of PNC use in Nepal with other Asian countries. Such information will be useful in the introduction and will help readers to understand why this study is important.

• Last sentence of the 2nd paragraph --> "For these reasons... PNC has been proved...." needs reference.

• Third sentence from the bottom of the Introduction section, etc --? "There are only few research..... " needs references.

METHODS

• Authors mentioned that they analysed information from 4148 mothers about their last pregnancies. How was it restricted? Only last pregnancies within the last 5 years? Or no time limits at all? This should be clearly defined. If no time limit, how about the recall ability of mothers?

• Needs a reference for DHS Website

• Need a clearer definition about the outcome variable. How did authors define PNC? Was it only services provided to health workers? Any time limit from PNC, e.g. within the first 42 days or 30 days? Please use the standard definition (with the reference).

• Authors used 40 assets variables to construct the Wealth Index. What are the variables? That is quite a large number of assets. It will be good to give information about, at least, the groups of those assets.

• Needs a reference for PCA method

• What are the basis of the selection of the potential predictors (independent variables)? There are some important variables not included in the analysis, but to my knowledge available in the DHS dataset, e.g. maternal autonomy, paternal occupation, birth attendants (it has been in several studies to influence PNC uptake), etc. Why didn't authors include them?

• Why did authors only present variables with significant unadjusted OR? What were the other variables showing not significant OR? All variables should be shown in Table 1 (descriptive analysis) as well as in Table 2 for the bivariate analysis.

• Authors used hierarchical modelling in the analysis; what was the reference for this? Was there a particular reason for using this technique?

• Authors preferred to retain all non-significant variables in the multivariate analysis. What was the reason and the basis of doing so? Was it due to the effect size?

• Please make the reference group of variables more consistent (same reference group across models). E.g. for ecological region, the reference group suddenly changed from Mountain (unadjusted, Model 1 & 2) to Terai (Model 3 and 4). Similarly, the reference group for Birth Order also differed across models.

• Why did authors used different groups of variables for immediate PNC? Why
including only 4 variables? What was the modelling strategy for this outcome?

- Under the Explanatory variable sub-heading, authors only mentioned seven variables; whereas there are more variables used in the analysis. Please state all variables used in the analysis (not only the significant ones), but all variables authors thought at the beginning of the study potentially associated with the outcomes. It might be best to place the "Statistical Analysis" sub-heading after the "Explanatory Variables" sub-heading.

RESULTS

- Paragraph 1, authors should not repeat the results shown in Table 1 in the text. Please highlight the most interesting or important parts to draw readers attention.
- Authors can be more consistent in the decimal digit for percentages
- Table 1. Writing N in the title of column "Attended PNC Visit" and "Immediate PNC" can be misleading. Readers might think that the percentages in the cells of that column were derived from that N; whereas that was clearly not the case. I suggest authors to insert some rows at the beginning to show the number and percentage of mothers attending PNC and immediate PNC.
- For the third paragraph, readers can be referred to Table 2 earlier (at the beginning of the paragraph).
- Authors took the results for all variables from either Model 3 or 4. What was the purpose of building Model 2 since there was no elimination of variables in Model 2?
- Timing of ANC only has information from 3519 respondents. If other cases were coded as missing, the inclusion of this variable into the model can reduce the N for the whole regression analysis (Model 3 and 4)? Please check again. If that was not the case, how did the author recode this variable?
- Variables included in the analysis should be treated carefully. Please check for potential collinearity or interactions. E.g. The unadjusted OR of mothers from higher maternal age were significantly lower than those from 15-19; yet, in Model 2 to 4, the direction of the effect changed, to significantly higher than those aged 15-19. Please check the modelling for other variables as well.
- There might be some collinearity issue between the timing of ANC and number of ANC visit. Please check.
- The modelling strategy for the immediate PNC should in the Methods section.
- For the multivariate analysis, how many missing variables? What is the percentage against total respondents?
- It is interesting to see that 2% of mothers who delivered at health facilities did not receive immediate PNC (within 24 h). What might be the reason? What can authors suggest to prevent this?
- For the immediate PNC, when place of delivery was included in the model, the birth order became not significant. The correlation between these two variables might be high. Could authors check for collinearity between these two variables?
DISCUSSION

• 1st paragraph:
  # This is repetition from the Introduction Section. My suggestion is to start with the main findings of this study (to answer the research question) and what are the significance of this study?

• 2nd paragraph:
  # Authors mentioned the role of other family members. Therefore, as mentioned previously, maternal autonomy variable can be included in the analysis, to see the role of mothers/other family members in the decision making process in the household.
  # For the seclusion issue, this is common in Asian countries. Are there any studies regarding seclusion issue in Nepal? I will be important to include that. What about the role of home visiting for PNC, which might be a solution for the seclusion issue. This has not been elaborated thoroughly by authors.
  # Authors mentioned their concern about the competency of medical professionals. Could authors elaborate more on this? What would be the potential solution? The reference (#2) was not clear, is it from the MoH of Nepal?

• 3rd paragraph:
  # This paragraph should be in the Results Section

• 4th paragraph:
  # If the findings show the discrepancy between HH wealth index in PNC use, what can authors suggest to improve utilization amongst women from poor household? What can be the potential solution for these under-privileged women? Are there any insurance system to help members of poor households accessing health care services?
  # Similarly to access, what can women be done for women from rural areas to increase their PNC uptake? What about the outreach clinics?

• 5th paragraph:
  # Typo in the working time of the government health facilities.
  # What can authors suggest so that women working in agricultural field can also receive PNC services?

• 6th paragraph:
  # It is interesting to know that women from Hindu religion were more likely to attend PNC. Could authors suggest potential reasons for that? What might be done to women from other religion, e.g. working together with their religious leader?

• 7th paragraph:
  # Authors stated that underutilization of PNC amongst younger women are related to their potentially low educational level. However, the model has adjusted for maternal education level. So this might not be the correct
explanation for the association between maternal age and PNC utilization.

# What can authors suggest to improve the uptake amongst younger and high parity mothers?

# It is encouraging to see the important role of ANC in promoting PNC. It is therefore important how to increase the uptake of ANC? What can be suggested to promote use of ANC during pregnancy or to promote institutional delivery?

# Reference for "Attending ANC visits and adequate counselling of mothers have been found......"

• General:

I suggest the authors to discuss potential solutions or recommendations about how to improve PNC uptake, after obtaining the results from these analyses. This has been mentioned briefly in the last, but authors need to elaborate it more. Authors may also take lesson learned from other countries that might be suitable to the context in Nepal.

CONCLUSIONS

• The first paragraph is more like the main findings. This can be removed from the Conclusion and placed as part of the 1st paragraph in the Discussion.

• Authors can highlight their recommendations which should be specific to the condition in Nepal, what can be strengthened/needs improvement.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests