

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Need factors for utilisation of institutional delivery services in Nepal: an analysis from Nepal Demographic and Health Survey, 2011
<b>AUTHORS</b>	Karkee, Rajendra; Lee, Andy; Khanal, Vishnu

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Vanora Hundley Bournemouth University United Kingdom
<b>REVIEW RETURNED</b>	28-Nov-2013

<b>GENERAL COMMENTS</b>	<p>Thank you for giving me the opportunity to review this interesting paper, which addresses the issue of facility birth. Nepal has made significant progress in reducing maternal mortality and is on target to meet the first part of MDG5, yet encouraging women to give birth within a health facility with a skilled birth attendant remains a major challenge. This paper is therefore a timely and potentially important contribution to knowledge in this area.</p> <p>My main concern about the paper is the limitations of the data set used. The paper benefits from a large sample obtained through a national survey, but as the authors point out the data set does not include a number of determinants of facility use. The authors suggest that proxies could be used to compensate for these missing data, but it is unclear whether this has been done. Further details are needed about the variables used to adjust for 'effects of predisposing, enabling, and external environment factors' and whether this included 'residential location and region', which the authors suggest could be proxies for distance and service availability.</p> <p>In light of missing determinants of facility use, caution is needed in interpreting lack of uptake of services as due to lack of perceived need (first paragraph of discussion).</p> <p>Minor points The introduction would benefit from some further context/background in relation to maternal mortality and facility birth in Nepal.</p> <p>Although the paper is well written, the authors might consider using a term such as resource poor or low income country rather than developing country.</p>
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<b>REVIEWER</b>	Christiana R Titaley Center for Health Research Universitas Indonesia
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**GENERAL COMMENTS****Abstract**

1. Objective:
  - It is not only "utilisation of delivery services" but more of "utilisation of institutional delivery services"
2. Design:
  - Authors might need to state the data analysis method used in the study (e.g. Logistic Regression etc)
  - Authors can mention the antenatal care visit and birth preparedness activates as main study factors
3. Outcome:
  - Perceived need is not the outcome of this study
4. Results:
  - Results of logistic regression should be written "after adjusting for....."
  - Please provide, SE and 95% CI for the institutional delivery rate and those did not indicate any of the fourth birth preparation activities.
5. Conclusion:
  - The current conclusion regarding behavioural intervention does not reflect the finding. Authors might want to revise it.

**Introduction**

1. Any reference for statement Line #43-48 ("Those women who perceived the need of ...")
2. Please explain what are the need factors examined in the paper.
3. The reason authors choose only ANC and birth preparedness to represent the need factors should be explained.
4. Since authors are interested to see the ANC and birth preparedness, are there any background information such as national data on the use of ANC or birth preparedness in Nepal?

**Methods**

1. Why did authors only restrict the analysis to ever-married women who had given birth within the past five years preceding the survey?
2. Any reference for Measure DHS website?
3. Are there any reference used by authors as the basis to select variables for birth preparedness?
4. Please specify if authors adapted Andersen framework, along with the reference of the framework

### **Results**

1. Tables should be self-explanatory. Please state the variables clearly, e.g. Age of who? Education of who? etc
2. Add some information about birth preparedness, e.g. what does it consist of, as a footnote
3. Adding a column to specific the absolute number (n) of each category will be beneficial in addition to the weighted percentage.
4. Make sure authors specify these are the last delivery within the past five years. E.g. "15.2% never visited a health facility before giving birth". This does not represent 15.2% of all women in Nepal, but only those giving birth within the past five years.
5. The regression models need more detailed discussion. Authors mentioned that after adjusting for the effects of predisposing, enabling and external environment factors, the two need factors remained statistically significant. How did authors adjust for those variables? Did authors adjust for all of them at the same time? Or only significant covariate? The footnote of Table 2 mentioned only selected variables. Why so? The process should be explained clearly (also in the Methods). The results of other covariates used in the regression model should be presented.
6. Birth preparedness variable in Table 2 should be explained in the footnote.
7. Please provide SE and 95% CI for any rates presented.

### **Discussion**

1. Discussion Section should be elaborated.

	<ol style="list-style-type: none"> <li>2. There are some typos, e.g. antennal instead of antenatal. Please check other parts.</li> <li>3. Paragraph 2. What can authors suggest to improve uptake of ANC? What will be the most appropriate strategy?</li> <li>4. Paragraph 2. Any reference for the final sentence of Paragraph 2? ("Making the recommended.....")</li> <li>5. Paragraph 3. What can authors suggest to improve birth preparedness? What will be the most appropriate strategy?</li> <li>6. If there are any literature/research that does not support the present analysis, authors might want to address and discuss about the differences.</li> <li>7. In the Discussion Section, authors can also discuss other variables (covariates) which are shown to be closely related to study outcome.</li> <li>8. Paragraph 4, authors mentioned that women should be extensively counselled and convinced of the benefits and safety of facility of delivery. What will be the best way to provide counselling to women? Any particular method? Who should be involved?</li> <li>9. Information about which are is inaccessible should be discussed in the Methods Section, instead of the Conclusion only.</li> </ol> <p><b>Conclusion</b></p> <ol style="list-style-type: none"> <li>1. As mentioned early, the current conclusion regarding behavioural intervention does not reflect the finding. Authors might want to adjust it.</li> </ol>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer Name Vanora Hundley

Institution and Country Bournemouth University

United Kingdom

Please state any competing interests or state 'None declared': None declared

Thank you for giving me the opportunity to review this interesting paper, which addresses the issue of facility birth. Nepal has made significant progress in reducing maternal mortality and is on target to meet the first part of MDG5, yet encouraging women to give birth within a health facility with a skilled birth attendant remains a major challenge. This paper is therefore a timely and potentially important contribution to knowledge in this area.

My main concern about the paper is the limitations of the data set used. The paper benefits from a large sample obtained through a national survey, but as the authors point out the data set does not include a number of determinants of facility use. The authors suggest that proxies could be used to compensate for these missing data, but it is unclear whether this has been done. Further details are needed about the variables used to adjust for 'effects of predisposing, enabling, and external environment factors' and whether this included 'residential location and region', which the authors suggest could be proxies for distance and service availability.

R. Thank you for your comments. Inclusion of confounders in regression model was made clear, discussion/last paragraph, "The regression model used 'region' and 'residence' as confounders together with other known predisposing and enabling factors that include women's age, education, partner education, parity, wealth quintiles and ethnicity."

In light of missing determinants of facility use, caution is needed in interpreting lack of uptake of services as due to lack of perceived need (first paragraph of discussion).

R. Following your suggestion, we have revised the text, ".....might have no intention or might not perceive the need of giving birth at a health facility. Such perception of need can also be influenced by distance and quality of maternity services."

Minor points

The introduction would benefit from some further context/background in relation to maternal mortality and facility birth in Nepal.

R. Agreed. The introduction has been elaborated with an addition of a paragraph, "Although there is a substantial reduction of maternal mortality from 539 maternal deaths per 100000 live births in 1996 to 281 in 2006 in Nepal, there has not been proportionate increase in utilisation of institutional delivery service.<sup>7</sup> The recent demography survey in 2011 reported that still about 65% of women deliver at homes and only 36% of births occur in presence of skilled birth attendants<sup>8</sup>, whereas the national target is to achieve 60% of births by skilled birth attendants by 2015 to meet the Millennium Development Goal 5 target of 134 per 100000 live births.<sup>9</sup> Utilisation of institutional delivery service is a major concern in Nepal."

Although the paper is well written, the authors might consider using a term such as resource poor or low income country rather than developing country.

R. Agreed.

Reviewer Name Christiana R Titaley

Institution and Country Institution: Center for Health Research Universitas Indonesia

Country: Indonesia

Please state any competing interests or state 'None declared': None declared

Abstract

1. Objective:

- It is not only "utilisation of delivery services" but more of "utilisation of institutional delivery services"

R. Corrected.

2. Design:

- Authors might need to state the data analysis method used in the study (e.g. Logistic Regression etc)

- Authors can mention the antenatal care visit and birth preparedness activates as main study factors

R. Revised, “Logistic regression was used to evaluate the effects of antenatal care visits and birth preparedness activities on facility delivery using complex sample analysis.”

3. Outcome:

- Perceived need is not the outcome of this study

R. Corrected.

4. Results:

- Results of logistic regression should be written "after adjusting for....."

R. done

- Please provide, SE and 95% CI for the institutional delivery rate and those did not indicate any of the fourth birth preparation activities.

R. Provided

5. Conclusion:

- The current conclusion regarding behavioural intervention does not reflect the finding. Authors might want to revise it.

R. Agreed. The conclusion has been revised, “These findings have implications for behavioural interventions such as birth preparedness and complication readiness, which aims to change women’s intention to deliver at a health facility.”

Introduction

1. Any reference for statement Line #43-48 ("Those women who perceived the need of ...")

R. Provided

2. Please explain what are the need factors examined in the paper.

R. Explained, “The need factors were assessed by antenatal care visits and birth preparedness activities as available in NDHS 2011 data.”

3. The reason authors choose only ANC and birth preparedness to represent the need factors should be explained.

R. Explained, “The need factors were assessed by antenatal care visits and birth preparedness activities as available in NDHS 2011 data.”

4. Since authors are interested to see the ANC and birth preparedness, are there any background information such as national data on the use of ANC or birth preparedness in Nepal?

R. The study itself analyses and provides national data; there are no other national data available.

Methods

1. Why did authors only restrict the analysis to ever-married women who had given birth within the past five years preceding the survey?

R. Only from this subset of women, antenatal and preparation activities were asked in NDHS survey, “This study focused on the subset of 4079 ever married women who had given birth within the past five years preceding the survey and who provided information on antenatal visits and preparation activities.”

2. Any reference for Measure DHS website?

R. Given

3. Are there any reference used by authors as the basis to select variables for birth preparedness?

R. Provided

4. Please specify if authors adapted Andersen framework, along with the reference of the framework

R. this has been described in Introduction/third paragraph, “Besides the immediate need, utilisation of delivery service can be affected by predisposing and enabling factors as well as external environment factors, as depicted by the conceptual framework in Figure 1, which is adapted from Andersen’s behavioural model for the utilisation of health services.<sup>10</sup>”

## Results

1. Tables should be self-explanatory. Please state the variables clearly, e.g. Age of who? Education of who? Etc

R. corrected

2. Add some information about birth preparedness, e.g. what does it consist of, as a footnote

R. Added

3. Adding a column to specify the absolute number (n) of each category will be beneficial in addition to the weighted percentage.

R. Added

4. Make sure authors specify these are the last delivery within the past five years. E.g. "15.2% never visited a health facility before giving birth". This does not represent 15.2% of all women in Nepal, but only those giving birth within the past five years.

R. This is the description of eligible sample only, "15.2% of eligible women never visited a health facility before giving birth."

5. The regression models need more detailed discussion. Authors mentioned that after adjusting for the effects of predisposing, enabling and external environment factors, the two need factors remained statistically significant. How did authors adjust for those variables? Did authors adjust for all of them at the same time? Or only significant covariate? The footnote of Table 2 mentioned only selected variables. Why so? The process should be explained clearly (also in the Methods). The results of other covariates used in the regression model should be presented.

R. clarified, "The confounders were adjusted simultaneously and included women's age, women's education, partner education, parity, wealth quintiles, ethnicity, region and residential location as presented in Table 1 and as available from the data set."

Please note that presentation and discussion of other covariates are out of focus of this article.

6. Birth preparedness variable in Table 2 should be explained in the footnote.

R. This was given in table 1.

7. Please provide SE and 95% CI for any rates presented.

R. Provided

## Discussion

1. Discussion Section should be elaborated.

R. Elaborated.

2. There are some typos, e.g. antennal instead of antenatal. Please check other parts.

R. Corrected

3. Paragraph 2. What can authors suggest to improve uptake of ANC? What will be the most appropriate strategy?

R. Provided, "Consequently, informing women about danger signs and providing qualitative antenatal care with provision of iron tablets and blood check might encourage women to go for antenatal visits."

4. Paragraph 2. Any reference for the final sentence of Paragraph 2? ("Making the recommended.....")

R. References cited.

5. Paragraph 3. What can authors suggest to improve birth preparedness? What will be the most appropriate strategy?

R. Please see question 8.

6. If there are any literature/research that does not support the present analysis, authors might want to address and discuss about the differences.

R. Included, "However, two previous pre-post evaluation studies of birth preparedness in southern districts of Nepal reported that increased preparedness level was not significantly translated into increased facility delivery."

7. In the Discussion Section, authors can also discuss other variables (covariates) which are shown to be closely related to study outcome.

R. Please note that presentation and discussion of other covariates are out of focus of this article.

8. Paragraph 4, authors mentioned that women should be extensively counselled and convinced of the benefits and safety of facility of delivery. What will be the best way to provide counselling to women? Any particular method? Who should be involved?

R. discussed, "Counselling can be performed by health worker, preferably female health workers, at a health facility or by female community health volunteers at household visits. Further, local teachers and social workers can also be involved in awareness raising campaign. Community networks and mother clubs can also support in preparation activities such as money and transport management."

9. Information about which are is inaccessible should be discussed in the Methods Section, instead of the Conclusion only.

R. Done as suggested

#### Conclusion

1. As mentioned early, the current conclusion regarding behavioural intervention does not reflect the finding. Authors might want to adjust it.

R. Agreed. Revised, "This strong association has implications for behavioural interventions such as birth preparedness and complication readiness, which aims to change women's intention to deliver at a health facility."

### VERSION 2 – REVIEW

<b>REVIEWER</b>	Vanora Hundley Bournemouth University, UK
<b>REVIEW RETURNED</b>	13-Feb-2014

<b>GENERAL COMMENTS</b>	Thank you for the revised paper and the response to feedback. The manuscript is easier to follow now.
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<b>REVIEWER</b>	Christiana R Titaley Center for Health Research Universitas Indonesia
<b>REVIEW RETURNED</b>	16-Feb-2014

<b>GENERAL COMMENTS</b>	<p>I thank authors for carefully responding to each comment given by all reviewers. Few issues to be addressed by authors are as follows:</p> <p><u>Results</u></p> <ol style="list-style-type: none"><li>1. In the results, 2nd paragraph, "...(<i>adjusted odds ratio, 95 confidence interval...</i>)". It is best to spell out CI only once, when the first CI term is used in the manuscript.</li><li>2. I still think the univariate and multivariate results for other confounders (i.e. age, education, partner education, etc) should be presented in Table 2, along with the results of the main variables. This is important to give ideas of other factors associated with the outcome; and whether there are some issues with other confounders.</li><li>3. All tables should be self-explanatory. I suggest authors to repeat the footnote on birth preparedness for Table 2.</li></ol>
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	<p><u>Discussion</u></p> <ol style="list-style-type: none"> <li>1. Authors mentioned that majority of mothers did not prepare any of the four activities and <b>it might be influenced by the distance and quality of maternal services</b>. Is there any previous literature or results from other studies, including those from Nepal, that can be used to support statement?</li> <li>2. Please cite other studies which demonstrating positive responses of counseling services (e.g. by health workers, health volunteers at household visits, local teachers and health workers etc), as mentioned by authors.</li> <li>3. Are there any interventions currently conducted in Nepal to increase birth preparedness amongst the community? If there are, please discuss why it does or doesn't work.</li> <li>4. Although other covariates are not the focus of the study, presenting the results of the univariate and multivariate can help authors later to discuss the most interesting findings concerning these covariates. This will also help readers to understand the overall context.</li> <li>5. Some typos needs correction.</li> </ol> <p><u>Conclusion</u></p> <ol style="list-style-type: none"> <li>1. Some typos needs correction.</li> <li>2. Please highlight the main recommendations that can be given to increase the rate of institutional delivery in Nepal.</li> </ol>
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## VERSION 2 – AUTHOR RESPONSE

Reviewer Name: Christiana R Titaley

Results

1. In the results, 2nd paragraph, "...(adjusted odds ratio, 95 confidence interval...)." It is best to spell out CI only once, when the first CI term is used in the manuscript.

RESPONSE: Done as suggested.

2. I still think the univariate and multivariate results for other confounders (i.e. age, education, partner education, etc) should be presented in Table 2, along with the results of the main variables. This is important to give ideas of other factors associated with the outcome; and whether there are some issues with other confounders.

RESPONSE: Agree. Results for other confounders are added to Table 2 along with some brief descriptions in main text.

3. All tables should be self-explanatory. I suggest authors to repeat the footnote on birth preparedness for Table 2.

RESPONSE: Done as suggested.

Discussion

1. Authors mentioned that majority of mothers did not prepare any of the four activities and it might be

influenced by the distance and quality of maternal services. Is there any previous literature or results from other studies, including those from Nepal, that can be used to support statement?

RESPONSE: Yes, references are added.

2. Please cite other studies which demonstrating positive responses of counseling services (e.g. by health workers, health volunteers at household visits, local teachers and health workers etc), as mentioned by authors.

RESPONSE: Please note that References 19, 23, 24, 25, 26 described awareness raising and counselling impact on place of delivery.

3. Are there any interventions currently conducted in Nepal to increase birth preparedness amongst the community? If there are, please discuss why it does or doesn't work.

RESPONSE: Yes, information on birth preparedness intervention in Nepal has been added in the first paragraph of discussion section.

4. Although other covariates are not the focus of the study, presenting the results of the univariate and multivariate can help authors later to discuss the most interesting findings concerning these covariates. This will also help readers to understand the overall context.

RESPONSE: Agree. Results for other confounders are added to Table 2 along with some brief descriptions in main text.

5. Some typos needs correction.

RESPONSE: Corrected.

Conclusion

1. Some typos needs correction.

RESPONSE: Corrected.

2. Please highlight the main recommendations that can be given to increase the rate of institutional delivery in Nepal.

RESPONSE: Agree. Recommendations added.