PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Inequalities in Complete Childhood Immunization in Nepal: Results from a Population-based Cross-sectional Study
AUTHORS	Song, In Han; Palley, Elizabeth; Atteraya, Madhu

VERSION 1 – REVIEW

REVIEWER	Albert Lee The Chinese University of Hong Kong, Hong Kong
REVIEW RETURNED	28-Feb-2020

GENERAL COMMENTS	This paper addresses an imoportant public health issue of vaccince coverage in low income countries. One would gain some insights from descriptive statistics. In multi-variate analysis, only one independent variable, those living in Hill region had significant higher ORs to recieve immunisation. However, there is no or very little discussion of this finding in discussion section which is most significant result. As not many mothers might have received higher education in Nepal, perhaps combining seondary and higher education as a group might generate some further insights. For the descriptive statistics, one would observe greater variation of vaccine uptake for 3 DPT and 3 polio among different independant variables. Perpaps the authors would consider conductin multi-variate analysis for each of the four types of vaccines. The data is claimed to be representative. Although the snrvey is cited as reference, it is still useful to include the methodology perhaps as appendix. The study is meangingful but the current analysis does not generate much insights to understand the factors affecting vaccine uptake. Authors should conduct further sub-analysis such as stratefied each vaccine group and also more analysis why certain region has higher uptake. This will enlighten the audience to gain more insights on vaccine uptake.

REVIEWER	Jane Fisher Monash University, Australia
REVIEW RETURNED	03-Mar-2020

GENERAL COMMENTS	Full immunisation of all children is essential to optimising population health. To date, no country has achieved this, but it is a more difficult goal to realise where health infrastructure and health systems are weak. This paper reports an analysis of National Demographic and Household Survey data to identify factors associated with incomplete immunisation of young children in Nepal. Overall the data appear to have been analysed appropriately and

	the findings are similar to those of equivalent settings and nations. My major concern about this paper is that none of the authors are Nepali and there appears to have been no effort to include the perspectives of the Nepali Ministry of Health and Population. The recommendations are potentially condescending and could be dismissed as being from authors in high-income nations with little understanding of local situations and circumstances in Nepal. My questions and comments relate predominantly to the need to provide references for all assertions and some careful consideration of language: 1. Use of the term 'developing' to describe Nepal is potentially offensive. A more neutral descriptor, using the World Bank classification of economies is less problematic. 2. The opening statement is that Nepal is 'struggling', but no reference is provided for this assertion. It is potentially offensive to have outside commentators make value-laden statements without providing evidence to support them. 3. It is not clear in the Introduction why the recommended schedule of immunisation is listed in abbreviated form in the first paragraph and then delineated in detail in the third paragraph. Re-writing to ensure that there is no unnecessary repetition would improve readability. 4. The aim is placed part way through the Introduction rather than being argued towards through the Introduction and placed at the end of it. I think it would be more coherent if the argument towards the aim was made in this more conventional way. 5. The authors appear to know already that in low-income nations children experiencing social and economic disadvantages are less likely to be fully immunised, so the originality of this research needs to be made very obvious in the Introduction. Improvements in conciseness and brevity in the Introduction would assist. 6. It is more respectful to use person-first language including in relation to children wherever possible in the paper, e.g. children from a high Hindu caste rather than high caste Hindu children. 7. The data source is described in a way that would permit replication, but the factors or variables extracted are not described and need to be. It is not clear what the 'Child Recode File' is and this needs to be defined and described in sufficient detail to enable readers to understand exactly what it comprises. The sub-sections describing how variables were coded is provided before an account of which fields of data were available and extracted for this study. It would assist if the logic of this section was revised to describe first what data relevant to the question are collected, which were available and extracted, and then what recoding was done within the NDHS and what recoding was done for this study. 8. Some more detail is needed for some descriptors, including what is a 'targeted country' and how was wealth status calculated (for individuals? or for households? using which factors?). 9. Women prefer the more respectful descriptor 'giving birth', to 'being delivered' e.g. 'Mothers who 'deliver babies'…. ? give birth. This should be corrected throughout the paper. 10. Nepal is described as having sought to increase childhood vaccination rates, but the paper does not describe the mechanisms that have been used or provide a reference for this assertion. These should be added. 11. Recommendations are embedded in separate paragraphs of the Discussion, but would be clearer if grouped into a specific section at the end of the paper. It is not clear on whose authority these recommendations are being made and, in my opinion, these need to be worded carefully so that they are constructive and not

	patronising.

REVIEWER	Dr. Abdur Razzaque Sarker BIDS, Bangladesh
REVIEW RETURNED	25-Mar-2020

GENERAL COMMENTS	This paper addresses an important topic about “Determinants of complete immunization in Nepal” using DHS dataset. The topic is not original, but the setting and the representativeness of the sample makes the contribution useful. Therefore, such research is important for policy decisions. However, I did not find such interesting topic while reading this paper. Further, there are few major concerns that should be addressed. Perhaps the most important comment is that the writing needs to be improved. It is often difficult to understand what the text is trying to convey. I did not find, how the immunization histories were collected in Method section? from vaccination card or mother recall period? As authors already mentioned various studies in Nepal showed (page 5 line 52) that poverty, geographic location, low caste or indigenous children, traditional cultural attitudes, female, low level of education all are significant factors for full immunization. I don’t understand, why the authors did similar study as some better study already available in Nepal? It seems that the authors emphasized that Terai Caste and Muslim were 42% less likely than Hindu caste for complete immunization which was significant at low significance level (i.e., P<.10)! However, the paper is failed to describe the underlying reasons regarding this issue. Look at the logistic Regression analysis at table 3 (page 12), all factors (except one) are significant at low i.e., at 10% significant level! I don t think the results and discussions are interesting in that sense. However, the decimals level should be consistent which was sometimes not readable. Again, if we look other settings regarding the wealth status, the poorest and poor segment of societies are not same regarding vaccine utilization. Various study observed that the poorest children are more vulnerable for complete immunization rather than poor group which was not captured in this study. In discussion section, it is difficult to readable until linked with the findings of this study. I strongly suggest the authors could revise the discussion section rather than statement. I will not list the many issues I found in this review, but rather recommend a complete and thorough editing prior to any re-submission.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Albert Lee
Institution and Country: The Chinese University of Hong Kong, Hong Kong
Please state any competing interests or state ‘None declared’: None declared

This paper addresses an important public health issue of vaccine coverage in low income countries. One would gain some insights from descriptive statistics. In multi-variate analysis, only one independent variable, those living in Hill region had significant higher ORs to receive immunization. However, there is no or very little discussion of this finding in discussion section which is most significant result.
>> Thank you. We explained in on page number 11, last paragraph of the discussion section.

As not many mothers might have received higher education in Nepal, perhaps combining secondary and higher education as a group might generate some further insights. For the descriptive statistics, one would observe greater variation of vaccine uptake for 3 DPT and 3 polio among different independent variables. Perhaps the authors would consider conducting multi-variate analysis for each of the four types of vaccines.
>> According to your suggestions, we combined education variable into three categories, such as none, primary education, and secondary and higher education.
>> Thank you. We conducted again multi-variate analysis for each of the types of vaccines, except BCG. We did not examine separately for BCG vaccine because almost 98% children received BCG vaccination.

The study is meaningful but the current analysis does not generate much insights to understand the factors affecting vaccine uptake. Authors should conduct further sub-analysis such as stratified each vaccine group and also more analysis why certain region has higher uptake. This will enlighten the audience to gain more insights on vaccine uptake.

>> Based on your suggestion, we also did further sub-analysis, especially all subtypes of vaccination. Please see it on the Table 2 and Table 3.

Reviewer: 2
Reviewer Name: Jane Fisher
Institution and Country: Monash University, Australia
Please state any competing interests or state 'None declared': None declared

Full immunisation of all children is essential to optimising population health. To date, no country has achieved this, but it is a more difficult goal to realise where health infrastructure and health systems are weak. This paper reports an analysis of National Demographic and Household Survey data to identify factors associated with incomplete immunisation of young children in Nepal.
Overall the data appear to have been analysed appropriately and the findings are similar to those of equivalent settings and nations.
My major concern about this paper is that none of the authors are Nepali and there appears to have been no effort to include the perspectives of the Nepali Ministry of Health and Population. The recommendations are potentially condescending and could be dismissed as being from authors in high-income nations with little understanding of local situations and circumstances in Nepal.
>> Than you. One of authors of the manuscript is a Nepali citizen (native) and is currently an international faculty in South Korea.

My questions and comments relate predominantly to the need to provide references for all assertions and some careful consideration of language:
1. Use of the term 'developing' to describe Nepal is potentially offensive. A more neutral descriptor, using the World Bank classification of economies is less problematic.
Thank you. We changed the term, low income, instead of developing country.

2. The opening statement is that Nepal is 'struggling', but no reference is provided for this assertion. It is potentially offensive to have outside commentators make value-laden statements without providing evidence to support them.
>> Thank you. We corrected it.

3. It is not clear in the Introduction why the recommended schedule of immunisation is listed in abbreviated form in the first paragraph and then delineated in detail in the third paragraph. Re-writing

to ensure that there is no unnecessary repetition would improve readability.
.>> Thank you . we corrected it.

4. The aim is placed part way through the Introduction rather than being argued towards through the Introduction and placed at the end of it. I think it would be more coherent if the argument towards the aim was made in this more conventional way.
.>> Thank you . we reorganized the introduction section.

5. The authors appear to know already that in low-income nations children experiencing social and economic disadvantages are less likely to be fully immunised, so the originality of this research needs to be made very obvious in the Introduction. Improvements in conciseness and brevity in the Introduction would assist.
>> Thank you. We tried our best to address it.

6. It is more respectful to use person-first language including in relation to children wherever possible in the paper, e.g. children from a high Hindu caste rather than high caste Hindu children.
>> Thank you we corrected it…

7. The data source is described in a way that would permit replication, but the factors or variables extracted are not described and need to be. It is not clear what the 'Child Recode File' is and this needs to be defined and described in sufficient detail to enable readers to understand exactly what it comprises.
>> Thank you. We added the information. Please see page number 4)
The sub-sections describing how variables were coded is provided before an account of which fields of data were available and extracted for this study. It would assist if the logic of this section was revised to describe first what data relevant to the question are collected, which were available and extracted, and then what recoding was done within the NDHS and what recoding was done for this study.
>> Thank you. We added this information in the manuscript, page 6 to 7

8. Some more detail is needed for some descriptors, including what is a 'targeted country' and how was wealth status calculated (for individuals? or for households? using which factors?).
>> Thank you we corrected this.

9. Women prefer the more respectful descriptor 'giving birth', to 'being delivered' e.g. 'Mothers who 'deliver babies'…. ? give birth. This should be corrected throughout the paper.
>> Thank you. We corrected it.

10. Nepal is described as having sought to increase childhood vaccination rates, but the paper does not describe the mechanisms that have been used or provide a reference for this assertion. These should be added.

>> Thank you. We try to address it throughout the manuscript.

11. Recommendations are embedded in separate paragraphs of the Discussion, but would be clearer if grouped into a specific section at the end of the paper. It is not clear on whose authority these recommendations are being made and, in my opinion, these need to be worded carefully so that they are constructive and not patronising.

Thank you. We made separate paragraph for recommendation. Please find the page number 11 to 12.

Reviewer: 3
Reviewer Name: Dr. Abdur Razzaque Sarker
Institution and Country: BIDS, Bangladesh
Please state any competing interests or state ‘None declared’: None declared

This paper addresses an important topic about “Determinants of complete immunization in Nepal” using DHS dataset. The topic is not original, but the setting and the representativeness of the sample makes the contribution useful. Therefore, such research is important for policy decisions. However, I did not find such interesting topic while reading this paper. Further, there are few major concerns that should be addressed. Perhaps the most important comment is that the writing needs to be improved.
>> Thank you. One of the co-author of the manuscript is a native speaker English. The manuscript has again been thoroughly edited in English before submission.

It is often difficult to understand what the text is trying to convey. I did not find, how the immunization histories were collected in Method section? from vaccination card or mother recall period?
>> Thank you. We added this in the manuscript. Please find the page number 4.
As authors already mentioned various studies in Nepal showed (page 5 line 52) that poverty, geographic location, low caste or indigenous children, traditional cultural attitudes, female, low level of education all are significant factors for full immunization. I don’t understand, why the authors did similar study as some better study already available in Nepal? It seems that the authors emphasized that Terai Caste and Muslim were 42% less likely than Hindu caste for complete immunization which was significant at low significance level (i.e., P<.10)! However, the paper is failed to describe the underlying reasons regarding this issue.
>> Thank you we try to address it throughout the manuscript. After categorized the wealth status into 5 subgroups as you suggested, we also fount strong statistical significant association between caste/ethnicity affiliation and childhood vaccine utilization. Please find the Table 3.

Look at the logistic Regression analysis at table 3 (page 12), all factors (except one) are significant at low i.e., at 10% significant level! I don t think the results and discussions are interesting in that sense. However, the decimals level should be consistent which was sometimes not readable.
>>> Thank you. We corrected it.
Again, if we look other settings regarding the wealth status, the poorest and poor segment of societies are not same regarding vaccine utilization. Various study observed that the poorest children are more vulnerable for complete immunization rather than poor group which was not captured in this study.
- Yes, we again analyze the data including poorest, poor, middle, richer and richest section of the population.
In discussion section, it is difficult to readable until linked with the findings of this study. I strongly suggest the authors could revise the discussion section rather than statement.
>> Thank you. We did our best to rewrite the discussion section as per your suggestion.
I will not list the many issues I found in this review, but rather recommend a complete and thorough editing prior to any re-submission.

>> Thank you. The manuscript has been thoroughly edited in English before submission.

VERSION 2 – REVIEW

REVIEWER	Albert Lee The Chinese University of Hong Kong
REVIEW RETURNED	13-Jul-2020

GENERAL COMMENTS	I recall reviewing the first submission.The revised version has improved. I have few comments. It is not clear why Province 3 is selected as reference. The author(s) need more detail explanation on categorisation of the difference provinces. Mother with Primary Education has OR 1.77 and mothers with secondary education of above has OR 3.95 with statistical significance for measles vaccination. This finding is worthwhile for discussion and why not for other vaccination. It will have implications

VERSION 2 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Albert Lee
Institution: The Chinese University of Hong Kong
Please state any competing interests or state 'None declared': None declared

I recall reviewing the first submission. The revised version has improved. I have few comments.
=> Thank you.
It is not clear why Province 3 is selected as reference. The author(s) need more detail explanation on categorisation of the difference provinces. Kathmandu, the capital city of Nepal, is in Province 3. Therefore, we used Province as reference.

Mother with Primary Education has OR 1.77 and mothers with secondary education of above has OR 3.95 with statistical significance for measles vaccination. This finding is worthwhile for discussion and why not for other vaccination. It will have implications
Why educated mother use measles vaccination not others.
Thank you for the suggestions. We explained this in the discussion section (See page 18):

The study revealed that mothers with at least a secondary education were more likely to vaccinate their children against measles but that was not true for other vaccines. The measles vaccine has to be completed between 9 and 12 months, whereas other vaccines are usually done earlier.