Author’s response to reviews


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Author’s response to reviews:

7 March 2019
Kathmandu, Nepal

The Editor-in-Chief,
BMC Nutrition,

Dear Editor:

Please accept herewith the revision of the following manuscript: 'Determinants of stunting of children aged 0-59 months in Nepal: Findings from Nepal Demographic and Health Survey, 2006, 2011 and 2016".
We appreciate the valuable feedback from the reviewers, which has allowed us to improve the manuscript. To facilitate communication, we have copied the reviewers’ comments in our response and below each comment; we have written our reply and explained the changes that we made in the manuscript.

Sincerely,

Yours Sincerely,
Ramesh Prasad Adhikari, M. Phil (Corresponding Author)
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Reviewer number: 1

Reviewer's report:

Maryam Amini, Ph.D. (Reviewer 1): Abstract
NDHS should be spell out for the first time it appears in the text.

Response: Yes, in the revised version, corrections are made.
Methods

How did you calculate height-for-age-Z-score?
Response: Thank you. The Z-score was calculated based on 2006 WHO growth standards. To reflect this, the following text is inserted in the method section:

“Stunting is the single outcome variables which is measured based on height-for-age z-score < -2 standard deviation. NDHS calculated the height-for-age-Z-score based on the 2006 WHO growth standards and this score was used for the analysis (WHO 2006)”

Explain about the questionnaire you used for food security. What was it?
Response: Thank you for the insightful comments. The following text is now inserted in the method section:

“NDHS used the same questions from the Household Food Insecurity Scale (HFIAS) which was originally developed by the United States Agency for International Development (USAID) Food and Nutrition Technical project to measure the food security status of the households. These questions focused on the severity and frequency of occurrence of food insecurity in the household units based on the past 30 days preceding the survey. Based on the response of these questions four different categories such as food secure, mild food secure, moderate food insecure and severely food insecure were developed based on the HFIAS measuring guideline (Coates et al 2007)”

For anemia did you use existing data or collect blood samples? if so explain how.
Response: The following text is now inserted in the end of first paragraph of sample section:

“NDHS collected the blood sample by using HemoCue to measure the anemia level of children and mother. The child is considered anemic if the hemoglobin level in blood is <11.0 grams/deciliter. Likewise, the mother is considered anemic if hemoglobin level in blood is <12.0 grams/deciliter for non-pregnant mother and <11.0 for pregnant mother (NDHS, 2016).”
Discussion

LBW and ARI should be spelled out.
Response: Yes, in the revised version, corrections are made.

The discussion can be more enriched if you provide more evidence and interpret the data accordingly.
Response: The recommendation is well noted. We have attempted to address the reviewer’s recommendation in the revised manuscript.

Reviewer 2

Peninah Kinya Masibo, Ph.D, MPH, BSc. (Reviewer 2): Thank you for your manuscript on Determinants of stunting of children in Nepal.

General comments

This manuscript requires editing for English language to correct language and sentence construction as necessary. The manuscript has no page numbers. Please include these in the next version of the document.
Response: Thank you. Revisions are made in the revised manuscript.
Abstract

Provide data in the results section of the abstract. For example, the statistics related to line 39 to 41 should be shown complete with the Odds ratios, confidence intervals and p-values. Remember that the abstract is the first stop for your audience, the reader, and this abstract as is does not provide much appetite to the audience to read the full paper.

The conclusion provided on line 42 of the abstract page indicates that stunting is a multi-sectoral problem. This conclusion is too general and should be narrowed down to the determinants isolated by the analysis in this study.

Response:

The following text is now inserted in the abstract:

“The prevalence of stunting was higher among children belonging to larger family (51.0% in 2006; 41.1% in 2011 & 38.7% in 2016); poor wealth quintile household (61.2% in 2006; 56.0% in 2011 & 49.2% in 2016); and severely food insecure households (49.0% in 2011 & 46.5% in 2016). For child stunting, the common determinants in all three surveys were: being from the highest equity quintile (OR-0.58 in 2006; 0.26 in 2011 and 0.28 in 2016); being higher ages of children (OR-2.24 in 2006; 2.58 in 2011 and 1.58 in 2016); being below average size at the time of birth (OR-1.64 in 2006; 1.55 in 2011 and 1.60 in 2016) and being affected by anemia (OR-1.32 in 2006; 1.59 in 2011 and 1.40 in 2016).

Conclusions: This study found that wealth status of the household, age of the child, size of child at the time of birth and child anemia were the common determinants of stunting in all three surveys in Nepal. Study findings underscore the need for effective implementation of evidence-based nutrition interventions in health and non-health sectors to reduce the high rates of child stunting in Nepal.”
Background

In the background page, line 74, the authors argue that Nepal has made significant gain in health and nutrition. please provide evidence of these gains, highlighting policy level, programmatic steps that have contributed to these gains.

The authors should provide a proper justification of why this study is important. What is the gap in evidence or programming that the study seeks to address? What new knowledge this paper is adding around the issue of stunting, provide a proper justification for undertaking this study.

Response: The following text is now inserted in the background section

“The government of Nepal identified nutrition as one of the key priority areas for the development of the nation. In 2012, the government of Nepal developed the multi sector nutrition plan involving different line ministries for the implementation of evidence-based nutrition intervention through health and non-health sectors. As a result, Nepal has made significant gains in health and nutrition indicators including stunting despite being in the social, economic and political transition and being one of the poorest countries in South Asia (NPC, 2012)”

“The purpose of this paper is to determine the prevalence of child stunting in the last 15 years and the factors associated with the child stunting in Nepal using a nationally representative data from Nepal Demographic and Health Surveys (NDHS) 1996-2016. Though previous studies attempted to explore determinants of stunting, the studies reported data only from certain year. Currently, there is a gap in the literature about the trends and determinants of stunning from nationally representative surveys in Nepal limiting sufficient evidence to be used for long-term policy formulation and planning. Hence, assessing the trends and factors associated with stunting will provide insights into the effectiveness of the implemented program and will assist the policy makers and program developers in designing new effective programs that target the vulnerable groups.
Methods

Provide a summary of the DHS methodology in the methods section. for example, what was the sampling frame, why do we have lesser numbers in 2011 and 2016 than in 2006? was there a change in sampling for the different rounds of the DHS survey?

Response: Thank you NHDS changed the sample size for 2011 and 2016 surveys so there are lesser numbers in 2011 and 2016 surveys compared to 2006 survey.

The following revision are made in the method section:

“In 2006, height and weight information of a total of 5,295 children was collected from 8,707 interviewed households. Similarly, in 2011, total 2,603 children’s height and weight information was collected from 10,826 interviewed households and in 2016 a total of 2,428 children’s information was collected from 11,040 interviewed households. Some cases were excluded because their height and weight measurement was an outlier (N=37 in 2006; N=118 in 2011 & N=7 in 2016). Thus, the final sample size for the analyses of this paper was N=5258 in 2006; N=2485 in 2011 & 2421 in 2016.”

Explain how the categorization of food security status was arrived at. for example, who was mild food secure and who was severely food insecure?

Response: The following text is now inserted in the method section:

“NDHS used the same questions from the Household Food Insecurity Scale (HFIAS) which was originally developed by the United States Agency for International Development (USAID) Food and Nutrition Technical project to measure the food security status of the households. These questions focused on the severity and frequency of occurrence of food insecurity in the household units based on the past 30 days preceding the survey. Based on the response of these questions four different categories such as food secure, mild food secure, moderate food insecure and severely food insecure were developed based on the HFIAS measuring guideline (Coates et al 2007)”
Detail the inclusion and exclusion criteria for this analysis. For example, were pregnant women or those 2 months postpartum with young children included in this analysis? how about children with less than 145 cm of height? - refer to NDHS, 2016 table 11.10.1 as you consider if to include all the women or not.

Response: Thank you. The following text is now inserted in the method section:

“Inclusion criteria included ever-married, but neither currently pregnant nor had given birth in the previous two months. The exclusion criteria included the outliers in BMI measurement and height and weight measurement.”

In line 107 of the methods page, the authors included only two categories of BMI, [18.5 or not]. Does this mean that the women who were overweight and obese were counted as normal weight in this analysis? what would it look like if you considered the overweight/obesity levels in the analysis. Perhaps you could be looking at a double burden where the mother is overweight while the child is stunted. this data should be analysed in the appropriate BMI categories to look at both ends of the malnutrition spectrum without a bias to undernutrition in women.

In line 106, explain what improved and unimproved water and sanitation sources are.

In line 110 of the methods section, define how anaemia was determined in children and the mothers. Was it using hemoglobin levels? if so, what were the cut off points?

Response: Thank you for the insightful comments. As low BMI is a serious problem in Nepal and it is directly connected to child nutrition, only two categories of BMI were used for this analysis.

The following text is now inserted in the method section.

“Piped drinking water was defined as sources of improved water while all other sources of water were defined as unimproved. Likewise, toilet was defined improved if the households have flush/pour toilets to piped sewer systems, septic tanks and pit latrines, ventilated improved pit latrines with slabs and compositing toilet. Access to other types of toilet was considered as unimproved).”

“NDHS collected the blood sample by using HemoCue to measure the anemia level of children and mother. Child is considered anemic if the hemoglobin level in blood is <11.0 grams/deciliter. Likewise, mother is considered anemic if hemoglobin level in blood is <12.0 grams/deciliter for non-pregnant mother and <11.0 for pregnant mother (NDHS, 2016).”
Results section

Correct the English language, e.g line 118 reads "...groups, more than half of from..."

Refer to all the tables in the text to point the reader to which table they should be looking at.

Line 119 - 120, the results about women's education should be put on the text. The statement says "...percentage of no schooling was higher in all three surveys" what is the comparison here? is it the surveys or other categories of education levels?

Line 125 about prevalence of stunting, conduct further analysis to test if the decline in the national prevalence of stunting was statistically significant across different surveys. You can do this through a pulled analysis of data from different surveys. The authors may refer to the DHS user forum online for further guidance on these analysis [https://userforum.dhsprogram.com/]

Line 130 - 135 - the results narrated here should be supported with the statistics.

In line 139 of the results, state what factors were adjusted in the statistics model.

Results tables are running more than one page and they should have repeated column headers on the next page. Tidy up the tables by making them single space. The results lack the numbers showing distribution of children in each category. For example, how many children were from the poorest household wealth quintile in 2006, 2011 and 2016? providing this data is useful for the contextualization of results. Please provide for table 1, and 2 at least.

Response: Thank you for the insightful comments. Corrections are made in the revised version.

The following text is now inserted in the first paragraph of result section:

“With regards to mothers’ education, more than half sampled mother have no schooling in 2006 and 2011 however this percentage was 36 in 2016.”

“In all three surveys, proportion of stunting decreased with the increase in the number of years of mother’s schooling. For example, prevalence of stunting was 45.3 percent for mother having no education compared with 22.7 percent for mother having 10 and above year of schooling in 2016. It showed that with the increase in the number of children in a household, the level of stunting also increased. For instance, in 2016, the prevalence of stunting was 28% for having single living children and 46.2% for having 3 and more living children.”
“In the adjusted model we adjusted households, maternal and child characteristics such as family size, headship of the households, caste/ethnicity, wealth quintile, place of residence, household food security status, access of drinking water, access of toilet, age of mother, year of schooling of mother, number of living children, employment status, mother BMI and anemia, age and sex of child, birth order, size at the time of birth and child anemia.”

Discussion

This discussion should be a succinct summary of evidence around the issue of stunting and its determinants in view of these results. Re-write this section putting into account these comments.

Line 153 of the discussion page talks about the decline of stunting in Nepal. Give specific examples of the nutrition-specific and culturally sensitive interventions that have contributed to this decline. explain what is in the MSNP that could have contributed to this change. see typing error on line 157 "stunning". do you mean stunting? This and other errors should be thoroughly corrected in the whole manuscript. Avoid using no for "number" in scientific writing. Write out the full word.

The discussion section should provide incites with evidence from literature about the observed predictors of stunting. For example, what are the reasons why the number of children in the family, anemia, maternal BMI etc are predictors of stunting. Explain each one of these from literature. For example, what is happening to the anemic child that can impact on their growth? what does maternal education have to do with children care practices? what about household wealth? Does maternal education have anything to do with household wealth in Nepal? are more educated mothers possibly living in higher income households and therefore correlations with these two variables with stunting?

Discuss how complementary feeding practices may impact on a child's stunting outcome from other studies that provide this evidence.

Line 180 in the results section, the authors state that health of a child is largely dependent on household socioeconomic status. Give evidence for this statement.

Line 189 - explain why anemia was not a significant predictor of stunting in this study which is contradictory to other findings. Are the anaemia levels exceptionally different in Nepal compared to other countries? Was the anaemia seasonal while stunting is more long term outcome?
Response: Thank you. The discussion section has been revised to incorporate reviewers’ recommendations.

Provide a paragraph explaining the usefulness of these results to policy and to programming in Nepal.

Response: The following text is now inserted in the end of discussion section:

“The findings of this study have policy implication as the study provides a clear picture about the trends and determinants of stunning from 3 nationally representative surveys over 15 years period. With the help of this study findings policy makers and planner can formulate feasible and culturally appropriate interventions to reduce stunning in Nepal.”

State any data limitations

Response: Thank you.

The following text is now inserted in the end of discussion section:

“Though the paper has explored the determinants of stunting from the last 15 years of data, it is not free from certain limitations. Our analysis was based on cross-sectional survey data, so the study did not permit us to assess cause and effect relationship between stunting and other socio-economic confounders.”

On the ethical considerations, explain how the data was obtained, were there permissions sought from the DHSprograms.com, was the data provided by the authorities in Nepal. Even if the data is publicly available, there are data custodians who give the requisite permissions either through a web portal in the case of the DHS data.

Response: Thank you

The following text is now inserted in the declaration section:

“Ethics approval and consent to participate: The study involved secondary analysis of publicly available data so there was no needed of an independent ethical approval. However, the first author received permission from dhsprogram.com to use the data for analysis.”
Reviewer 3

fasil wagnew (Reviewer 3):

There are several grammatical and punctuation errors that need to be revisited. Other comments are embedded in attached document.

Response: Thank you for the insightful comments. Corrections are made in the revised version.

Major comments:

- In regression table; authors tried to compute factor analyses for stunting in each year separately. Thus, what is the significant to deal the outdated year 2006 for evidence based medicine? which factors analysis is more sound-able for policy maker or decision maker(2006, 2011,2016). I need a strong plausible justification

Response: Thank you for the insightful comments. Please find below our responses.

The following text is now inserted in the end of background section:

“The purpose of this paper is to determine the prevalence of child stunting in the last 15 years and the factors associated with the child stunting in Nepal using a nationally representative data from Nepal Demographic and Health Surveys (NDHS) 1996-2016. Though previous studies attempted to explore determinants of stunting, the studies reported data only from certain year. Currently, there is a gap in the literature about the trends and determinants of stunning from nationally representative surveys in Nepal limiting sufficient evidence to be used for long-term policy formulation and planning. Hence, assessing the trends and factors associated with stunting will provide insights into the effectiveness of the implemented program and will assist the policy makers and program developers in designing new effective programs that target the vulnerable groups.”

- In discussion section. In general, the way to explain your finding is poor quality. It lacks comparison studies and plausible evidence of your justifications.

Response: Thank you for the insightful comments. Corrections are made in the revised version.
-Put your study limitation at the end of discussion.

Response: Thank you for the insightful comments. Please find below our responses.

The following text is now inserted in the end of discussion section:

“Though the paper has explored the determinants of stunting from the last 15 years data, it is not free from certain limitations. Our analysis was based on cross-sectional survey data, so the study did not permit us to assess cause and effect relationship between stunting and other socio-economic confounders.”

-you have to attach the cross-tab 2X2 for each year as a supplement file for further clarification unless reader may be confuse a such way of presentation (as a supplementary files).

Response: Thank you for the insightful comments. Supplement file are prepared accordingly.