Reviewers report

Title: Factors associated with small size at birth in Nepal: Further analysis of Nepal Demographic and Health Survey 2011

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'Factors associated with small size at birth in Nepal: Further analysis of Nepal Demographic and Health Survey 2011'
Vishnu Khanal, Kay Sauer, Rajendra Karkee and Yun Zhao

General comments

I am reviewing not as a resubmission or revisions to the earlier version as there was major change to objective and analysis. All my comments are considering this manuscript as a new submission. Generally this article well written except for the variables included in the analysis. While addressing the risk factors of LBW/Small size at birth a number of well established risk factors (covariates) are obviously missing in the analysis (models) since NDHS data set does not have those. A possible solution for this is to specify the variables tested in this analysis as a hypothesis for this study. (See the cited article Sreeramareddy et. al). Otherwise the authors should mention, for example socio-demographic factors associated with small size at birth.

The covariates associated with small size at birth as surprisingly few (ANC, Far-western region, female sex of baby) as compared similar analysis based on India DHS. Though the countries are quite similar in many aspects, some results are very contrary. One possible reason I can think of is not using BMI, haemoglobin and re-categorisation of some of the variables namely, wealth index, birth order. Authors should also consider testing collinearity like Sreeramareddy et. al did between BMI and Haemoglobin. There could be possibility of collinearity between Wealth and education, wealth and urban/rural etc.

In addition to the above items there are some other issues listed, below:

Abstract:

“The association between small size at birth, socio-demographic characteristics and other health related factors were analysed…………………………….”. This statement is wrong.

Statistical analysis:

“…..child related factors (sex of the child) were added to model 1” To which model was birth order added.
Table 4: Wealth index
Reference category is generally the first row among categories Rich is at the bottom and shown as reference category with OR of 1.00.

Why ‘type of fuel’ was used not included in multivariate analysis? Maternal smoking was included in moel-1

Results:
Description of socio-demographic factors, NDHS 2011 would be necessary in such a detail all of them available in table 3 along with univariate analysis.

Discussion:
“This study found that one in every six infants in Nepal was small...”. This should written as ‘small size at birth’. This should written this as ‘mother’s self-report’ throughout the manuscript.

“Maternal nutritional status during pregnancy such as weight gain, anemia, food consumption and smoking are some of the important factors that influence birth weight. However, NDHS data did not collect information on these factors.”

The authors have used maternal smoking in their models and information about hemoglobin is available though this may not necessarily be measured during pregnancy.

The authors should somewhere in (methods or discussion) figures for % LBW in Nepal.

The authors should state more limitations related to analysis methods employed, for example classification of variable, collinearity, residual confounding despite doing a multivariate analysis.

Conclusion:
Prevalence and 95% of small size at birth should not be reported in conclusion. The second sentence of conclusion is too general. Which interventions should be introduced to lower % LBW or improve ANC coverage?

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

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
'I declare that I have no competing interests'