Author's response to reviews

Title: Maternal depression and malnutrition in children in south west Uganda: a case control study

Authors:

Scholastic Ashaba (ashaba.schola@gmail.com)
Godfrey Zari Rukundo (gzrukundo@gmail.com)
Florence Beinempaka (beineflorence@yahoo.co.uk)
Moses Ntaro (ntaro2001@gmail.com)
John LeBlanc (john.leblanc@dal.ca)

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Dear Editor-in-Chief,

Please find enclosed our revised manuscript, entitled “Maternal depression and malnutrition in children in South west Uganda: a case control study” by Ashaba et al.; for publication as a Research article in BMC Public Health. In this revised manuscript, we have attempted to address all of the reviewers’ comments, as described in detail in the response to reviewers’ comments on the following pages.

As described in my cover letter accompanying our original manuscript submission, I believe that this manuscript fits very well within the scope of BMC Public Health as it covers one of the neglected causes of malnutrition in children
in developing countries. We believe the study findings will be of great interest to those involved in health policies and community interventions aiming at improving maternal and child health.

To our knowledge, this is the first report showing an association between maternal depression and malnutrition in children in Uganda and Sub Saharan Africa and we believe our findings will be of particular interest to researchers focusing on maternal newborn and child health. The authors confirm that this manuscript has not been published elsewhere and is not under consideration by another journal and all have approved the manuscript and agree with its resubmission to BioMed Central, BMC Public Health.

Sincerely

Scholastic Ashaba

Response to reviewer comments for:
Title: Maternal depression and malnutrition in children in south west Uganda: a case control study.
Authors: Scholastic Ashaba, Godfrey Zari Rukundo, Florence Beinempaka, Moses Ntaro and John Leblanc
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We thank the reviewers for their interest in our manuscript, and for all their helpful comments. Provided below is a point-by-point response describing our attempts to address and incorporate all of their requested revisions in our manuscript.

Reviewer #1
Major Compulsory Revision #1

Background
The question posed by the authors are well justified, but it is not clear. The authors made some methodological explanations into the sentence where they stated the study main goal, which has compromised the clarity of the sentence. I suggest that they review the main goal.

The second and last paragraph of the background information page 4 of the old manuscript

We agree with the reviewer that although the posed question was well justified it was compromised by methodological explanations that were included in our main goal. We have revised and stated our main goal clearly as and the explanations pertaining to the methodology have been included in the methodology section. The second last paragraph has been revised while the last paragraph on page 4
has been removed and placed in the methodology section. The revised main goal appears on page 5 of the revised manuscript while the methodological explanations are in the methods section page 6 sub section: Depression among mothers.

Major Compulsory Revision #2

Methods

A case-control study should always be described in details, especially concerning the criteria of inclusion and exclusion for cases and controls. The authors describe the criteria of inclusion, but they do not mention the exclusion criteria. Furthermore, there is lack of information in some important questions: The cases are included in the study only with the diagnosis of undernourishment or they had some other illness that lead to under nutrition? What are the health condition of children included in control group? Are they sick too?

The second sentence in the methods section of the old manuscript page 4. The reviewer pointed out that we had not described the details of a case control study most especially concerning the inclusion and the exclusion criteria. In response to this question we have revised the selection criteria for both children and their mothers. The revised inclusion and exclusion criteria appears on page 5 of the revised manuscript under the subsection: Inclusion and exclusion criteria. The general criteria for children included age between 1 and 5 years, being admitted in hospital, having their mothers as the main caretakers and if mothers consented to participate in the study. In addition to the above general criteria cases were defined as children who were malnourished defined as z-scores of below -3SD of weight for age, weight for age and weight for height according to WHO child growth standards and having no other physical illness. Case exclusion criteria included malnourished children with other physical illness identified through investigations while in hospital, children below 1 year of age and children whose caretakers while in hospital were not their mothers. Control inclusion criteria was a chronic illness but normal nutritional status. Control exclusion was if the mother did not consent to participate in the study. Mothers were included in the study if they had a malnourished child admitted in the hospital and were aged 18 years and above. Inclusion criteria for control mothers were having a child with a chronic physical illness admitted in hospital but normal nutritional status and the child matched a case according to age and gender.

Major compulsory Revision #3

Data analysis

I suggest that the authors address their analysis model clearer. They inform that “Logistic regression analysis was used to estimate OR for each variable, controlling for potential confounding by all other variables.” However, what are the potentially confounding variable? What does it means “controlling” for those variables? Does it means that all confounding variables are included in a multivariate regression model?

This was on page 6 of the old manuscript where we had stated in the last line
that “Logistic regression analysis was used to estimate OR for each variable, controlling for potential confounding by all other variables”.

We agree with the reviewer that our analysis model was not clear. We have therefore repeated the analysis model and reviewed the relationship between the dependent and independent variables. We initially run a bivariate logistic regression model for each of the variables to determine their relationship with malnutrition in children. Each of the variable was run in the model against malnutrition in children. Odds Ratios (ORs) for each of the variables were recorded generating a bivariate logistic regression model table (Table3). The variables that were associated with malnutrition were then run into a multivariable model to determine if the association remained hence generating a multivariable logistic regression model with adjusted Odds Ratios showing a significant association between maternal depression and malnutrition in children after adjusting for maternal level of education and source of income. (Table 4). Our analysis model did not include controlling for confounding factors as previously stated in the manuscript. The revised description of our analysis model is on page 7 of the revised manuscript.

Major Compulsory Revision #3

Results I

The authors do not mention in what extent the groups of case and control are similar or different. It should be well described since some of the findings could be a result of selection bias. This is the first step when you carry out an unmatched case-control study.

This was in relation to our selection criteria on page 4 of the old manuscript. Where we did not describe the selection criteria. We agree with the reviewer that we did not describe to what extent the cases matched the control. As we have described the inclusion and exclusion criteria above, for children the control matched the case by gender and age but the mothers were not matched but were recruited on the basis of their child meeting the inclusion and exclusion criteria. In addition the mothers had to be aged 18 years and above and consented to participate in the study. The changes are on page 5 of the revised manuscript. The last and the second last sentences of the sub section: Inclusion and exclusion criteria of the methods section.

Major compulsory Revision #4

Results II

Furthermore, they describe that “Overall 71.7% of the children were malnourished and of those malnourished 78.1% were underweight, 79.8 % were stunted while 84.0% % had wasting.” It seems that in both group there are malnourished children. In what way the inclusion of malnourished children in both case and control group can weaken the association founded?

This comment was in response to the percentages about measures of malnutrition in children reported in the old manuscript on page 7.

We agree with the reviewer about the percentages previously reported within the measures of malnutrition and we have done the correct analysis which gave us
the right percentages. The percentages refer to the cases who are malnourished children since the children in the control group had normal nutritional status. The malnourished children were 50% of the total sample and analysis within the cases group to determine measures of malnutrition indicated that 74.7% of the malnourished children were stunted (low height for age), 83.7% were wasted (low weight for height) while 86.7% were underweight (low weight for age). The revisions are on page 8 of the revised manuscript the first sentence on the page and are reflected in table 2 on page 18.

Major compulsory Revision #5
Results III
I would like to understand how the non-adjusted association of 1.68 jumps to 11.02 after adjusting. Why do the data losses accuracy with an adjustment? What does it means? In addition, I suggest review the analysis model, since it, conceptually, implies a hypothesis, which is not contemplated in the analysis. This observation was made on page 7 of the old manuscript lines 8 and 10. In response to this we reviewed the analysis model by initially using bivariate logistic regression analysis for each of the variables and indicating the non-adjusted Odds ratios for each of the variables. The variables that showed an association with malnutrition were then run in a multivariable logistic regression model generating adjusted Odds Ratios. This gave us the correct values of Odds Ratios for the association between maternal depression and malnutrition in children where by the non-adjusted Odds Ratio is 2.38 (1.18-4.79) while the adjusted Odds Ratio is 2.23(1.08-1.89). This is reflected on page 8 of the revised manuscript and tables 3 and 4 on pages 18 and 19.

Minor essential Revision #1
The authors should revise the quality of typing, especially too much space between words and the use of parenthesis. This comment referred to style of writing in the whole manuscript.

The quality of typing was revised removing unnecessary spaces between words and we tried as much as possible to avoid parenthesis.

Minor essential Revision #2
The tables should be revised. The table header should express clearly what each number means, in other words, if they are frequency or proportion. In addition, they should include in the table title, all the information that the reader needs to understand that table. Lastly, the table should not be “closed” as a frame, with vertical lines in the ends.

We responded this by revising the tables. We have included the titles indicated clearly that we used proportions rather than frequencies. The tables are now open with no vertical lines on either sided and we have removed inside vertical lines as well. The tables are pages 17, 18 and 19.

Reviewer #2
Major Compulsory Revision #1

Background

Is the question posed by the authors well defined? Yes, although in the introduction, the objective is stated together with methods (like the instrument to be used for the depression assessment) and topics that would be better in the Discussion.

We have clearly stated our main goal in line with our research question removing the description of the instruments used in this section which has been placed in the methods section. This is reflected on page 5 the last sentence of introduction/background section.

Major compulsory revision #2

Methods

Are the methods appropriate and well described? It is unclear if to be defined as a case the child should be defined by all the criteria of weight for age, height for age and height for weight together.

The methods section has been revised describing the inclusion and exclusion criteria for both cases and controls. We have stated clearly that cases were malnourished children without any other physical illnesses while controls were children with other chronic illnesses but with normal nutritional status. All children had to be admitted in hospital and they were matched for age and gender. Their caretaker in hospital had to be the mother who provided informed consent to participate in the study. Malnutrition in children was defined by low weight for age (underweight), low height for age (stunting) and low weight for height (wasting) according to WHO growth standards. Inclusion criteria for the mothers was having a child admitted in hospital, being 18 years and above while the inclusion criteria for the controls was the children with any other chronic condition but with normal nutrition status. The mothers of controls also had to be 18 years and above and consented to participate in the study. This is reflected on page 5 in the methods section subsection: Inclusion and exclusion criteria.

Major Compulsory revision #3

Results

Are the data sound? No. For example on the fifth line of Results: "Overall 71.7% of the children were malnourished". I do not understand because in this case control study cases were 83 malnourished children and controls were 83 eutrophic children. Therefore 50% of the sample were malnourished children and 50% were eutrophic ones (sixth line of Methods).

The analysis model has been revised providing appropriate results. 50% of the participants were malnourished children (cases) and 50% were controls who had a chronic medical condition but with normal nutritional status. Within the cases (malnourished children) 74.7% of the children were stunted (low height for age), 83.7% were wasted (low weight for height) while 86.7% were underweight (low weight for age). These percentages do not include controls since these had
normal nutritional status. The changes are reflected in the results section of the revised manuscript on page 8 the second sentence and in table 2 on page 18.

Major Compulsory Revision #4

Data analysis

Do the figures appear to be genuine, i.e. without evidence of manipulation? Yes they appear to be genuine, but the tables deserve some improvement: for example, titles are incomplete, capital letters are missing.

We revised our analysis model. Cross tabulation and logistic regression analysis was done resulting in 4 different tables. The tables have been much improved with complete titles and capital letters in the right places. The table titles include all details concerning the content of the tables. The tables are pages 17, 18 and 19 of the revised manuscript.

Major compulsory Revision #5

Discussion

Are the discussion and conclusions well balanced and adequately supported by the data? Sometimes no. For example, in the beginning of the fourth line of Discussion: “The results also agree with what has been found in developed countries that depression and most especially postnatal depression interferes with cognitive and emotional development of children”. The present study does not address cognitive and emotional development of children.

We have revised our discussion keeping it in line with the main of the study, removing unrelated information that was not a focus of this study as noted by the reviewer. “The results also agree with what has been found in developed countries that depression and most especially postnatal depression interferes with cognitive and emotional development of children”. This statement was removed because it was not related to what the study was about. With the help of the statistician we revised our analysis by running both bivariate and multivariable logistic regression models. The analysis gave a non-adjusted Odds Ratio for the association between maternal depression and malnutrition in children of 2.38(1.18-4.79) and the adjusted Odds Ratio of 2.23(1.08-1.89). We describe how we reanalyzed our data on page 7 of the revised manuscript and the last sentence of data analysis section describes how logistic regression was done on the same page.

Minor Compulsory Revision #1

Do the title and abstract accurately convey what has been found? The title is fine Although the use of capital letters must be corrected.

We revised our title and removed unnecessary capital letters. The abstract was revised and grammatical errors have been eliminated. This change is reflected on the title page of the revised manuscript.

Minor compulsory revision #2

Abstract
The abstract needs to be revised in terms of grammatical errors like in the fifth line: “Cases were children who were children malnutrition…” where it must be added the word “with” or improve the writing to avoid the repetition of the word “children”.

In response to this comment which was made according to the grammatical errors in the old manuscript on page 2 second sentence of the manuscript. The changes are reflected on page 2 of the revised manuscript the methods section of the abstract.

Minor compulsory revision #3

Manuscript in general

Is the writing acceptable? I think it is needed a lot of improvement.

We edited the whole manuscript and used an independent person whose native language is English and with long term experience in writing who helped us with further editing to make our writing acceptable and worthy of publication. Through the process of editing and proof reading grammatical errors were eliminated.

Minor compulsory revision #4

References 19 and 18 are the same

References were revised, a reference manager was used to avoid duplication of references. References 21-23, the first author is the same but the studies are different. This is on page 14 of the revised manuscript.

Minor compulsory revision #5

Eleventh line of results the word “with” is missing in the phrase “also associated malnutrition”

This was edited and changes are reflected on page 8 of the revised manuscript, the last sentence of the results section.

Minor compulsory revision #5

In line 27 of Discussion “jobs which are not well paying despite working several hours a day” should use “paid” instead of “paying”.

We revised the discussion section and the line that was talking about poorly paid jobs has been removed and instead concentrated more on how education empowers women to make right choices for their children and to seek care at the right time. This is reflected in line 27 and 28 of the discussion section in the new manuscript on page 9.