Author's response to reviews

Title: Individual and Community Level Determinants of Childhood Full Immunization in Ethiopia: A Multilevel Analysis

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Author's response to reviews:

Thank you for contemplation of our manuscript for publication in BMC Public Health. We have reviewed the manuscript according to your reviewer’s comments.

Reviewer # 1 (Chiara de Waure)

METHODS

MINOR REVISIONS
- In my opinion the part on study area should be shortened and moved to introduction.
  • Done; Study area which was discussed under Methods Section of the manuscript was shortened and moved to background section. (line 58-60 page 2)
- Authors should report how they categorized continuous variables early in methods section.
  • Done; Categorization was done for continuous variables using information from different literatures (line 121 page 4)
- Authors assessed the effect of independent variable through p-values and 95%CI independently. Anyway this is meaningless since p-values do agree with 95%CI.
  • Done; we have used 95% CI throughout the manuscript. (line 133 page 5)

MAJOR REVISIONS
- It is not clear how authors combined information about children immunization. In fact they relied on both immunization cards and mother’s verbal reports. This is quite misleading. I believe that immunization cards are enough in order to assess immunization status. Furthermore, relying only on the latter, recall bias could be avoided.
  • Done; although the respondent was mother of the child, we have recorded information regarding full immunization status of the child from immunization card. (line 105-108 page 4)
- Criteria used to run the stepwise regression should be provided.
  • Done; Stepwise regression analysis was used to fit the model (line 151-159, page 5), simply by removing independent variables that become insignificant during insertion of every other independent variable to the model

- Criteria to assess interaction and confounding should be detailed and provided. Furthermore, in my opinion, since the model is a predictive one, confounding is not a concern.
  • Done; Interactions between individual level and separate community level characteristics were added to the models to test whether the community level characteristic effects on full immunization were modified by individual level characteristics. We have accepted the comment regarding confounding and issue was omitted from the report. (line 170-176 page 6)

- How did the authors manage missing data?
  • Although there are many methods to treat missing data, the authors had agreed to exclude observations having missing data.

RESULTS

MINOR REVISIONS
- Authors should provide information on missing data in tables.
  • Done; We have provided information on missing data under table 1a and 1b

- I suggest the Authors to replace p-values equal to 0.000 with p-values < 0.001. It is not sound to say that the chance to occur alfa error is 0.
  • Done; throughout the whole document of the manuscript we have substituted P-Value=0.000 with P-Value < 0.001

DISCUSSION

MAJOR REVISIONS
- In discussion it emerges that some observations were removed from the analysis. This information should be given earlier and should be reasoned.
  • Done; initially, in the child data set there were 5842 children distributed among 595 clusters. For the purpose of analysis age of the child (12-59 months) and number of children per cluster at level-2 was used as criteria to create the full data set. Based on these criteria 896 children were excluded from the analysis. Hence, the final data set used in the analysis comprises 4983 children distributed in 520 clusters (line 126-130 page 5).

- Authors elaborated on the association between having children less than five years of age and incomplete immunization of the last child. Anyway, I do not understand why they spoke about last child. I mean that, even though parents may have more children less than five years of age, it is not clarified that the analysis was carried out on last children. Furthermore, in table 1, birth order is shown and it appears that a huge amount of children were not the last ones. Finally, I am wondering if birth order was associated to immunization status.
  • According to this study, number of under five years children and child birth
order were two different independent variables; the analysis result had depicted that the number of under five years children in the household was significantly associated with childhood immunization (line 306-312 page 14)

Number of Under Five Children:
• It is a continuous type of variable
• Total number of children resident in the household and aged 5 years and under.
• Used to check association between full immunization status of the child in the study (12-59 months) and the number of under five years children in the household

Children Birth Order
• It is a categorical type of variable
• It is the birth order of the child, having values ranging from 1 to 18, categorized as 0 = first birth; 1 = 2nd - 4th; 2 = 5th and above
• Used to check association between full immunization status of the child in the study (12-59 months) and his birth order (whether he is first, second to fourth or fifth and above)

CONCLUSION

MINOR REVISIONS
- I suggest the Authors to replace p-values equal to 0.000 with p-values < 0.001. It is not sound to say that the chance to occur alfa error is 0.
  • Done; throughout the whole document of the manuscript we have substituted P-Value=0.000 with P-Value < 0.001.

Reviewer # 2 (Nicola Luigi Bragazzi)
1. I don’t think study area section is so essential for the sake of the manuscript. I suggest to shorten this part and to give only the essential details referring to bibliographic sources and references.
  • Done; Study area which was discussed under Methods Section (line 94-104, page 5) of the manuscript was shortened and moved to background section.

2. There are some grammar mistakes (for example “were participated” in the abstract section instead of “participated”; “diseases, …. Which includes” at line 42-43 page 2 instead of “include”; “factors … which includes” at line 68-69 page 3 instead of include). The manuscript should be revised by an English speaker.
  • The comments was addressed and rectified as :
    # participated in the analysis ( line 20-21 page 1)
    # which include ( line 42 page 2)
    # which include ( line 72-73 page 3)

3. There are some punctuations mistakes and typos (for example a ; instead of : at line 69 page 3; same issue at line 74 page 4; sentence at line 140 page 7 has
not a final dot). The manuscript should be carefully re-read and edited by authors.

- The Comment was addressed and rectified as:
  # at the individual level child place of delivery … (line 73 page 3)
  # and at the community level…. (line 78 page 3)
  # …., and cross tabulation was used……. (line 124 page 4)

4. Some sentences are not clear and should be rewritten for the sake of clarity (see for example sentence at line 139-140 page 7). Also for this reason, the manuscript should be revised by an English speaker.

# Line 122-126 page 4-5) re-written for the sake of clarity

Finally, we want to inform the reviewers that we have strictly reviewed the whole sections of the manuscript to reduce the grammar and punctuation mark errors.