Reviewer's report

Title: Why are children not vaccinated against measles? A cross-sectional study in two Nigerian states

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Reviewer: Pierre Verger

Reviewer's report:

Major comments

This is an interesting article about a very important public health subject: children vaccination against measles. The authors made considerable efforts to collect information about vaccine coverage in two Nigeria states and document factors associated with measles vaccine shots, through a quantitative survey: factors have been documented at individual, household and community level. They have also implemented focus groups to get better insight into the reasons alleged for under-vaccination or vaccine refusal. Despite interesting and useful results, this article would gain in a more precise redaction on several aspects. Moreover, the presentation of the results of two different study designs in the same article (quantitative and qualitative) is unusual and questionable; this choice probably led the authors to present the results of the focus groups in a very concise way, and in doing so, they have probably lost part of the richness of their results. I note that they do not discuss the results of the focus group in the discussion section. These results should be presented in a separate paper (given also the efforts implied by collecting this qualitative information: FG in each of 90 communities x 2 (states) x 2 (gender stratification) = 360 focus groups of 8-12 persons. Same comment about the use of the study findings sections (method and results).

Introduction

To which extent would vaccination help reducing mortality due to malaria and even diarrhea?

Could the authors provide some information to the reader about national official recommendations regarding measles vaccination in Nigeria (schedule, number of recommended shots, vaccine coverage objectives…) and the possible between-states variations (both in recommendations and vaccine modalities and organization)?

Why were the Cross River and Baunchi states chosen for the surveys?

A concise paragraph presenting results already published in Nigeria and comparable countries about determinants of measles vaccine acceptation would be welcome. This would help justifying the choice of categories of factors studied.

Methods
The sampling methods should be presented first and the survey procedures after. Inclusion and exclusion criteria should be clearly presented.

Please provide a reference for the stratified last-stage random cluster sampling and a clearer explanation about correspondence between the clusters and the geographical and/or community levels.

The sentence “each cluster comprised contiguous households radiating from a random starting point” is unclear. As the strategy aimed at including 100 children per cluster and the number of children per households may vary, did the authors take into account in the analysis the unequal probabilities of inclusion for each child?

Analysis:

The sentence about the data entry procedures is not necessary. The statistical package used for the analysis should be presented at the end of the analysis section.

The strategy of analysis should be presented in more precise way: apparently, the authors used logistic regressions. As the authors aimed at testing individual as well as aggregated variables at community level multilevel logistic regression analysis is a priori more appropriate than logistic regression analysis (which does not allow the consideration of an individual level embedded in an aggregated level (community level)).

The presentation of the factors being analyzed should be made in differentiating between socio-demographic characteristics (education level) and attitudinal factors (e.g., “considering worthwhile to immunize one’s children”). The choice of specific factors such as “possession of a birth certificate” should be justified.

The section “using the study findings”: this section should be deleted even if some points are indeed interesting for the discussion section.

Results

The response rates (or refusal rates) should be provided for both states. Socio-demographic characteristics of the two samples should be compared to the extent possible to those at state level.

Discussion

Page 11: explain why adding information from vaccination cards does not improve accuracy: this is a rather counterintuitive statement for a reader unfamiliar with context of the study.

The rest of the discussion should not include the results of the focus groups but rather compare the results with already published studies. The authors should underline which results are new in the Nigerian context and give more insight to the reader on the results discrepancies between the two states.

Minor comments

Table 1
Subtitles for each variable category should be included for the clarity of the table; individual socio-demographic variables, attitudinal and behavioral variables and community variables should be clearly distinguished.

First column: please find a way to avoid repeating children at each line
Second and fourth column: could be deleted.
Tables 2 and 3 a and b
I would suggest to present univariate and multivariate results in the same tables, with one table for each state.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

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