Author's response to reviews

Title: Inequities in incidence, morbidity and expenditures on prevention and treatment in southeast Nigeria

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Author's response to reviews: see over
Dear Editor,

Submission of revised manuscript for possible publication in BMC International Health and Human Rights

I hereby submit our paper entitled “Inequities in incidence, morbidity and expenditures on prevention and treatment in southeast Nigeria” by Nkolika Uguru et al.

We are very grateful to the reviewers for their comments, which has helped us to further improve the paper. The paper has been revised along the lines suggested by the three reviewers.

Our point-by-point responses to all the reviewers’ comments are:

Reviewer’s report

Title: The burden of malaria to the poorest households is unjust but redeemable: Inequities in Incidence, morbidity and expenditure on prevention and treatment in southeast Nigeria

Version: 2 Date: 10 November 2008

Reviewer: Jane Chuma

Reviewer’s report:
General comments
1. Introduction requires strengthening and authors should highlight clearly what their contribution to the literature is.

Authors’ response
The entire introduction has been strengthened. We have now included more literature on burden of malaria and state of malaria control not only in Nigeria but in many countries of sub-Saharan Africa. We have now included the explicit contribution of the paper to knowledge.

2 Methods section and the way results are presented is weak. P-values are missing and where they are included it is difficult to tell what they are comparing (i.e. is it differences across or within villages)

Authors’ response
The methods section has been revised to be more informative about what was done. The study was not designed to compare villages but only SES. This has been clarified in data analysis sub-section. The missing p-values have been included and results have been revised to clearly show that they are only comparing SES groups within each village.

2. Table headings need to be reworded to reflect what is presented in the table.
Major compulsory revisions
Authors’ response
The headings for the tables 3 and 4 have now been reworded accordingly. The other table headings are appropriate.

Introduction

3. Please check recent literature (e.g. Snow et al., 2005) regarding malaria mortality, that documents evidence that malaria morbidity/mortality is on the decrease

Authors’ response
We have included recent literature that shows that malaria is on the decline in some parts of Africa.

4. Review/background presents evidence on the inequitable nature of malaria burden in Nigeria and elsewhere. It is therefore not clear what the contribution of this paper is to the literature. The authors need to clearly spell out what their contribution is or whether or not their aim was just to confirm the existing literature.

Authors’ response
We have reviewed the available evidence feel that this paper contributes to knowledge about the level of inequities in malaria burden and expenditures on its control in Nigeria, with relevance to other malaria-endemic countries in sub-Saharan Africa, because there is still paucity of data in the area. Hence, there is the need to build the evidence base on socio-economic inequity in burden of malaria as well as in expenditures to treat and prevent it, which would act as a catalyst to improve equitable policies and strategies for the control of the disease. This has been elaborated in the last two paragraphs of the Introduction

Methods:

5. It is not clear how malaria was defined in the study

Authors’ response
It was described as presumptive malaria using the presence of fever as a proxy. This has been included in the methods.

6. Provide details on the number of households that formed the sampling frame

Authors’ response
The sampling frame for the study was developed by an enumeration the households in the four villages. The numbers of enumerated households were 1,100 in Ahani, 580 in Adu, 750 in Amaetiti and 750 in Enugu-Akwu. This has been included in the methods section.

7. Might be useful to provide some information on key variables included in the SES index

Authors’ response
We have now included the variables that were used to develop the SES index in the data analysis subsection.

8. Provide information on how expenditure on malaria were estimated

Authors’ response

Respondents were asked how much they spent on treating malaria using a one month recall period. The respondents were asked how much they spent on registration, consultation, investigations and drugs. The expenditures on these items were then aggregated to give total monthly expenditure. This information has been included in the results section.

Results
9. Table 1 in general is not necessary and requires editing should it be included in the paper. Authors should discuss the variables relevant to the study (mainly SES indicators). The last row in particular can easily be deleted without losing any value. Quartile means 25%, hence no point to show the number of households per quartile.

Authors’ response
Table 1 has been edited as recommended.

10. Table 2: provide age category for children. Not clear whether paper is referring to under fives only or anyone <18 yrs

Authors’ response
Study is referring to age category less than 13yrs. This has been explained in the methods section and in the tables 2 and 3.

11. It is surprising that a larger proportion of adults reported malaria in the last one month compared to children, who are known to be more vulnerable to malaria. Does this have to do with the nature of malaria transmission in the setting? If yes, this should be picked up in the discussion

Author’s response

We have now discussed the point in the second paragraph of the discussion section. There we argue that the reasons for this apparent anomaly were not investigated in the study but should be an area for future studies where similar findings occur. However, one speculation was that since male household heads were the majority of the respondents instead of their wives that are usually the major household care givers, the respondents may have under-reported the occurrence of childhood malaria. Yes

12. Paper is comparing which villages had higher levels of malaria etc. but fails to provide p-values to support their argument

Authors’ response
The study did not compare the villages but rather SES differences in the key variables within the villages. Hence, the study focused on socio-economic inequity and not also on spatial inequity. This has been clarified in the data analysis section.

13. • Expenditures to treat malaria: provide p-values for the differences in spending across villages. The last sentence on this section is not clear i.e. least poor children most likely to recover???

Authors’ response
Our research focus was comparisons across different SES groups and not across villages. The mentioned sentence has been corrected: but we find that the children belonging to the least poor SES groups recovered faster after an episode of malaria in comparison to those belonging to other SES groups.

14. Table 4 & 5: Cost of prevention- not clear what the values refer to. Also Table 5 should be edited- what should be in the brackets? %?

Authors’ response
The values represent the Average monthly cost of preventing malaria in each village

Table 5 has been edited and missing values computed.

15 • Expenditures to prevent malaria: states that <5% of households owned an untreated net. Is this 5% of all households? Also states higher SES more likely to own nets…but not all are significant

Authors’ response
This has been adequately adjusted and it is 5% of all households.

Discussion
16. • 3rd paragraph states that the poorest households spent the highest proportion of their income on treatment, but data on household income were not collected, hence not possible to make such conclusions from the findings presented in the paper.

Author’s response
We revised the statement to show that they potentially spent the largest amount relative to their socio-economic status.

Conclusions
17. • The conclusions are not supported by the data provided

Authors response
The conclusion has been revised to reflect the data provided.
Reviewer’s report

Title: The burden of malaria to the poorest households is unjust but redeemable: Inequities in Incidence, morbidity and expenditure on prevention and treatment in southeast Nigeria

Version: 2 Date: 14 December 2008

Reviewer: Marcy Erskine

Reviewer’s report:

Discretionary Revisions

1. Generally, the writing needs to be cleaned up. Reading of the article is difficult due to poor sentence structure, grammar, punctuation and non-standard use of English.

Authors’ response:
The article has been generally reviewed to improve the delivery and use of English.

2. Some of the references that are cited in the article should be replaced with more recent references, such as the World Malaria Report 2008, to provide more accurate information regarding progress towards the Roll Back Malaria targets. There have been improvements in malaria control and prevention, though the article states that we are experiencing a worsening situation. In addition, countries are accessing more funds through the Global Fund against AIDS, Tuberculosis and Malaria, and these advances are not acknowledged. In fact, the statement that there is “limited attention to malaria prevention and treatment” is incorrect in the current international health context where malaria is a major focus in the push to the RBM 2010 and MDG 2015 targets.

Authors’ response:
The references cited in the article have been updated. We have now included excerpts from the World Malaria Report 2008 and other sources that show that there are improvements in funding for malaria control.

3. The introduction mixes global information and the specific situation in Nigeria, and should be divided out for clarity, beginning with the global and then coming down to the more specific context of the article. In addition, the literature review is fragmented and should be reorganized. As it stands, it is highly repetitive. As an example, the second and third pages of the introduction have the same reference to household expenditures on malaria in Kenya and Nigeria.

Authors’ response:
The introduction has been better organized and no longer mixes global information with the specific situation in Nigeria.

4. In the methods section, a map should be inserted showing the location of the state.

Authors’ response: A map of Nigeria has been included as figure 1 in the methods, with Enugu state highlighted in red.

Minor Essential Revisions
5. There is a significant difference between Adu and the other three villages in terms of both adult and childhood malaria incidence (Table 2), which is not addressed well in the text. Given that the malaria situation is the same across the four villages, this significant difference requires explanation as it calls into question the implementation of the survey in this village.

Authors’ response:

The statement has been adjusted to emphasize the obvious difference in malaria incidence between Adu and the other villages, although our study is not focused on comparing incidence between the villages.

6. The results section is very mixed. Results should be presented in a more systematic method (e.g. adults in one section, children in another section). The current presentation lacks clarity.

Author’s response: The results have now been presented in a more systematic method as recommended in the text.

7. Presentation on total costs (treatment plus transportation) would strengthen the article and the conclusions drawn. It is unclear why a total cost analysis was not undertaken and, if this data is being presented, it is not clearly presented. In addition, average costs for treatment through various providers should be presented so these can be related to household expenditures.

Authors’ response: We have now presented total costs using a pooled data of the four villages in the text. We have also presented average costs through various providers that were computed also using a pooled data of four villagers in the results section. The results show that there no SES differences in total costs. The least total costs were incurred for home treatment and the highest total costs were incurred in hospitals. These analyses have been reflected in the methods, results and discussion sections.

8. On page 9, there is a reference to “most-poor” which is not one of the quartiles defined (see “Expenditures to prevent malaria and ownership of mosquito nets). The quartiles are confusing enough in terms of all containing “poor” that there needs to be consistency in referring to them throughout the article.
Authors’ response: This has been adjusted as shown below. (see page 9)

9. In the discussion section, the authors state that “The expenditures on transportation to health centers from some villages are enormous” though the data show that the cost is significantly less than $1. In the article, the average cost of transportation across the four villages is less than 20 Naira, which is very little considering the exchange rate. The exchange rate should be presented for the reader’s reference.

Authors’ response: The discussion section has been amended accordingly. The exchange rate of 120 Naira = 1US$ has been included in the methods section and below the relevant tables.

10. For the conclusions, the first sentence should begin with “in principle”. There is no link between a higher amount of money at the Federal level contributing to higher household income given disparities in access to funds between high, medium and low-income households. The first sentence of the conclusions makes assumptions that are not supported by the African (or Nigerian) reality.

Authors’ response: The conclusion has now been completely re-written to reflect the data that we collected.

11. Table 5 does not clearly define whether Q1 is the least poor or poorest quintile. This should be indicated, as the table does not stand alone and present comprehensible data.

Authors’ response: The categorization of Q1 to Q4 has now been clarified in Table 5.

**Major Compulsory Revisions**

12. In the data analysis section, the development of the socio-economic status index needs to be elaborated upon. The authors should explain whether they have used existing SES indices (e.g. Demographic Health Survey, World Bank, etc). The quartiles are unclear as there is no indication of what it means to be least poor versus poorest (e.g. household income). An indication of household income would also help to justify their later conclusions regarding percentage of income dispensed on malaria treatment and prevention for the poorest.

Authors’ response: We used an asset-based SES index and this has now been better explained in the paper under the data analysis section. We did not collect data on income since it is both difficult and unreliable to collect from the respondents who are mostly employed in the informal non-salary paying sector. The most-poor (Q1) is the economically worse-off households and the least poor (Q4) is the economically better-off households. This is now clearer in the paper.

13. A significant piece of information that is missing is the type of treatment that was sought and where. This has an obvious impact on the expenditures for malaria treatment. In addition, it would be better to know whether the treatment taken was appropriate and those costs versus inappropriate and those costs. This is especially important given that the authors state “Only a minority of the children recovered from the first treatment that they received in the four villages”. From the data presented, it is impossible to determine whether there is a difference between the least poor and the poorest in terms of accessing recommended and appropriate treatment for malaria. This is a major omission in the study and should be addressed.
14. Related to the above point, in the discussion section, the authors state “The lower expenditures on treatment for childhood malaria compared to that of adults are explained by the fact that children require lower dosage of drugs than adults”. This conclusion cannot be drawn without knowing the source and type of treatment.

Authors’ response: Using a pooled data from the four villages, the findings show that for the 420 adults that had presumptive malaria, the highest proportion of 35.0% used patent medicine dealers, 17.4% used hospitals, 7.6% used home treatment, 9.5% used clinics, 10% used other sources of treatment such as herbalists and 9.5% did not seek any treatment. Similarly, in the case of childhood presumptive malaria, for the 231 cases, treatment was sought for 51.7% of the cases in patent medicine dealers, 9.1% used hospitals, 7.0% used home treatment, 9.1% used clinics and 2.2% used other providers. This has been reflected in the methods, results and discussion sections of the paper.
Reviewer's report

Title: The burden of malaria to the poorest households is unjust but redeemable: Inequities in Incidence, morbidity and expenditure on prevention and treatment in southeast Nigeria

Version: 2 Date: 3 December 2008

Reviewer: Mark Grabowsky

Reviewer's report:
* Major Compulsory Revisions
  None
* Minor Essential Revisions
  1. There are a number of unusual uses of English that could easily be addressed with a careful editorial review.

Authors’ response
The language has been corrected.

2. The authors may wish to change the title to more accurately reflect the article. The article is descriptive rather than prescriptive. Therefore the first part of the title, "The burden of malaria to the poorest households is unjust but redeemable" seem inappropriate. The second part alone seems a more accurate description of the content: "Inequities in incidence, morbidity and expenditures on prevention and treatment in southeast Nigeria."

Authors’ Response: The title of the paper has been changed as recommended.

3. The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

Authors’ response: The revisions have been made.

4. One of the principal values of doing a multivillage study is to make comparisons across villages as to outcomes. That is, for those outcome factors which differ, are there underlying differences in the population which provide explanatory clues. This type of analysis is missing from the paper. If such differences were found, it would provide a basis for interventions. The paper can be published without such analysis but it moves it farther away from being prescriptive.

Authors’ response: The study was not designed to compare villages but only compare across socio-economic status. This has been clarified in the methods section.

* Discretionary Revisions
  5. The data tables are generous in the amount of data and provides a full description of the study population. However, it lacks a clarifying principle of analysis. That is, how does it all fit together? It would be useful, for example, if the Table 1 demographic data and Table 2 incidence data were somehow related to the table 3 costing data. For example, are those who have higher transportation...
costs for malaria more likely to die from malaria? it may be that the sample size does not allow this extra analysis but it would be interesting and would likely support there underlying thesis.

Author’s response: Some further analysis on health seeking from different providers has been undertaken. We have now better triangulated most of the data in re-writing the discussion section. Some of the suggestions are issues for future since the study does not have data to provide the answers, e.g. link of costs with mortality. The areas for future studies have been included in the discussion.

2. It may be useful to provide some context for the low levels of malaria services for these populations. I suspect it is related to factors not presented in the paper. Large sums of money for malaria control are now slated for Nigeria. It would be useful to make a larger statement about how best to use these funds - based on the papers findings.

Author’s response: Unfortunately, determinants and context of low level of malaria services in the study area was not a focus of the study. However, they are interesting areas for future studies. We have included the point in the discussion section.

We hope that you will now find the paper suitable for publication in BMC International Health and Human Rights

Thank you.

Nkolika Uguru