Reviewer's report

Title: Caretakers' Understanding of Malaria, Use of Insecticide Treated Net and Care Seeking-Behavior for Febrile Illness of their Children in Ethiopia

Version: 0 Date: 16 Dec 2016

Reviewer: Emilie Pothin

Reviewer's report:

The manuscript entitled "Malaria Related Perceptions among Caretakers' of Children 2-9 Years Old Living in Malaria Sentinel Sites, Ethiopia: Implication for Sustained Control and Enhancing Elimination Efforts" is interesting and brings novel knowledge to the malaria community and in particular in Ethiopia by bridging some of the knowledge gap on the perceptions and knowledge of malaria among communities.

The manuscript and the analyses would however benefit some revision before readiness of publication. One of the main issue to address concerns the statistical method used for the analysis. The knowledge score being constrained between 0 and 1, the statistical method should account for this and currently the authors have used ANOVA (and linear regression, which is redundant) and do not address this. The authors should transform their outcome before proceeding to the analysis.

Further comments are available below:

Figures:
- lineplots are not adequate for the analysis - bar charts would be more appropriate, potentially CI could also be added. Use stacked bar charts where appropriate

- Spider chart makes it too complicated to read and add no additional information (bar chart typically used for scoring of a single component looking at different dimensions) - should use bar chart or other more adequate plot.

- The legends for each figure that contains results might need to be in the text rather than in legends.

- I suggest to remove "Ethiopia, 2016" from all legends

- Analysis:
Linear regression and ANOVA suggest the same analysis. Where ANOVA is referred to in the text, it implies contrast (and differences between sites). Here the objective is not really to look at the paired-differences but looking at the difference overall so I am not contrast is necessary.

More importantly, a transformation such as log/logit should be used to constrain the outputs to lie between 0 and 1. The current approach is not acceptable.

- Line 56: Format of estimates not consistent. I would suggest mean+CI instead of mean+SE. This should be consistent throughout the whole document if proportions are cited. If SE is chosen, the notation should be SE (and not St. Erro (line 56) or St.err (line 614), and so on…)

- Line 60: for results from linear regression, estimates of coefficients do not need to be cited. P-values should be enough and readers can refer to the table for more information (leaving it there is confusing to know whether it is a regression or a correlation coefficient).

- Line 85-87: the sentence is not clear (would it be better with "to provide" instead of "providing"? and a synonym for "named"? appointed?)

- Line 88: "(laboratory confirmed plus clinical) cases of malaria" should be cases of malaria (presumptive and laboratory confirmed)".

- Line 89-90: when referring to Plasmodium falciparum and Pf, there are naming conventions and it should be in italics and as return just here.

- Line 90: "accounting" should be replaced by "accounting for"

- Line 91: the number of people at risk is irrelevant as unlikely to be absolutely accurate so it would be better to round the number or write "around 61 millions"

- Line 91-101: I am not sure about the relevance of this paragraph in the context of the study. It remains very generic and not necessary.

- Line 103: "Global malaria technical strategy" could be written as "Global malaria Technical Strategy (GTS)" as its acronym is often used.
- Line 103-104: there is a mistake with the sentence, it seems incomplete with "2016-2030) vision,"

- Line 112-114: the sentence does not make sense

- Line 115: "requiring" should be replaced by "as it requires"

- Line 118: " malaria is no longer a perceived risk" could be replaced by "malaria is no longer perceived as a risk"

- Line 134: the statements affirms that "little is documented regarding community knowledge and perceptions on malaria among community reside on malaria surveillance system". However on line 126/127 it states that the detection system "lacks program elements to capture community side factors such as local knowledge and perceptions". These sentences seem to contradict each others. These should be rephrased.

- Line 136: this is the place in the manuscript to define the study participants, i.e. describe the fact that the study focuses on children and their caretaker will be interviewed.

- Line 149: the sentence starting with "Health centers are usually…" This sentence provides details irrelevant to the study that could be dropped.

- Line 154: do you mean that sites were "added" instead of "replaced"?

- Line 154/155: "(to meet local health system)" - what does it mean in the context of the study?

- Line 159: Plasmodium vivax should be in italics. Also vivax was not mentioned in the introduction and appear in the material & methods, should this not be included in the introduction or not mentioned at all?

- Line 161: Plasmodium falciparum should be in italics

- Line 168: the acronym should be "ELISA" and not "EIA"
- Line 168: "anti-body" should be "antibody"

- Line 171: the sample size calculation is not really necessary in the text especially when it was derived for the endemicity city rather than this study. This should refer to the study design of the endemicity study explained somewhere else.

- Line 174: "equal number" is stated - but how many should be mentioned.

- Line 174: "to assess caretaker's perception" should be replaced by "to assess their perception"

- Line 174: Need some consistency on numbers format if come is used it should be used throughout the whole document so here it should be 1,038 instead of 1038. Check the whole document for consistency.

- Line 170-176: It is not really clear whether the text refers to the endemicity study or to this study described here. The paragraph needs restructure with focus on this particular study and refers the other study when needed.

- Line 179: "children together with respective caretakers" should be replaced by "children accompanied by their caretaker"

- Line 181: "The sample size (1038 children with equal numbers of caretakers)" should be replaced by "The sample size (1,038 participants)"

- Line 182: "Second" is mentioned when "First" is not in the document. Please change for consistency. Could you "additionally" for instance.

- Line 181-186: The design of the study is not very clear. If equal number of participants is considered in each of the 8 health posts that makes 1038/8 which is not an integer. Could you be clearer on the design?

- Line 187 'parents' are mentioned while on line 190 it is stated parents/caretakers. This should be defined and described once at the beginning and then the same terminology should be used to avoid inconsistencies.
- Line 191: "Up on arrival, parents/caretaker were given detail information about the study and signed written consent form for participation in the interview, only when agreed to participate" should be replaced by "Upon arrival, caretaker were given detailed information about the study and signed written consent form were sought when they agreed to participate to the study."

- Line 199-200: Rephrase the sentence only stating that responders were not probed. The list was pre-determined. Answers were recorded wither if corresponding to items on the list or open text otherwise. Only at the end they were probed if they had anything else to add.

- Line 205: Remove "nine"

- Line 206: Replace "specific" by "most important"

- Line 212: "this knowledge score was used for further analysis using ANOVA and linear regression" This sentence should be removed as both these methods are equivalent so you should mention one or the other and this should appear in the statistical analysis section and not here.

- Line 219: I believe "enumerators" should be replaced by "interviewers"?

- Line 222: inconsistencies by using terminology caretaker/parents- be consistent throughout the whole document.

- Line 226-233: This section needs to be revisited as the analysis needs to change. Log transformation should be used and only one analysis should be stated (ANOVA or linear regression as it does the same analysis). I believe contrasts are not necessary here. Statements on correlation, chisquare (& t-test if used) should be added.

- Line 239: How many individuals took part to the interview? The text states 702 but the tables states 709 and it seems the analyses are derived on 709. Please check this and correct adequately.

- Line 257: what does the surrounded R refers to?
- Line 262: Same as Line 239. Is the sample size 702 or 709?

- Line 266: "sign" should be "signs"

- Line 271: it is not clear anywhere in the document what the expected manifestation of malaria illness should be. Please define these somewhere.

- Line 278: format of the legend are not consistent between parenthesis "(" and square parenthesis "[") and the translations.

- Line 287 & 291: chisquare not mentioned in methods and only p value might be useful if the chisquare value can be stated somewhere else. Revisit the format to be consistent when you mention results from Chisquare tests.

- Line 296: "children caretaker" should be replaced by "respondents"

- Line 298: same as line 271. Make it clear what is and what is not a misconception

- Line 299-301. This sentence repeats the same idea as the sentence above.

- Line 328: revisit the format for citing correlation and mention it in the method.

- Line 330: is it pearson or spearman correlation?

- Line 347: I would merge this section with the section below and I would add a bar chart comparing score values instead of table 4 comparing sites 2 by 2 (has little interest here).

- Line 397: "knowledge of the basic signs" should be replaced by "the proportion of individuals knowing about the basic signs"

- Line 400: Levels of endemicity could be added as a covariate in the ANOVA (looking at MAP estimates if not available otherwise for instance). Does it make much difference between the sites?
- Line 411: what is an unacceptably low knowledge of correct malaria? What is the estimates? It should be the proportion of people knowing about… (same as line 397).

- Line 424: "Unexpectably" instead of "unusually"?
- Line 425: "geographically widespread" instead of "multiple"?

- Line 424-438: it seems that the idea from this paragraph is similar as the one in the paragraph above. Could this paragraph be shortened and combined with the preceeding one?

- Line 443: "adherence" should be replaced by "adhere"

- Line 465-471: Not sure about the relevance of this paragraph

- Line 474: "fives" should be replaced by "five"

- Line 492: Statements should be made on the use of a score and its limitations.

- Line 575-581: A statement on altitude needs to be added in the text if this is mentioned in the discussion

- Line 587: do not use "and so on" in the text.

- Line 612-617: same as Line 56 be consistent in the format for your estimations all different in this paragraph. Consider using CI instead of SE.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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