Reviewer’s report

Title: Health system strategies to increase HIV screening among pregnant women in Mesoamerica

Version: 0 Date: 06 Feb 2017

Reviewer: Shuhei Nomura

Reviewer’s report:

I would like to express my great respect to you work. While this is a valuable report regarding HIV screening in ANC services in the context of Mesoamerica, I have significant concerns about regression model building (see comment below for Line 224); it is unclear what framework did authors assume for HIV screening in ANC settings (see comment below for Line 99-107); and authors did not provide any explanations and interpretations for Table 1 and 2 in results section.

I do think this paper should be fully re-organized and add much more information for, particularly the above points. English should be also improved. I am sorry that I cannot be positive on this occasion, but hope you would find my following comments.

Major comments:

Abstract

* Introduction should be re-organized in the context of ANC services.

Background

Line 99-107:

* A framework for HIV screening in ANC settings is unclear. What is a mechanism in which low coverage of ANC affects HIV screening; or high coverage of ANC contributes to HIV screening? Authors should present their assumption or provide evidenced framework.

* It is very unclear from what context authors aimed to increase the HIV screening rates. Low rate of HIV screening in ANC? HIV screening in low ANC coverage? High prevalence of mother-to-child transmission?

Methods

Line 122-136:
Eligibility is unclear. On the line 122-123, it reads 'a household must have at least one women 15 to 49 years of age, or a child under the age of five'. Meanwhile, on the line 130-131, it says 'women with children aged 0-5 years'. Please clearly describe who participated in the study and answered what questionnaires.

Line 143-147:
Authors employed the 'backward elimination' method in variable selection in the regression modeling, and mentioned nine variables (eg, age, marital status) were initially considered in this study as potential covariates. On the other hand, according to Table 2 and 3, all these variables were included in the final models. Are there any variables that were not significant and excluded from the final models (but were not mentioned) in the text? Or was every variable initially considered really significant and remained in the final models?

Line 154-174:
The description of regression estimates of probability of HIV testing under different scenarios is wordy and should be improved. Particularly, authors repeated same phrases in line 157-158 and 168-169.

Results
Line 174:
What percentage of the total population in reproductive age did the 24,020 accounted for in the six countries?

Line 176:
Please add a table for demographic of all the study participants (ie, 24,020 women)

Line 178:
Provide number (and %) of the study participants who received ANC.

Line 179-180:
Could it be possible to provide confidence intervals or uncertainty intervals?
There are many unclearness in Table 1. What does 'weighted %' indicate?

What does the confidence intervals present? AOR's confidence intervals?

Some reference categories have the 95% CI, but others do not - very confusing.

P-values should be provided.

Authors did not describe and interpret anything from Table 1 in the text.

As same with Table 1, what were AOR adjusted for?

P-values should be provided.

Did authors consider multicollinearity in regression model? If all the variables in table 2 were mutually adjusted, because of the large number of variables, multicollinearity should be checked and addressed in the text.

Why did authors classify no. of antenatal care visits into 1-3 and 4+? Readers may be interested in rather comparison of 1, 2, 3, and 4+.

As for attendant of antenatal care visit, 'other' includes what?

Again authors did not describe and interpret anything from Table 2 in the text.

As same with Table 1 and 2, it is unclear what covariates were adjusted for the estimates of AOR.

P-values should be provided.

I wonder if it is appropriate to include all the participants from the different six countries in the single model. As a different country has a different context in ANC and HIV screening, the relationship between covariates and reception of HIV test (in terms of both magnitude and direction) might be different. If so, the regression model needs to be constructed separately for each country, or an interaction term between country and other covariates must be considered. Authors should justify this point in the limitation section. The same logic can go for Table 1 and 2.
* Multicollinearity should also be checked.

Line 247-248 (and 298-299):

* Based on the study findings, authors concluded that 'increasing women's educational level can increase their probability of being screened for HIV during pregnancy', but what mechanism can support this logic?

Line 314-320:

* This paragraph addresses health care services for child mortality and maternal health rather than the HIV screening during the ANC. Authors should not go beyond their research findings and topic.

Line 326:

* One of the authors' implications is 'to ensure every woman receives at least four ANC services'. As far as I understand, this implication came from the finding that those who had four or more ANC visits had higher odds of having received an HIV test through ANC than those with less than four visits. However, this classification of the number of ANC visits (1-3 versus 4+) was arbitrarily developed by authors. Authors therefore should try other classifications.

Line 325-328:

* It is quite unclear why authors picked up these two as main implications of this study from their many findings. Logic should be carefully explained.

Line 339-344:

* The conclusion is too general and not fully supported by the findings.

Figure:

* Please make sure each figure can standalone.

Minor comments

* En dash (-) and hyphen (-) are confused throughout the text.
*   Formatting is not consistent at all throughout the text. Spaces between paragraphs are missing in many parts of the manuscript. Some paragraphs start with a tab space, but others not.

**Level of interest**
Please indicate how interesting you found the manuscript:

An article whose findings are important to those with closely related research interests

**Quality of written English**
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.
I agree to the open peer review policy of the journal