Reviewer's report

Title: Spatial analysis of factors associated with HIV infection among young people in Uganda, 2011.

Version: 1 Date: 24 March 2014

Reviewer: Alex Opio

Reviewer's report:

I have reviewed the manuscript and here are my comments.

Overall, the topic of study is very important and appropriate. The study is well justified and does complement the many epidemiological and behavioural studies on HIV/AIDS. The authors should be commended on this because if the manuscript is eventually published, it will make good contributions.

However, the following are the specific comments:

1. Is the question posed by the authors well defined? Yes
2. Are the methods appropriate and well described? Yes
3. Are the data sound? Yes and no. I am still not clear how the HIV Sero-status was obtained given that the 2011 Uganda Demographic and Health Survey did not perform HIV testing.
4. Does the manuscript adhere to the relevant standards for reporting and data deposition? Reasonably well.
5. Are the discussion and conclusions well balanced and adequately supported by the data? Some, but not all.
6. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes
7. Do the title and abstract accurately convey what has been found? Fairly well, but requires revision.
8. Is the writing acceptable? Yes, but some revisions are required especially on the conclusion and recommendations (see the comments in the track changes).

Specific comments:

Discretionary Revisions
None.

Minor Essential Revisions
1. You can only transmit HIV but not AIDS. Therefore, delete the word AIDS.
2. Multiple sexual partnership: What is the operational definition of this? Is it having 2 or more sexual partners in the last one year?
3. Change the language; OR is estimated and not reported.
4. Provide the operational definition of “Young coital debut”.

**Major Compulsory Revisions**

i. Abstract section: What is the source of the HIV data. There was no HIV testing during the 2011 UDHS.

ii. Abstract section: This sentence needs to be re-worded; interventions cannot only be focused in this Kampala area because other studies have shown other regions such as North central Region to have high HIV prevalence.

iii. Methodology section: Could you please describe how the HIV data was obtained. It is not clear to me where the HIV data came from or the methodology used to obtain it.

iv. Results section: a; Describe in more details the selection procedure used to obtain the sample. Was the method used a random procedure? b; I am having difficulty in understanding how the figure 7,518 of HIV database was arrived at. Please make it clearer. 1; Fig 1 shows that 21174 women and 2295 men contributed to the 31698 HIV dataset; when you add women to men, I get a figure of 23,469 and not 31,698. Please clarify. 2; To get the final dataset of 7518 in Fig 1 you said you excluded 26989 people age <15 and > 24 years, as well as 1343 with missing data; this brings the total excluded from the initial 31698 dataset to 28332. This does not add up. Clarify. 3; Explain how you got the 533 HIV sero-positive from the final dataset of the Uganda Demographic Health Survey. 4; The term sero-positive means the HIV status was determined through blood testing, and yet there was no blood testing for HIV during the 2011 UDHS. Please explain the procedure used.

v. Conclusion section: Some recommendations are not appropriate, for example, the one saying “Since the central and eastern regions were identified as the most probable regions for HIV/AIDS cases, efforts by health authorities should be concentrated in these regions”. This is not an appropriate recommendation. Uganda’s epidemic is generalized with all regions affected though heterogeneously. Therefore, making a recommendation to concentrate the interventions only in some regions is not appropriate. I would rather recommend that “these regions be further studied to identify why they are more affected and then those identified factors be addressed.

vi. Discussion section: Please take note of the following: 1; Recommendations should be based on the findings of this study. For example, the authors make recommendations to address fishing communities. In this study, no data is presented on fishing communities. 2; The recommendations and conclusion are not focused and need to be re-written.

**Level of interest:** An article of importance in its field
Quality of written English: Not suitable for publication unless extensively edited

Statistical review: No, the manuscript does not need to be seen by a statistician.

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