Reviewer’s report

Title: Spatial Analysis of HIV-TB Co-clustering in Uganda

Version: 0 Date: 26 Apr 2019

Reviewer: Suparna Das

Reviewer's report:

Thank you for this opportunity. The study is an important piece for Uganda or for any developing country which is suffering from similar health comorbidities. I believe that the paper is an important contribution to the field which struggles to gauge spatial health issues thus inform prevention intervention. Having said that based on my experience as a spatial statistician, I felt that the analysis suffers from tremendous redundancies. The paper should be simplified. The idea is simple - to identify spatial clusters of TB-HIV coinfections for prevention intervention. The outcome is lost in translation, where the zeal of the author(s) were primarily evident in using several methods to say the same thing. While, colored maps and cool graphs grab people's attention, we must be careful of the implications of statistics. Retrospective space time analysis using SaTScan would identify space-time clusters. I am guessing the author(s) used discrete Poisson probability model to identify spatial clusters (it is not clearly mentioned in the method section). Then, what is the point of LISA? It does the same thing. Global Moran's I can be used to identify whether the data was spatially autocorrelated or not to justify the spatial cluster analysis and that would be sufficient.

I am not sure if data is available that can be matched - people who have HIV and coinfected with TB. If not I see the reason for bivariate Moran's I. Though it is not the most effective way of identifying spatial clusters. I would rather use a spatial regression, controlling for other explanatory variables too. since the author(s) used aggregated data, there is no way to know how many people are/were actually coinfected (possible only in clinical trials and through active surveillance data). Regression (frequentist or Bayesian) can only show location based association. I think using Bivariate Moran's I to say that is risky.

With multiple methods, the results became confusing. Statistical guidelines across nations are strictly opposing use of p values as measure of statistical significance. I am sure this journal is using the same guidelines, the authors should check them. More over p < 0.05 is used as both significant and not significant in the result section. This error completely changes the results. Attention needs to be paid. Considering Uganda may not have too many studies which has the capacity to assist in area based prevention intervention, I would recommend the author(s) take the analysis seriously and understand the implications of what the statistical methods are capable to do or not, use them wisely.
The methods used by the author(s) are not new, including the formula in the method section is not required, they can just cite the paper, which they have not. This will help simplify the manuscript as well.

Error! Reference source not found - this keeps coming, guessing some kind of formatting error. It is distracting though.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

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.

No

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I am able to assess the statistics

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