Reviewer's report

Title: An investigation of factors associated with the health and well-being of HIV-infected or HIV-affected older people in rural South Africa

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Reviewer: Lisa Kakinami

Reviewer's report:

Dear editors of BMC Public Health. Thank you for the opportunity to review the manuscript "An investigation of factors associated with the health and well-being of HIV-infected or HIV-affected older people in rural South Africa". The article is interesting and well-written, but I have a few major comments that I would like the authors to address before this manuscript is published.

I have outlined my comments according to the journal's guidelines for categories:

Major compulsory revisions:

1) The abstract and objectives of this manuscript present the research question as a study comparing the health of HIV-affected persons relative to HIV-infected persons. However, all of the analyses are stratified by HIV status, thus no comparisons or conclusions based on HIV status can be made. The authors justify this stratification in the first paragraph of their results section based on the fact that many of the demographics differed between the HIV-infected and HIV-affected persons. Based on table 2, age, education, income, marital status and sex are significantly different between HIV-infected and HIV-affected. However, I believe all of the significant differences are largely due to the sex and age differences between groups. It is expected that a significantly older HIV-affected group would have a different source of income, marital status, and education, than a younger HIV-infected group. If the authors wish to maintain the stratified analyses, revisions to the background and discussion are warranted to reframe the research question. However, I strongly advise against this, because by conducting only stratified analyses, the authors prevent themselves from being able to make comparisons between HIV-affected and HIV-infected persons, and the manuscript is less compelling. I recommend that the authors instead re-analyze all the groups in a single model, with an independent predictor of "HIV status" in order to make comparisons based on HIV status. The authors may wish to investigate some potential interactions based on sex or age.

2) The first paragraph of the discussion describes how the QoL and health status of the HIV-infected is better than that of the HIV-affected. I believe these statements are based on Table 3 results, but it is unclear from the table if the results are adjusted for age and sex. Based on Table 2, because the HIV-infected and HIV-affected groups are significantly different in age and sex, it is inappropriate to draw conclusions based on an unadjusted t-test or comparison of medians.
3) It is unclear to me why the results in Table 3 presented the outcomes as a continuous measure from 0-100, yet the main adjusted analyses (Table 4-6) were ordered logistic regression with the outcome in quintiles. I would have thought maintaining the continuous values for the outcomes in a multivariable linear regression would have been interesting. If the authors feel that it is more important to show the risk of moving from one health category to the next, some more information on the score distribution in the quintiles based on HIV status would have been interesting. I think this would make a more interesting Table 1, than the current table 1 which presents demographics stratified by sex.

4) A conceptual difference that I wonder about is the difference in health based on being HIV-affected because a family member is currently living with HIV, and being HIV-affected because a family member has passed away from HIV. I am not familiar with the WHO health tools, but I would imagine that having a family member recently pass away from HIV would have different effects on QoL than someone that is the head of household caring for someone living with HIV. The authors do not discuss the differences between groups 3 and 4 at all, and I think this is something that should be further analyzed and discussed in the manuscript. If there are no additional details on how the person is HIV-affected, then this needs to be described in the limitations section.

Minor essential revisions:
1) The first full paragraph on page 15 starts with "In contrast to these study results...". Please clarify what study results you are referring to.

2) Some other household details would be nice (if available). For instance, how many members in a household, and how many HIV-infected persons in a household of an HIV-affected person? These variables might also be important to control for in the analysis.

3) The description of the composite health score should be a bit more in-depth. It is not clear to me if all the questions in the QoL and functional ability questionnaires were analyzed with IRT, or if just a sub-set was.

4) I think the background can be organized a bit better. I recommend moving the paragraph that starts with "Little is known..." after the first paragraph, and moving the first few sentences of the second paragraph ("The population in our study area... given the high unemployment rate among adults.") to the first paragraph of the methods.

5) I feel that the manuscript is lacking a focused section on statistical analyses. Different pieces of analytic consideration are sprinkled throughout the methods section, and should be centralized in one section. The authors should make it clear which tables are adjusting for variables in this part of the text, as well as in the relevant tables.

Discretionary revisions:
1) The methods indicate that within six months of a death, a validated verbal
autopsy is performed by trained nurses. If the data collection is only once a year, how is a death verified within six months?

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

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