Author’s response to reviews

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

Authors:

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Author’s response to reviews: see over
13 December 2011

Dear BMC Public Health Editors,

Thank you for considering our manuscript “An investigation of factors associated with the health and well-being of HIV-infected or HIV-affected older people in rural South Africa”, and inviting us to respond to the reviewers comments. We have responded to the reviewer’s comments point-by-point.

The reviewer’s comments were highly appreciated and have helped to greatly improve our manuscript. We look forward to further hearing from you.

Yours,

M. Nyirenda
Reviewer's report - 1

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:

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.

We have carried out additional analyses as recommended by reviewer 1. In Table 4 and commented upon on pg 12-13, we have compared the health and well-being of participants by HIV status adjusting for other factors. We further tested for interactions between age and gender, and between age and HIV. None of these interaction terms were statistically significant.

We have added a new paragraph under discussion (pg 15-16) to discuss some of the results presented in Table 4. “Our findings suggest the effect of being HIV-affected differs between those who are affected via having an adult HIV-infected adult household member and those affected via an HIV-related death of a household member. Older people who had lost an adult due to HIV were more likely to be in poor physical and emotional health than those with a living HIV-infected adult (Table 4). Death of an adult child is likely to take its toll on the physical health of older people who had to care for the adult during the time of sickness and may additionally be emotionally affected upon death. Death of an adult child may furthermore place greater household responsibilities on the older person as there may be loss of household income from the deceased adult. Thus death of an adult child is likely to strain the older person physically, emotionally and financially, which in turn is likely to contribute to their poorer physical and emotional health relative to older people just living with an infected adult. “

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.

In the additional analyses we have performed comparing the health status of HIV-infected to HIV-affected people (Table 4), the difference in health status and QoL between HIV-infected and HIV-affected participants has been confirmed. We have added these sentences at the end of the first paragraph under the subsection 'correlates of health and well-being among study participants’ (pg12-13): “Overall,
adjusting for gender and an interaction term of age and HIV status, compared to HIV-infected participants HIV-affected people were statistically significantly less likely to have high functional ability (aOR 0.27, 95% CI 0.14-0.50) and health state (aOR 0.32, 95% CI 0.18-0.58). HIV-affected participants were further more likely to have low quality of life compared to HIV-infected participants (aOR 0.58, 95% CI 0.33-1.03), but this did not reach statistical significance.”

The second paragraph in the discussion section is thus based on both the medians test in Table 3 and the logistic regressions adjusting for gender and age.

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.

The purpose of Table 3 was to provide an indication on the scale of 0-100 of where the study participants fall by HIV status. In the logistic regression analyses we were more interested in showing factors associated with moving from one category to the next. We agree providing the quintile distribution may be interesting, but in order not to clutter the articles with too many tables we now provide the quintile distribution tables as an appendix.

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.

We agree with the reviewer that being HIV-affected via death of an adult child is likely to impact the health and well-being of older people differently from caring for an adult HIV-infected person. In Table 4 we present results of analyses comparing group 3 to group 4 participants. As the results indicate, those affected through having an HIV-infected adult (group 3) in their household had higher odds of better health and well-being than older people affected via HIV-related death of an adult (group 4). We discuss these results on page 15-16.

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.

This paragraph in view of the reviewer comment has been rewritten (pg 18, paragraph 1) and made more consistent with the results presented in table 7 (pg 34).
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<td>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.</td>
<td>We appreciate the reviewer wanting additional household variables added to this analysis. In this paper we wished to focus on presenting the results from the WOPS. Comparisons with people not in WOPS and further details from the household surveillance would add another layer of results which we have little space for. We would thus suggest doing such analyses in a separate paper. However, we now make it clear in the discussion (pg 20) that in this paper we are not allowing for other factors at a household level which may be of relevance.</td>
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<td>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.</td>
<td>We have provided additional details not just about the composite health score but for the functional ability and QoL as well to clarify what was used to compute each of the measures (pg 8-9).</td>
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<td>4) I think the background can be organized a bit better. I recommend moving the paragraph that starts with &quot;Little is known...&quot; after the first paragraph, and moving the first few sentences of the second paragraph (&quot;The population in our study area... given the high unemployment rate among adults.&quot;) to the first paragraph of the methods.</td>
<td>As recommended by the reviewer we have reorganised the background section. The last sentence of paragraph one has been moved and joined to the paragraph which had started with “Little is known.....”. However, we then deleted that sentence as it was a repetition of what was in the last sentence of paragraph 1 (the new paragraph 2, pg2). The passage stating with “The population in our study area....” Has been moved to the methods section as recommended (Pg4).</td>
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<td>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.</td>
<td>The methods section has been reorganised and a focused analytical methods section created (pg7). A description of the outcome and control variables follows this section (pg8-10). All control variables are indicated in the tables or explained were relevant.</td>
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**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?

We have moved the 2 sentences, starting with “Once a year...” and the other “Separately collected annually....” to the end of this paragraph just before “Details about the Africa Centre .....” (pg 3-4). This should make it clear that deaths are reported in biannual surveillance rounds and within six months of death notification a VA is conducted. Verbal autopsies happen throughout the year.

**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.
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<th>Reviewer's report - 2</th>
<th>Authors response</th>
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<td>A well-written manuscript reporting on a neglected topic i.e. the health and well-being of older adults living in a society with a high prevalence of HIV/ AIDS.</td>
<td>➢ On Pg 5 at the end of the first paragraph of the section describing WOPS, we have added a sentence to help clarify that only three measures (WHODAS, WHOQol and HSS) are utilised in this report: “Data collected in the anthropometric measurements and the blood specimen were not used in describing the health and well-being of older people as that was outside the scope of the present analysis.” ➢ We have added the following sentences in the limitations sections (pg 19-20) on why HIV testing was not done. “Although a blood specimen was collected from all participants as per study protocol these specimen were not tested for HIV antibodies. All participants were informed that no HIV testing would be done on the specimen. However, an earlier study from our study population showed that HIV prevalence in the population 50+ in 2008 was 9.5% (95% CI 8.4 - 10.7), with an incidence rate of 0.5% (95% CI 0.3 - 1.0). Therefore, we could not have had many infected people in groups 3 or 4, to significantly bias our findings.”</td>
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| Minor Essential Revisions Methods - WOPS: | ➢ To improve clarity we have rewritten the last 3 sentences of this last paragraph. The new sentences read: “Comparing the health scores presented in Error! Reference source not found. for men who are HIV-infected to women who are HIV-infected, and likewise among the HIV-affected participants, revealed that men reported better health than women in both HIV-infected and HIV-affected participants. Further tests of these differences (data not presented) showed that they were statistically significant for functional ability (p-value<0.001) and health state score (p-value=0.002) among HIV-infected, and only for functional ability (p-value <0.001) among HIV-affected participants.” (Pg12) ➢ Caption and footnotes for Figure 1 added ➢ We have added a comment (pg14) on the Table 6 finding regarding income and HSS: “Adjusting for other factors in the model, HIV-infected older people who had some source of income compared to none were significantly more likely to report a high health state score (Error! Reference source not found.).” (pg 14) |
| The authors should clearly state at the outset that this report is mainly on WHODAS, WHOQoL and HSS (Reference is made to anthropometric measurements performed and blood drawn for laboratory measurements but these results are not presented). It is assumed that the HIV affected groups (3 and 4) are HIV negative: It would have been helpful if the authors expanded on why the HIV status of respondents in these groups were not known since blood was taken. | |

Results: p11: Last paragraph, last sentence: ”These differences were statistically significant different for the WHODAS..............”. Please rewrite this sentence to improve clarity since the statements made do not correspond to the results shown in Table 3. p11: Figure 1 in need of a caption. p12 and Table 6: It is worthwhile to comment that HIV-infected older people with some source of income were associated with the likelyhood of having a high HSS score after adjusting for other factors. | |
<table>
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<th>Discussion:</th>
<th>We have made this change (rounded off 87.5 to 88). (pg 14)</th>
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<td>p12 paragraph one: ..(median by gender and HIV status from 69 to 88). (87.5 rounded off to 88).</td>
<td>The paragraph on pg 18 in view of the reviewer comment has been rewritten and made more consistent with the results presented in Table 7. The paragraph now reads: “Being in the highest two household wealth quintiles was strongly associated with quality of life, even after adjusting for other factors in HIV-infected participants. This is consistent with a study among older people aged 50+ in Pune district, India, which found that older people in higher household wealth quintiles were more likely to report better quality of life than those in lower wealth quintiles. However, our results and context differ from the Pune district study in that in their case there was no ready access to government cash transfers and they did not find a significant association between gender and quality of life. In our study area government cash transfers in the form of old-age pensions are widely available and we find a significant association between gender and quality of life, as well as between having some income source and quality of life. Most of this income which is linked to the quality of life of older people in rural South Africa is from non-contributory government cash transfers or grants, therefore rapid increases in the proportion of older people poses serious challenges to their well-being by threatening the sustainability of the cash transfers programme.”</td>
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<td>p15, last paragraph: ”In contrast to these study results,...: this statement is unclear: consider removing and retain the rest of the sentence. The statement made in this (the first sentence) does not appear to be entirely consistent with Table 5).</td>
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<th>Limitations</th>
<th>As pointed out by the reviewers this statement was not consistent with the results presented. It has since been deleted. The first sentence of this paragraph has been rewritten as follows: “We urge caution in the interpretation of our results, particularly the association of age with poorer functional ability and health state because of small-numbers, especially in the oldest age group, and limited statistical power.” Pg 20</th>
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<td>p17, first paragraph: The data presented do not support the following statement: &quot;The findings suggesting those aged 70+ may have better health status than those aged 50-59...&quot;</td>
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<th>Level of interest:</th>
<th>An article of importance in its field</th>
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<tr>
<td>Quality of written English:</td>
<td>Acceptable</td>
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<tr>
<td>Statistical review:</td>
<td>No, the manuscript does not need to be seen by a statistician.</td>
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<tr>
<td>Declaration of competing interests:</td>
<td>I declare that I have no competing interests.</td>
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<td>Reviewer's report - 3</td>
<td>Authors response</td>
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<td>Minor Essential Revisions: The paper will read better with some line editing. Major compulsory Revisions are all indicated on the attached comments.</td>
<td>This sentence has been rephrased and some factors that predispose older people to HIV infection have been included. It now reads: Furthermore, older people are at risk of becoming HIV-infected themselves, with additional numbers coming from HIV-infected adults on treatment living longer. (pg4)</td>
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<td>The following comments raised that need to be addressed: Page 1 – last sentence needs to be rephrased. “Furthermore, older people are likely to be HIV-infected themselves due to continued sexual activity.” This sentence assumes that sexual activity should end at a certain age. Does sexual activity <em>per se</em> predispose to infection – what are the predisposing factors to HIV infection in this age group?</td>
<td>Additional sources for this statement have been added. Pg 2.</td>
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<td>Page 3</td>
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“In a few studies that have been conducted in South Africa …..” only one source is given for reference. “While others have focused solely on HIV infected ….” Only one source is given for reference” What are the sources for the studies referred to? | 
Page 4 | Full reference has been added. (pg 4) |
| Page 5 | Paragraph 1 “Having at least 100 people in each group allowed us to test for statistically significant differences ….” What was the power of the study? | Differences were considered to be statistically significant at 5% level of significance. |
| Page 10 | Ethical clearance “Oral informed consent was obtained for participation …..” it is not clear as to who it is that gave consent? Ethics approval from the Biomedical Research Ethics committee is mentioned only for the SAGE Well-Being of Older People Study (WOPS). Was ethics approval for other aspects of the study not sought? | We have revised this section to clarify informed consent and ethical approvals. For the Africa Centre’s surveillance, oral informed consent is obtained from a proxy household respondent for the household and demographic surveillance. For the individual sexual behaviour and HIV surveillance written consent is obtained from all individual participants. Ethic approval for the Africa Centre Surveillance as well as for WOPS were obtained from UKZN’s biomedical research ethics committee. (pg11) |
| Page 12 – first paragraph states that: “The oldest age category in both HIV-infected and HIV-affected older people was statistically significantly associated with lower odds of better WHODAS and HSS”, yet Page 17 states “The findings | The odds ratios on page 12 were appropriately interpreted. The statement on page 17 was thus an error and has been removed. The whole paragraph has been rewritten as follows: “Not surprisingly, higher age is associated with poorer health status and functional capacity.” |
suggesting those aged 70+ may have better health status than those aged 50-59 ....” This is contradictory. Is the interpretation of the odds ratio correct?

follows: “We urge caution in the interpretation of our results, particularly the association of age with poorer functional ability and health state because of small-numbers, especially in the oldest age group, and limited statistical power.” Pg 20

Page 15
Discussion
What effect has the sample size of men had on outcomes? – There were fewer men than women. A number of subgroups have five or less people. What is the likelihood of chance findings?

The proportion of men to women in our study is consistent with the proportions in the HIV Treatment and Care Programme, which provided the sampling frame for three of the four groups. In the interaction tests of age and gender, HIV status and gender, we did not find a significant interaction effect of gender on the outcomes.

Page 18
In conclusion
“Not same amount of resources have been devoted to care and management of chronic conditions associated with advancing age such as hypertension, diabetes....” The care and management of chronic conditions is mentioned in the conclusion but has not been mentioned in the paper. What is the evidence for such comparisons? Was there a difference in the burden of chronic conditions that may impact on function and quality of life between the affected and infected? There are more participants in the age 70+ in the affected group while the infected group. Last sentence does not clearly state what the authors are referring to. “This however is the first time this is being shown,...”

As mentioned in the background, we were not able to find any literature discussing the health and well-being of older people in South Africa comparing HIV-infected to uninfected people. What we are arguing here is that chronic conditions such as hypertension and diabetes are prevalent among both HIV-infected and uninfected older people, but the infected benefit from the increased attention they receive as part of their HIV treatment and care. According to a study by Barnighausen et. al. (2007), obesity and hypertension were prevalent among HIV-infected people (women 25-49, men 25-54) in rural South Africa.

Page 37
Table 5
Wealth quintiles
Error in Fifth quintile for HIV-Infected: Adjusted OR 3.85 [1.36-0.92]
This is a useful and relevant study. A major omission in the study limitation is that these findings are limited to the study population. This is a population under constant surveillance and not representative of the general older population of South Africa. The experiences and access to health care facilities of this population can be generalized. Access to HIV management is generally poor in the older population compared to the younger age group in South Africa.

We have corrected the typographic error. It was supposed to be: OR 3.85 [1.36-10.92] (pg 34). we have as well made the suggested inclusion to the limitations of our study as follows:
“Furthermore, we are limited in generalising our findings to the general older population of South Africa since our study participants came from a population under surveillance and had ready access to a comprehensive HIV care and treatment programme. Our results nonetheless make an important contribution to understanding the correlates of health and well-being of older people in rural South Africa.” (Pg20)

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
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<td>4. Does the manuscript adhere to the relevant standards for reporting and data deposition?</td>
<td><strong>Yes</strong></td>
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<tr>
<td>5. Are the discussion and conclusions well balanced and adequately supported by the data?</td>
<td><strong>Partially</strong></td>
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<td>6. Are limitations of the work clearly stated?</td>
<td><strong>Partially</strong></td>
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<tr>
<td>7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?</td>
<td><strong>Partially</strong></td>
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<td>8. Do the title and abstract accurately convey what has been found?</td>
<td><strong>Yes</strong></td>
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<td>9. Is the writing acceptable?</td>
<td><strong>Yes</strong></td>
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**Level of interest:** An article whose findings are important to those with closely related research interests  
**Quality of written English:** Needs some language corrections before being published  
**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.  
**Declaration of competing interests:** I declare that I have no competing interests