Author’s response to reviews

Title: Sexual HIV risk behaviour and associated factors among pregnant women in Mpumalanga, South Africa

Authors: Karl Peltzer (kpeltzer@hsrc.ac.za)

Version: 2 Date: 2 December 2012

Author’s response to reviews: see over
We would be grateful if you could address the comments in a revised manuscript and provide a cover letter giving a point-by-point response to the concerns.

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Non-financial competing interests
Are there any non-financial competing interests (political, personal, religious, ideological, academic, intellectual, commercial or any other) to declare in relation to this manuscript? If so, please specify.

(4) Could you also please confirm that you are the sole author on this study? We noticed that the methods section indicates that a research team conducted the interviews in Zulu; however, this team was not mentioned as authors or in the acknowledgments section. We would greatly appreciate it if you could confirm that you are the only author on this manuscript.

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With best wishes,

Reviewer's report
Title: Sexual HIV risk behaviour and associated factors among pregnant women in Mpumalanga, South Africa
Version: 1 Date: 21 November 2012
Reviewer: Nazarius Mbona Tumwesigye
Reviewer's report:
MINOR
1. An English check needed. See first second of abstract. May [be] explained. The[ be] is left out
Response: Corrected

2. 2nd second sentence of methods on page 1 should. Systematically… can be better stated as a women were selected using systematic sampling. Then details like a one in two systematic sampling procedure was used…. Can be placed in the main text.

R: Antenatal women were selected using systematic sampling from 48 primary care clinics and community health centres in Nkangala district

(SD 1.6)). No need for two bracket on page 2
…did not accompany[her] to antenatal care...

R: Corrected

3. 1st para page 3. What is the proportion of sero conversion among pregnant
women after the first visit?

R: In South Africa, it is estimated that the proportion of mother-to-child transmission (MTCT) from mothers who seroconverted after their first antenatal visit was 26% in 2008 [5].

4. Page 4. Convenience sampling of the 48 of 74 clinics may have caused a bias in the results. We don’t know how they selected differed from the non-selected. You should state what really forced you to do the convenience and state this potential source of bias in the limitations.

R: 48 primary care clinics and community health centres systematically sampled from the 74 clinics in all the 6 sub-districts of the Nkangala district.

5. Page 4 last para. You mentioned different tribes. Do they all understand and speak Zulu well?

R: The interviews were conducted in Zulu, Swati and Ndebele (main spoken languages, which are also well understood by other ethnic groups) and took 45 minutes to complete.

7. In the discussion 1st paragraph the author says ..sexual risk behavior was frequent…. Probably he meant to say ..... was quite prevalent

R: Corrected

8. In the same paragraph of the discussion the author says “Interestingly, this study found that sexual HIV risk behaviour was higher among pregnant women who were HIV positive”. This was in comparison with who? Not sure why it was interesting. Some HIV+ people may not see anything to fear since they are already HIV+.

R: Whole discussion reworked, as below

Further, the study found that being single and alcohol use were associated with multiple sexual partners. Other studies in South Africa also found that drinking prior to pregnancy recognition or during pregnancy and being single was associated with having a greater number of sexual partners or a greater history of sexual risk-taking [26,27]. Moreover, fewer antenatal visits, being HIV negative and not having used alcohol were associated with unprotected intercourse. This seems to show the importance of antenatal care attendance, which can be used to reinforce condom use. Also other studies [28,29] show that being HIV positive was associated with protected sexual intercourse. Previous studies also found that alcohol use was inconsistently related to protective behaviours (e.g., condom use) [30].

This study found, as in other studies [31,32], that being HIV positive was found to be associated with having been diagnosed with a sexually transmitted infection (other than HIV). Further, having experienced physical partner violence and psychological distress were found to be associated with having been diagnosed with an STI (other than HIV). This finding is conforming to other studies about the co-occurrence of intimate partner violence and STIs (including HIV) [15,16,33-35] and psychological distress has been found to be associated with
HIV risk behaviour [36,37]. In a study among pregnant women in rural Haiti, results showed that gender and power factors were most significant for condom use. These results suggest the need to create prevention interventions that restore power imbalances, strengthen communication skills [18] and partner communication on sexual matters [38]. Treating intimate partner violence, mental health and alcohol use problems may aid in reducing HIV infection [36].

Finally, educational factors (lower education, belief that antiretrovirals can cure HIV, unplanned pregnancy), lack of male involvement (non-antenatal care attendance by expectant father) and being HIV positive were found to be associated with having a partner with HIV positive or unknown status. Having unprotected sexual intercourse with partners of HIV positive or unknown HIV status includes an increased HIV risk and should be avoided and calls for improved partner communication on sexual matters [38]. In addition, health education should address misconceptions about the effects of antiretrovirals. In this study HIV knowledge was not found to be associated with HIV risk behaviour, unlike in a previous study in South Africa [39].

9. The same first paragraph in discussion says “There is a concern that HIV positive pregnant women engaged in HIV sexual risk behaviour. This will need to be included in HIV prevention activities among pregnant women” This text may need to be modified or removed. Why should the HIV positive pregnant women be different from other women? May be what is a concern is the high prevalence but this must be in comparison with other prevalences. On inclusion in prevention activities I have a feeling this is being done in all countries. Probably more effort in this.
R: Corrected, as above

10. Second paragraph of discussion. The “was” may need to change to “were”. The study found that more frequent antenatal care visits, having the father accompany to antenatal care and having planned the pregnancy was protective of sexual
R: Corrected, as above

Conclusion:
11. This increased risk of HIV transmission and the burst of viremia associated with… what did the author mean by use of the words burst of viremia? I think there are simpler words. No conclusion from significant factors?
R: Corrected, as below:
This study identified high levels of HIV risk behaviour among women during pregnancy in South Africa. Multivariate analysis revealed significant factors (being single, lower education, belief that antiretrovirals can cure HIV, fewer antenatal care visits, unplanned pregnancy, non-antenatal care attendance by expectant father, HIV status, alcohol use, physical partner violence and psychological distress) associated with various sexual HIV risk behaviour among pregnant women. Recent studies have highlighted the heightened risk of HIV transmission during
pregnancy. This increased risk of HIV transmission and the burst of viral particles in the blood (viremia) associated with HIV infection make unprotected sex during pregnancy especially dangerous to mothers. The results of this study call for the need of targeted HIV risk reduction interventions for pregnant women [40].

Tables
12. What is N or M on table 1 you mean small n? why not say % then in front of a variable that has mean and standard deviation you write mean and sd(in first column). This is because most use %.
R: Changed

13. Some labels on the first column are bold while others are italics. No indents!! This strains the reader. Categorising variables together is good but the category name is not necessary. Can you indent levels of variables like below
Education
Grade 7 or less
Grade 8-11
Grade 12 or more
R: Changed

14. Table 2: Odds ratios and 95%CIs are more preferred in most health related journals that coefficients. Two columns show standardized BETA. Did u mean adjusted and unadjusted columns?
R: Changed to reporting Odds ratios and 95%CIs

MAJOR
6. MAJOR COMMENT- The results are too summarized. Unpack the relationship of each. Give a few (not many since there are tables) key OR and 95%CIs. Some details of the results in the discussion should be in the results.
R: Changed

15. The process of arriving at the results in table 2 need to be specified in Methods
R: Added

Level of interest: An article of importance in its field
Quality of written English: Needs some language corrections before being Published
R: Corrected
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests: No competing interests.
Reviewer's report
Title: Sexual HIV risk behaviour and associated factors among pregnant women in Mpumalanga, South Africa
Version: 1 Date: 27 November 2012
Reviewer: Elizabeth Machado

Reviewer's report:
3.- Major Compulsory Revisions
The author studied risk factors for sexual HIV risk behaviour among pregnant women which is a current and important issue because several countries are now considering the possibility of delivering antiretrovirals to a HIV-negative partner in a discordant couple situation, therefore, addressing other risk situations are equally important. My concern is that the author did not adequately explain how the HIV risk behaviour composite score was scored and it needs to be more clearly detailed.
For example: the sexual HIV risk behaviours were composed of 5 questions, 2 of them with 3 or 5 possible answers. How were those questions categorized? How was the variable HIV sexual risk composite score scored?
R: This was explained. However, this has now been changed, as suggested in 4 major outcome models; as below

Table 2 Results of regression analyses predicting multiple sexual partners and never having used condoms among pregnant women

<table>
<thead>
<tr>
<th></th>
<th>Two or more sexual partners in past 12 months</th>
<th>Never condom use with primary partner in past 3 month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CrOR (95% CI)</td>
<td>AdjOR (95% CI)</td>
</tr>
<tr>
<td>Socio-economic factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.96 (0.93-0.98)**</td>
<td>0.98 (0.94-1.02)</td>
</tr>
<tr>
<td>Education</td>
<td>0.92 (0.84-1.01)</td>
<td></td>
</tr>
<tr>
<td>Single versus married</td>
<td>2.05 (1.34-3.13)**</td>
<td>1.62 (1.00-2.62)*</td>
</tr>
<tr>
<td>Obstructs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of own children</td>
<td>0.82 (0.71-0.96)**</td>
<td>0.91 (0.74-1.13)</td>
</tr>
<tr>
<td>Number of antenatal care visits</td>
<td>0.93 (0.83-1.05)</td>
<td></td>
</tr>
<tr>
<td>Current pregnancy not planned</td>
<td>1.27 (0.91-1.78)</td>
<td></td>
</tr>
<tr>
<td>Father accompany to antenatal clinic</td>
<td>1.25 (0.88-1.78)</td>
<td></td>
</tr>
<tr>
<td>HIV related variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV knowledge scores</td>
<td>1.04 (0.89-1.20)</td>
<td></td>
</tr>
</tbody>
</table>

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** Denotes statistical significance at the 0.05 level.
* Denotes statistical significance at the 0.01 level.
<table>
<thead>
<tr>
<th>Belief ARVs can cure HIV</th>
<th>0.97 (0.49-1.27)</th>
<th>0.97 (0.72-1.30)</th>
<th>0.97 (0.65-1.45)</th>
<th>1.00 (0.77-1.30)</th>
<th>1.11 (0.73-1.68)</th>
<th>0.44 (0.33-0.57)***</th>
<th>0.39 (0.29-0.52)***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belief in someone treated with ARVs cannot transmit the HIV virus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV positive versus negative</td>
<td>1.11 (0.73-1.68)</td>
<td>0.44 (0.33-0.57)***</td>
<td>0.39 (0.29-0.52)***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-economic factors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>1.12 (1.00-1.04)</td>
<td>1.00 (0.98-1.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>0.93 (0.86-1.01)</td>
<td>0.88 (0.82-0.94)***</td>
<td>0.91 (0.84-0.99)*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Single versus married</strong></td>
<td>1.04 (0.77-1.40)</td>
<td>1.18 (0.93-1.48)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstetrics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of own children</strong></td>
<td>1.18 (1.03-1.34)*</td>
<td>1.10 (0.99-1.24)</td>
<td>1.07 (0.96-1.19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of antenatal care visits</strong></td>
<td>0.97 (0.88-1.06)</td>
<td>1.02 (0.95-1.09)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current pregnancy not planned</strong></td>
<td>0.95 (0.73-1.25)</td>
<td>1.75 (1.41-2.17)***</td>
<td>1.73 (1.36-2.20)***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Father accompany to antenatal clinic</strong></td>
<td>1.11 (0.83-1.49)</td>
<td>0.56 (0.44-0.70)***</td>
<td>0.53 (0.41-0.69)***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Psychosocial distress and alcohol use**

| Past month alcohol use | 4.77 (2.99-7.63)*** | 4.38 (2.63-7.31)*** | 0.56 (0.37-0.86)*** | 0.55 (0.35-0.86)*** | 1.81 (1.09-2.98)* | 1.59 (0.90-2.80) | 0.83 (0.57-1.22) | 1.64 (1.11-2.41) | 1.02 (0.77-1.34) |
| Physical partner violence in the past 6 months | | | | | | | | | |
| Psychological distress (Kessler 10 ≥ 28 scores) | | | | | | | | | |

Hosmer-Lemeshow $\chi^2=9.24, p=0.323$; Nagelkerke $R^2=0.08$; Hosmer-Lemeshow $\chi^2=8.95, p=0.177$; Nagelkerke $R^2=0.06$; CrOR=Crude Odds Ratio; AdjOR=Adjusted Odds Ratio

Table 3 Results of regression analyses predicting history of STI and HIV positive or unknown status of sexual partner

<table>
<thead>
<tr>
<th>History of STI (other than HIV) in the past 12 months</th>
<th>HIV status of partner is positive or unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>CrOR (95% CI)</td>
<td>AdjOR$^1$ (95% CI)</td>
</tr>
</tbody>
</table>

---

1. $^*$p < 0.05
2. $^*$*$p < 0.01
3. $^*$*$*$p < 0.001
### HIV related variables

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>CrOR</th>
<th>AdjOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV knowledge scores</td>
<td>1.12</td>
<td>(0.98-1.27)</td>
<td>0.94</td>
<td>(0.85-1.04)</td>
<td>0.94</td>
</tr>
<tr>
<td>Belief ARVs can cure HIV</td>
<td>0.90</td>
<td>(0.64-1.27)</td>
<td>1.51</td>
<td>(1.11-2.05)**</td>
<td>1.41*</td>
</tr>
<tr>
<td>Belief in someone treated</td>
<td>1.58</td>
<td>(1.12-2.23)**</td>
<td>1.24</td>
<td>(0.97-2.11)</td>
<td>0.96</td>
</tr>
<tr>
<td>with ARVs cannot transmit the HIV virus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV positive versus negative</td>
<td>2.13</td>
<td>(1.56-2.91)***</td>
<td>1.94</td>
<td>(1.39-2.72)***</td>
<td>5.17***</td>
</tr>
</tbody>
</table>

### Psychosocial distress and alcohol use

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>CrOR</th>
<th>AdjOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past month alcohol use</td>
<td>2.29</td>
<td>(1.75-2.07)</td>
<td>1.33</td>
<td>(0.84-2.09)</td>
<td>1.33</td>
</tr>
<tr>
<td>Physical partner violence in the past 6 months</td>
<td>2.90</td>
<td>(1.94-4.34)***</td>
<td>2.08</td>
<td>(1.32-3.30)***</td>
<td>1.07***</td>
</tr>
<tr>
<td>Psychological distress (Kessler 10 ≥ 28 scores)</td>
<td>2.19</td>
<td>(1.60-2.99)**</td>
<td>1.84</td>
<td>(1.29-2.62)***</td>
<td>1.17***</td>
</tr>
</tbody>
</table>

Hosmer-Lemeshow $\chi^2$=7.97, p=0.335; Nagelkerke $R^2=0.07$; *Hosmer-Lemeshow $\chi^2$=7.49, p=0.485; Nagelkerke $R^2=0.15$; CrOR=Crude Odds Ratio; AdjOR=Adjusted Odds Ratio

2. Did the author check risk factors for each of the sexual HIV risk behaviours separately? As the number of patients studied is not small, the author might be able to compare the odds ratio for each sexual HIV risk behaviour instead of using the score. Was there any difference in the prevalence of sexual HIV risk behaviour between HIV positive and negative patients?

R: The odds ratio for each sexual HIV risk behaviour instead of using the score is now done, as described above. For each sexual HIV risk behaviour model, the difference between HIV positive and negative patients is included.

3. Use of alcohol was an important risk factor. Please, define the quantity of alcohol used in the questionnaire to classify usage or not of alcohol.

R: Alcohol use was assessed with the frequency of past month use of alcohol. Past month alcohol was defined as any alcohol use in the past month.

4. Table 1: add labels to N, M and SD at the end of the table.

R: added

5. There are several spelling mistakes in the text and abstract that need to be reviewed and corrected.

R: Corrected
**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

R: Corrected

**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'