Reviewer's report

Title: Is male circumcision increasing risky sexual behavior and HIV in Uganda? Evidence from a cross-sectional national survey

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Reviewer: Robert Bailey

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"Is Male Circumcision increasing risky sexual behavior and HIV in Uganda? Evidence from a cross-sectional national survey."

1. It would be very helpful if the question posed by the title of this paper were answered by this paper; however, the data that were analyzed cannot address this question, and the title is misleading. The data come from the 2011 Uganda AIDS Indicator Survey (UAIS). While Uganda did start talking about SMC as soon as 2007 when the RCT in Rakai was completed and published, the SMC policy was not introduced until 2010, and very few circumcisions occurred under the SMC program. In other words, the results captured by the 2011 UAIS will not include any, or will include a trivial proportion, of circumcisions done under the surgical SMC program. Virtually all the circumcised men appearing in this dataset will have been circumcised traditionally or for religious reasons or for some medical condition (e.g., phimosis or repeated balanitis). Therefore, these data cannot address risk compensation (or sexual disinhibition) under the SMC program and they cannot say whether circumcision "is increasing risky sexual behavior." They can only tell us whether in 2011 circumcised men engaged in different sexual behaviors from uncircumcised men. A more appropriate title would be something like: "Differences in sexual risk behaviors and HIV prevalence of circumcised and uncircumcised men in Uganda: Evidence from a 2011 cross-sectional national survey."

Background:

2. Page 4: Delete the word "intact" throughout. This is a loaded term, used by anti-circumcision advocates. The word "foreskin" is sufficient. Of course the foreskin is "intact." Otherwise, the man would be circumcised.

3. References should be provided at the end of the sentence that ends, "...Chlamydia in female partners."

4. In the next sentence, "by more than 60%" is incorrect. By "approximately 60%" would be more accurate. Only one of the trials had an over 60% protective effect.

5. Page 5-6: "The possible reasons for the increased HIV prevalence in the population are twofold..." Surely there are myriad possible reasons. Rephrase to say, "Tow of the possible reasons..." The increase in the numbers on ART is clearly one possible reason. Increases in sexual risk behaviors is another
possibility. However, using the term "complacency" is a loaded term and should be avoided, as should in this context the term, "disinhibition." If indeed risky behavior has increased, there may be many reasons in addition to complacency or disinhibition. Similarly, the UAIS is referenced to support these claims and yet the UAIS explicitly states that it does not address these issues.

6. Page 6: The entire second paragraph on this page is loaded with terms that indicate carelessness or lack of objectivity on the part of the authors.

7. "The sexual disinhibition which undermines..." Change to "could undermine."

8. "In the context where circumcision is viewed as a "natural condom..." This is not a pervasive view and is hyperbolic. Express this more objectively. For example, "Because SMC is promoted as a method for prevention of HIV, there is the possibility..."

9. "driving them..." is too strong.

10. "In low income countries..." It has little to do with "low income," it is about religion and culture. The same is true in the U.S. and Korea, which are not "low income countries."

11. Page 7: Again, the authors need to be much more careful with their wording.

12. "Circumcised men tend to engage in risky sexual behaviors..." Is that true universally? Provide references. Otherwise, change the language. Indeed, it is the purpose of the paper to see if circumcised men do indeed in more risky behaviors.

13. "The general belief that circumcision is 'an HIV vaccine.' This is hardly a "general belief." It has been pushed by a handful of researchers, but it is not generally accepted.. Be careful.

14. "Establishes..." I think you mean "assess" or "evaluates" or "investigates."

Methods

15. Change, "male circumcision status" to "self-reported male circumcision status."

16. The analysis is restricted to those who had ever been sexually active. Please justify this. If circumcised men or uncircumcised men had a later sexual debut than those of the other status, this would affect the results. Part of sexual disinhibition could be earlier age at sexual debut. You could include all men, irrespective of prior sex, or do a separate analysis to see if the proportions of never having had sex men differed by circumcision status.

17. Please clarify how you handled non-marital sexual relations. Does this include all men who are not married? It looks as if (although it's difficult to tell - see below) circumcised men are less likely to be married. This would mean that all their sexual relations would fall under "non-marital sexual relations. Please
clarify, and consider restricting this variable to only men who were married, if you haven't done so. This will also influence the variable "non-condom use last non-marital partner in last 12 months." If unmarried men are included here, then there could be a bias depending on possible differences in marriage status of circumcised vs uncircumcised men.

18. You say that you included "ethnicity" in the multivariable analyses, yet there are 12 different ethnicities. Were all 12 included? Seems unlikely. Please specify how this variable was coded, since it is crucial there being only two or three ethnic groups that practice traditional MC.

Results

19. The presentation of the results should be revised because it is not possible to know how many men are circumcised and not circumcised by each variable. Provide a table that includes the following columns: variable with categories within each (as it now exists), number and percent circumcised, number and percent uncircumcised, total (circumcised plus uncircumcised) and percent, chi-square and p-value for difference in distribution of circumcised vs uncircumcised. This will allow the reader to see the differences in distributions of circumcised and uncircumcised men by variable. Further, the proportions provided should be the proportion within each variable category are circumcised and the proportion uncircumcised. So those two should add up to 100%, rather than show what proportion of circumciced men are within one category or another with the columns adding up to 100%. This way the reader can see the proportions in each category who are circumcised vs not circumcised. You can combine the results presented in Table 2 with this new Table 1, and you should include HIV status in this table as well.

20. The "majority were aged 25-34 years (31%)." 31% is not a majority. You can say the highest dproportion circumcised was in that age group.

21. "29% of the circumcised men were Bagisu, Sabiny or Bakonjo..." Please indicate the proportion within each of these who were circumcised. Similarly, what % of Muslims were NOT circumcised?

22. "Risky sexual behavior was made of four categories..." Please explain (in the methods) why you chose 4 or more partners as the cutoff for risky or not risky. Was it because of the distribution of the variable or some biological rationale, or because it has been used by others? There is no obvious reason. Also, as indicated above, please explain who is included in the variable "non-marital sex" and in non-use of condoms last non-marital partner." Do these include or exclude single men? It looks in Table 1 that circumcised men are less likely to be married, which would affect the results.

23. Page 11: The modeling has to be better explained, either here or in the methods section. I assume the "unadjusted" model is just that, a bivariate analysis of each risk factor by circumcision status. Is that correct? For the adjusted model, please specify exactly what variables were included in the
original model and how each variable was coded. If all the variable that are mentioned were included, there would likely have been colinearity (e.g., residence and ethnicity and region; age and wealth and marital status) or effect modification. Was this examined? How was it handled? Then indicate in the footnote at the bottom of the table exactly which variables are included in the final model. It would be conventional and helpful to provide a table of the ORs and 95%CIs for every variable remaining in the model, not just the four risk behaviors. It is frankly suspicious that there is no difference between the unadjusted and adjusted results for number of lifetime partners. One would expect this to be associated with age and that the OR would change after controlling for confounders.

24. The same comments regarding the models in Table 4 as above.

Discussion

25. Page 14. "...outside Uganda (18, 20). These references are not correct. Ref 18 has no evidence and ref 20 was a study inside Uganda.

26. "This is often in cases where men view circumcision as an HIV vaccine..." This is completely unfounded. If circumcised men do engage in riskier behaviors (and this is not found in most studies), it is a leap of faith to say that it is because they believe MC is like a vaccine, especially in 2010 when SMC had not been widely promoted for HIV prevention in Uganda. Please be more cautious in your statements and assumptions.

27. "...for the worse..." is judgemental.

28. "In the study by Reiss..." Yes, some men (one I think) stopped using condoms temporarily, and others increased the number of partners, but overall the paper supported the notion that there was NOT sexual disinhibition.

29. The Orange Farm trial did not show "risk compensation at play." Circumcised men reported more sexual encounters (not sexual partners), but adjusting for behavior, the HR for circumcision did not change, indicating no RC.

30. "We believe that risk compensation in our study is the most plausible explanation..." If risk compensation is changing one's risk behaviors to compensate for a perceived reduction in risk, how is it that men who have been circumcised much of their lives (81% of men in the UAIS sample were circumcised before age 19), suddenly in one year decide that they are more protected. You cannot conclude that there is risk compensation unless you compare, say, the 2004 results to the 2011 results, or you compare the 2011 results to the next UAIS. All you can say, assuming that it holds true after redoing the analyses, is that circumcised men have riskier behaviors. You do not have evidence that it is due to risk compensation.

31. Page 16: Other limitations should include: the analysis was restricted to only those who were ever sexually active, that circumcision status was reported by the participants, not verified, and that sexual behaviors were by self-report.
Conclusion

32. Delete "uptake." You cannot say "risk of HIV prevalence. This is a cross-sectional study. Just stae that HIV prevalence was lower in circed men.

33. "There is a need to 'repackage the safe male circumcision messages'." The SMC messages already do caution men from engaging in risky behaviors after circumcision. This is gratuitous and not based on evidence.

**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 that I am aware of.