Author’s response to reviews

Title: Vaginal douching in Zambia: A risk or benefit to women in the fight against cervical cancer: A retrospective cohort study

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RESPONSE TO REVIEWERS’ COMMENTS

Katie O'Brien (Reviewer 1):

1. Again, I found that this paper addresses an important and interesting research gap, but I am still very confused about the definition of douching and the use of those who douche with water as the referent group for the analysis of the effects of douching on cervical lesions. I would like to see this better explained and justified or otherwise modified to address my concerns.

Response: Thank you for the comment. We were interested in examining the effect of douching with different solutions among women who douched. We do, however, agree with the reviewer that comparing risk between women who have ever douched and those who have never douched would have provided more information about the risk of douching in general with respect to abnormal cervical lesions.

To address the reviewer’s concerns, we have revised the manuscript and specified throughout the paper that the risk of abnormal cervical lesions was examined and discussed with respect to women who douched with any solution other than plain water.

2. As written, the last analysis currently addresses the question: "among women who use douche, how is douching with a specific solution relative to douching with water associated with risk of cervical lesions." What I think you want to address is "how is douching in general related to cervical lesions, and what type of douche is associated with the highest risk".
Response: Thank you for the comment. Our interest was to determine the factors associated with
douching with solutions other than plain water and to examine the effect of the specific douches
used (compared to plain water) on risk for abnormal cervical lesions. The study population was
restricted to women who had ever douched, that is, douching with either plain water or any
solution.

Major concerns

1. Please be consistent about the definition of douching. Page 5 you say that "douching was
defined as any act involving the introduction of water or any solution into the vagina", yet in the
results (page 6) and Table 1 you restrict the definition to those who douched with a solution other
than water. If you keep your definition as "douched with a solution other than water", make this
more clear in the column heading of table 1 (i.e. get the word "water" in there somewhere) and in
the definition on page 5.

Response: Thank you for the comment. We have revised the definition of douching throughout the
paper to reflect the idea that douching was investigated and discussed in the context of douching
with any solution other than plain water. We have also highlighted this in the headings of Table 1,
Pages 6-7 and Table 2, Pages 8-9.

2. You also never provide the numbers/ %s of women who douche only using water. One way
to do this would be to add a column to Table 3 showing the n's for each category by cervical lesion
status. I actually don't think your paper ever states the total number of women with cervical lesions.

Response: We thank the reviewer for this observation and suggestion. Indeed, the paper did not
report findings on the proportion of women with abnormal cervical lesions, which was an oversight
on our part. We have reported the proportion of women with abnormal cervical lesions in the study
population. Please refer to the abstract (Page 2, line 48) and Page 9, lines 192-196. We have also
included a column to Table 3, showing the proportion of women in each category of the douche
variable by cervical lesion status. Please refer to Page 11.

3. Unless this is most of the sample, I still think there may be important differences between
those who douche with water and those who do not douche at all, yet your analyses appear to either
group these two together (Tables 1 and 2) or exclude non-douchers entirely (Table 3). The reasons
for this are really not clear to me. I'm guessing your analysis would be much better powered if you
used non-douchers as the referent group in Table 3.

Response: Thank you for the comment. We have revised the definition of douching throughout the
paper to reflect the idea that douching was investigated and discussed in the context of douching
with any solution other than plain water. We have also highlighted this in the headings of Table 1,
Pages 6-7 and Table 2, Pages 8-9.
Response: Thank you for the comment. We would have liked to analyze the data with respect to women who have ever douched compared to those who have never. However, the data that we have is that for women who douched, either with plain water or any solution.

4. Conclusions (page 17): As above, I am still very confused with the intended research question here. You talk about the association between douching or certain types of douching and the risk of cervical lesions, but since your referent group is those who douched with plain water, all you can really talk about is how douching with some substances may be worse than douching with water. You cannot make any statements about the health effects of douching in general.

Response: Thank you for this comment. We agree with the reviewer that our findings can only speak to the effects of douching with certain solutions relative to douching with plain water. We have rephrased the sentence in the conclusion to reflect this observation. Please refer to Page 13, lines 250-254.

5. Page 4, starting line 107 "Through this program, cervical cancer screening services are being for free at most of the public health facilities across the country." should be something like "Through this program, cervical cancer screening services are freely available at most of the public health facilities across the country."

Response: We thank the reviewer for this correction. We have rephrased the sentence as advised. Kindly refer to Page 4, lines 101-102.

6. Page 5 - HIV status: You state that anyone with incomplete information on HIV status was excluded, yet a large proportion of the sample is listed as HIV status unknown in Table 1. Please clarify in the text (i.e. the difference between "unknown" and "missing").

Response: Thank you for the comment. We have explained the difference between women with unknown HIV status and women with missing data on HIV status. Kindly refer to Pages 4 and 5, lines 115 -117.

7. Results page 8 and Table 2 - The interpretation of the findings from the unadjusted analysis are nearly identical to those from the univariate analysis in Table 1, and very similar to the adjusted results, which you also present. Please consider limiting your write-up to the adjusted results to avoid this redundancy.

Response: Thank you for the guidance. We have deleted the interpretation of results from the univariate analysis. Please refer to Pages 7 and 8, lines 166-175.
Johannes Berkhof (Reviewer 2):

1. The manuscript has been improved a lot. My only suggestion is to keep the wording as neutral as possible when presenting the results of Table 3. For instance, "Adjustment variables included age, condom use, occupation, number of sexual partners and HIV status".

   =&gt; "Independent variables included ... ".

"After adjusting for potential confounders, douching with either vinegar .... "

   =&gt; After adjusting for other independent variables, douching with either vinegar ....

Response: Thank you for this comment. We have replaced the words ‘adjustment variables’ with the words ‘independent variables’. Kindly refer to Page 9, lines 190 and 201.