Reviewer’s report

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

Version: 2 Date: 03 Aug 2019

Reviewer: Katie O'Brien

Reviewer's report:

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.

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".

Major concern:

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 doused with a solution other than water. If you keep your definition as "doused 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.

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.

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.
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.

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."

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").

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.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:
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