Author’s response to reviews

Title: DOUCHING PRACTICES AMONG WOMEN IN THE BOLGATANGA MUNICIPALITY OF THE UPPER EAST REGION OF GHANA

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Author’s response to reviews:

RESPONSE TO REVIEWERS COMMENTS

We will like to thank the editor and the reviewers for such wonderful comments. These comments have helped to improve the readability of the manuscript. Find below our response to the comments and how they were addressed in the manuscript

Omar Shaaban (Reviewer 1)

The idea of local importance for the health care providers in the region. Its international importance is not clear in the rationale section.

Response: The data regarding this topic in Ghana is insufficient. The evidences from this study will be relevant to several developing countries that have similar challenged health care system like Ghana.

Study population is heterogeneous as they included nulliparous and multiparous women

Response: Age, sex and being resident of the Municipality were the only inclusion criteria. Parity was not a criteria for the selection of participants. The age of the participants was used. It was women age 15 – 59 years regardless of their marital status
There is no clear definition to vaginal douching.

Response: We have revised the definition and it reads.

‘Vagina douching (VD) is the process of rinsing the vagina by introducing different kinds of fluids for the purpose of hygiene or therapeutic or contraceptive reasons’

Sample size is not estimated.

Response: We revised and it is as indicated below.

“The sample size was estimated using the prevalence rates of vaginal douching from previous studies. Hence, the formula n = \( z^2 P q \) \( d^2 \) was used to calculate the sample size.

\[ n = \frac{z^2 P q}{d^2} \]

\( n = \text{Sample size} \)
\( z = \text{Standard normal deviation} = 1.96 \text{ at 95\% confidence level} \)
\( P = \text{Prevalence rate} = 81.9\% \)
\( q = 1 - P = 0.181 \)
\( d = \text{Error margin} = 5\% \)
\( n = (1.96)^2 \times 0.819 \times 0.181 \times \frac{0.05^2}{0.148 \times 0.0025} \)
\( n = 227 \)

They did not have enough justification that the women's sample they obtained is even representative to their population.

Response: The sample size was determined using the prevalence of douching practice in a previous study.
Emmanuel Ajuluchukwu Ugwa (Reviewer 2)

Indicate what local dialect was used.
Response: This is revised and reads. “The Guruni local dialect”

How was the sample size calculated and what was rationale?
Response: The sample size was estimated using the prevalence rates of vaginal douching from previous studies. Hence, the formula \( n = z^2 \frac{P q}{d^2} \) was used to calculate the sample size

\[
n = \text{Sample size}
\]

\[
z = \text{Standard normal deviation} = 1.96 \text{ at 95% confidence level}
\]

\[
P = \text{Prevalence rate} = 81.9\%
\]

\[
q = 1 - P = 1 - 0.819 = 0.181
\]

\[
d = \text{Error margin} = 5\%
\]

\[
n = (1.96)^2 \frac{0.819 \times 0.181}{(0.05)^2}
\]

\[
= 3.84 \times 0.148
\]

\[
= 0.0025
\]

\[
n = 227
\]

Provide evidence that vaginal douche with ordinary water is harmful.
Response: This is taken note of and is revised and now reads. “While water may not be seen as a dangerous product for douching, contaminated water may be a source of infection to these women. Giving the setting of the study area, the safety of the water used by these women cannot be guaranteed.”

Chemical douche is no doubt harmful.

Response: Thank you

Did you associate any harm including RTIs with the clients in this study?
Response: Though this would added to the value of our study, it was not the focus of the study. The study only sought to know the prevalence of vagina douching in the Municipality. However, in our future study on this subject, it shall be considered

Education is not strongly associated with douching, please run a correlation statistics.

Response: The variables were categorical which does not support correlation analysis. Hence chi-square and cross tabulation was used

Did you find any association between religion and douching?

Response: although other studies reported some association with religion, we did not find that in our study. There was no any association between religion and douching. The P- value was 0.041

What position did the women use when they douche?

Response: Though this would have added value to our study, it was not the focus of the study. However, we are grateful to the reviewer for drawing our attention to this. Our future study shall take into consideration.

What is the implication of your findings to women's reproductive health?

Response: Education is important and such health workers should increase women’s awareness on the harmful effects of douching

What future research direction do you suggest?

Response: Future research shall look at the association of douching practice with RTI and the position used in douching.

What are the limitations of your study?

Response: It is cross a sectional study which is difficult to establish causalities. It was self-report which makes the findings susceptible to social desirability bias. However, the critical reposes provided the participants might have reduced the effect of this bias of the findings. The use of nonprobability sampling might and the choice of one municipality have affected the generalizability of our findings. However, the our findings provide the foundations for future extensive work on the subject
Ami R Zota (Reviewer 3):

My most substantial comments relate to clarifying details about the study population as well as the approach towards analyzing the data. On a minor note, the manuscript is generally well written although there are some grammatical errors. For example, the word "commonest" is not a word and should be changed to most common

Response: We are grateful to the reviewer for the commendation.

Study area and participants

1. The authors say that the female participants "were randomly selected in the Bolgatanga Municipality." Specifically, what were your eligibility criteria (e.g. were there age restrictions, language or reading restrictions, residential location?)?

Response: This has been revised as convenient sampling. The inclusion criteria is also mentioned as women aged 15 – 59 years and resident in the municipality and are fluent in the English language or Guruni dialect.

2. Study area and participants: Who contacted the eligible participants? Was it research assistants, professors, or health workers?

Response: This is now clarified as research assistant.

3. How were eligible persons identified? Who identified the eligible participants?

Response: The research assistant did

4. What percentage of contacted participants agreed to participate?

Response: “The percentage of participants contacted who agreed to participate was taken note of. However, the number of questionnaires that were and the percentage returned is what is note and has now been included in the manuscript. This is stated as follows; A total of 250 questionnaires administered to participants. However, 236 questionnaires were returned in which 36 were incomplete resulting in a response rate of 80%”

5. Can you provide more information about this region of Ghana, is it mostly industrial or agricultural. In term of national economy, how does it rank? This is done and reads as below
Response: “Ghana is a sub-Saharan African country located in west of Africa. It shares boundaries with Togo to the east, Burkina Faso to the north and Cote d'Ivoire to the West. It is divided into ten (10) administrative regions and 216 districts.

The Upper East Region is the second smallest and poorest region in Ghana. The Bolgatanga Municipality is the largest urban centre among the thirteen Districts and Municipalities of the Upper East Region of Ghana and also the regional capital. The main occupation of the people is agriculture and its related works which employs about 60% of the population. According to the 2010 population and housing census, the Municipality accounts for 12.6 percent of the population of the Upper East Region with a total population of 131,550. Females form 52.3% of this population and about 50.2% of the population are rural dwellers. The population of females aged 15 – 59 years in the municipality is 38,917. Gurunui is the main local dialect spoken in the municipality. It is located approximately 779 km north of Accra, Ghana’s capital city.”

Data analysis and results

6. For Table 4, the percentages should add up to 100 as they go down vertically not horizontally. For example, a reader would want to know, within the "yes" category, what percentage of participants were aged 15-20 versus over 51? Currently, it is difficult to determine that because the percentages are tallied by row (percentage of women aged 15-20 who doused versus those who did not doused).

Response: This has been revised as shown below.

Table 4 Factors associated with douching practice

<table>
<thead>
<tr>
<th>Variables</th>
<th>Yes</th>
<th>No</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-20</td>
<td>55(41.4%)</td>
<td>25(37.3%)</td>
<td>0.891</td>
</tr>
<tr>
<td>21-30</td>
<td>56(42.1%)</td>
<td>30(44.8%)</td>
<td></td>
</tr>
<tr>
<td>31-40</td>
<td>16(12.0%)</td>
<td>10(14.9%)</td>
<td></td>
</tr>
<tr>
<td>41-50</td>
<td>5(3.8%)</td>
<td>2(3.0%)</td>
<td></td>
</tr>
<tr>
<td>Above 50</td>
<td>1(0.8%)</td>
<td>0(0%)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>-----</td>
<td>-----</td>
<td>--------</td>
</tr>
<tr>
<td>Single</td>
<td>84</td>
<td>48</td>
<td>63.2%</td>
</tr>
<tr>
<td>Married</td>
<td>48</td>
<td>17</td>
<td>36.1%</td>
</tr>
<tr>
<td>Divorced</td>
<td>1</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Widowed</td>
<td>0</td>
<td>1</td>
<td>0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational status</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>JHS and below</td>
<td>26</td>
<td>6</td>
<td>19.5%</td>
<td>9.0%</td>
</tr>
<tr>
<td>SHS</td>
<td>59</td>
<td>23</td>
<td>44.4%</td>
<td>34.3%</td>
</tr>
<tr>
<td>Tertiary</td>
<td>48</td>
<td>38</td>
<td>36.1%</td>
<td>56.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowing the dangers of douching</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>68</td>
<td>62</td>
<td>51.1%</td>
<td>92.5%</td>
</tr>
<tr>
<td>No</td>
<td>26</td>
<td>0</td>
<td>19.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>39</td>
<td>5</td>
<td>29.3%</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

7. In Table 4, you should collapse some of the education categories, because very few people in your study had no formal education. I would recommend converting the 5 categories into 3 categories. Similarly, you have too many age categories with few numbers so the statistical test results will not be robust.

Response: This has been revised as shown below

<table>
<thead>
<tr>
<th>Variables</th>
<th>Douching practices</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational status</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>JHS and below</td>
<td>26</td>
<td>6</td>
<td>19.5%</td>
<td>9.0%</td>
</tr>
<tr>
<td>SHS</td>
<td>59</td>
<td>23</td>
<td>44.4%</td>
<td>34.3%</td>
</tr>
</tbody>
</table>
Tertiary

For knowing the dangers of douching, you can only do a statistical comparison for the "yes" category not all three categories.

Response: We are very grateful for your opinion. However, we think presenting the rest of the responses will give a clearer picture of the situation.

Margaret P. Kasaro (Reviewer 4)

Background

Your literature summary seems to be emphasizing the bad of VD and not summarizing current evidence and then to highlight the gap that your research wants to address. It may benefit from paragraphs addressing each point.

Response: We are grateful for the advice of the reviewer. This has been done as advised.
Line 37 VD is not only practiced for post menstruation or after ciotus it may be a daily hygiene practice. Most literature highlight hygiene, health/therapeutic and sexual enhancement. Contraception may be added to this list but may not be commonly cited.

Response: This has been revised accordingly

Line 45 pay attention to tense vary here must be varies and this sentence and the next are not well linked

Response: Thank you so make for this. The manuscript was given to an English person for the correction of this errors in grammar.

Line 54 highlights the deficiency in your definition of VD as here you have included more than fluids which is in your definition

Response: Thank for that

Line 57 seems to be a conclusion

Response: The background of the study have been revised according to your advice.

Methods

In the site and participants, please separate out the design description.

The other comments are participants were from that area and not mainly from, this would imply you had participants from elsewhere. Also, please do not mix information on participants and other procedures like the ethics.

Response: These were done according to the advice of the reviewer

For data collection was the translation done as needed or the document was already translated?

Response: The translation was done as needed during the data collection.

For the statical methods, is cross tabulation sufficient for use in and describe your analysis?

Response: Although correlations would have also enriched the data or our analysis, we used cross tabulation ……..
Results

The style of reporting results in your paper needs review to ensure clarity. Here is an example, instead of - Table 1 presents the demographic data of the participants. Majority (83%) of the participants were within the ages of 15 - 30 years, 13% aged 31 - 40 whiles less than 10% were above 40 years. Out of the total, 66% of the participants were single, 71.5% were Christians whiles over 90% had some level of formal education, - suggested format - Table 1 presents the baseline demographic data. In summary, majority (83%) were between 15 and 30 years, 66% were unmarried, 71.5% were christians and over 90% had formal education.

Similar concerns and comments apply for the other results reported.

Response: This was revised as advised by the reviewer.

In table 2 what is the difference between reasons for and factors influencing VD?

Response: this was revised as shown below.

Reasons for douching

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapeutic</td>
<td>17(12.8)</td>
</tr>
<tr>
<td>Cleansing of the vaginal</td>
<td>90(67.7)</td>
</tr>
<tr>
<td>Tighten of the vaginal muscles</td>
<td>26(19.5)</td>
</tr>
</tbody>
</table>

For table 4 and 5 for associations you have selected presented p values, you have not include the statistic used for testing the associations which should indicate the directions of the association.

Response: This is a univariate analysis and does not show direction of association. Cross tabulation using chi- square was used

What is the statistical method used, I recommend review to show the statistic used and how the conclusion can be made.

Response: This has been revised as advised by the reviewer and indicated as A Chi – Square Test. P-value of 0.05 was considered significant

Discussion section suggested flow - make a general statement on the findings of your study for para 1, para 2 could be limitations and strengths, para 3 and so on (broken down per points) can
discuss the findings in relation to current knowledge, is your data in agreement or not and maybe you can state some reasons for that.

Response: The discussion has been revised

DISCUSSION

The study assessed douching practices among women in the Bolgatanga Municipality of the Upper East Region of Ghana. Majority of the participants of the study douch. Many of them had no knowledge of the dangers associated with vaginal douching. Cleansing of the vaginal was the main reason for douching.

The study found that 66.5% of the women who participated practiced douching. This is lower than what has been reported by other studies investigating douching practices. Ekpenyong et al., (2014) reported a prevalence of 80% among young adult women in Nigeria. Furthermore, our prevalence rate is lower than the 84% reported among sex workers in Yunnan province in China; the 72% among women attending reproductive health clinic in Dar es Salaam in Turkey. However, the reported prevalence in this study is higher than the 46% reported among black women at risk in Southern United States (5).

In this study, over half of the women who practiced douching did so daily. In other studies less than 30% of women who douche did so daily (2,18). The high number of women in this study who douched daily is a source of concern for health care services due to the negative health effects of vaginal douching such as bacterial vaginosis, pelvic inflammatory diseases, cervical cancer among others.

Consistent with other studies water was the most common product used (67.7%) (9,18,19). While water may not be seen as a dangerous product for douching, contaminated water may be a source of infection to these women. Giving the setting of the study area, the safety of the water used by these women cannot be guaranteed. The women also douched for various reasons which were mainly for vaginal hygiene and sexual satisfaction. This is consistent with other studies elsewhere (2,5,9,19–21)

Findings from other studies (2,18,20) indicate that mothers, seniors and self-experimentation have been the main sources of information for those that engaged in douching practices. However, in this study, friends (62.4%) and parents (mothers) (17.3%) were core sources of information for participants that have heard and practiced douching with self-experimentation being the least accounting for 9.0%. This disparity may be due to the cultural differences of the study areas. ………

Another important finding of the study was that 87.2% of the women who practiced douching, were not aware of its harmful health effects. This is consistent with previous findings (8,20,22–
27). In this study we found that education was associated with awareness of the dangers of douching as well as its practice. Women who had low level of education were more likely to practice douching and also had inadequate knowledge regarding the dangers of douching. These findings are consistent with those of previous reports from Nigeria and Uganda (21,26). Education is a strong predictor because, educated women have access to health information and are more likely to understand compared to their counterparts.

Conclusion - although including health education at the end seems appropriate it may not be tying to what you have indicated as the aim of the study. It may be more appropriate to state that these identified factors may be useful in formulation of interventional packages specific to this locale.

This has been revised and reads

Vaginal douching is commonly practiced by women in the Bolgatanga Municipality. Most of these women douche because they did not know that there are health problems associated with the practice. Health education on the issues of women health is very vital for the improvement of women’s health