Author’s response to reviews

Title: A cross-sectional mixed-methods study of sexual and reproductive health knowledge, experiences and access to services among refugee adolescent girls in the Nakivale refugee settlement, Uganda

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Author’s response to reviews:

Dear Reviewers,

Thank you very much for your suggestions and feedback. Please find attached below our responses.

Reviewer #1:

Thank you for this good work. Compiling more information on the lived experience of displaced adolescents in relation to SRH is important. There are a few minor changes I would recommend.

Response: Thank you very much for your kind words and revision.

1. The first being more description of the methodology of the qualitative analysis, it is stated that thematic analysis was used, was inductive or deductive coding used? Where the results interpreted within an existing/constructed framework? If so please describe. What were the themes used for the thematic analysis, my reading of this is that the themes were SRH knowledge, menstrual hygiene and commodities, sources of information of SRH information sexual experiences and forced intercourse and FGM, but it is not clear if those really where the themes or if the paper is structured inline with the
structure of how the surveys where structured. Where the parents/care-givers present for the interviews? Did the research team feel that saturation was reached in the course of the IDIs? Any trends in perceptions that varied among subgroup that emerged from the IDIs?

Response: we added more information on the methodology following your suggestions. We used deductive coding and we guided our coding using literature, our quantitative data and questions from the qualitative guide. We followed the steps for the analysis suggested by Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006 Jan;3(2):77–101. A number of themes emerged during the analysis, some of them you mentioned, and they were similar to the quantitative survey sections, such as access to commodities, sexual experiences etc.; however, we had to leave out many of them from the manuscript, such as migration history, in order to support and illustrate the findings from the quantitative survey. We are planning to write a separate qualitative manuscript using and analyzing additional qualitative data from the interviews as well as FGDs which were not included here. Parents were not present during the interviews to ensure privacy and willingness of girls to share the information. The findings did not vary among groups (by country). The differences were mostly due to age, e.g. older girls sometimes were more aware about contraceptive methods. We feel that the saturation was reached as we found similar patterns in answers between the participants.

2. In general would recommend that the results are presented through the lens of perception and self-reporting of the participants, example is: Line 303, would recommend to phrase "70% of girls report no using a condom" since this information is from participants self-report it cannot be stated that 70% of girls did not use a condom (perhaps other girls also did not use a condom but did not feel comfortable disclosing this information".

Response: we stated a % when findings were from quantitative study and statistical analysis, like in the case you mentioned. For the qualitative findings we tried to operate with the description such as many, majority, some. We agree that is more appropriate to say reported and we addressed this in the manuscript.

3. Also for table 4 sexual experiences could consider to rephrase along the lines of "reported sexual experiences"

Response: we added it to the title of the table and in the text.

4. The quote in line 202 could be reconsidered, that to me reads as a girl who knows that HIV is acquired from sexual activity and she could be indirectly saying this, along the lines of if you go out a night, you could engage in sexual activity, and thus put oneself at risk for acquiring HIV. Would consider to select a different quote that more clearly shows a misconception about HIV acquisition.

Response: we deleted the quote as indeed it did not represent well the idea of myths.
5. The quote starting in line 208 says nothing about condom use, where are in the preceding line the content of the statement seems to be about girls knowing the most well-know method of prevention was condom use, would consider to select a quote that is more explicit about condom usage.

Response: we assume you meant line 248. We reformulated the sentence and added a quote.

6. Section on Female genital mutilation. Line 354 states that FGM was prevalent in this population at 10%, what is the standard measure of prevalence of FGM, i.e. what is considered high or low prevalence? Is the 10% found in this cohort high or low prevalence based on standard measures? It would be interesting to know of Somali and Congolese girls which percentage had experienced FGM (so 10% over entire sample, but what % in Somali subset and which % in Congolese subset?) Was there any difference accounting for age and % who had undergone FGM?

Response: we added the information for Somalian and DRC girls in the text. The age when FGM was performed varied from 5 to 9 years old with some girls who did not remember the age. According to the WHO, the prevalence rate varies considerably by region and country. There are only estimations from the literature that suggest 5% for DRC and from 25% to 98% for Somalia. So we assume for our population it is prevalent.

Reviewer #2:

Thank you for your questions and suggestions. Please see our responses below.

1. Why did you use convenient sample for quantitative survey? Sample size of 260 needs to be justified.

Response: This was a cross-sectional explorative study which primary goal is to describe the knowledge of girls on different SRH issues, their experiences and access to SRH services. The sample size was determined using an estimate for % knowledge on SRH by young people of Uganda of 40% (Uganda Demographic and Health Survey 2016 Key Indicators. [cited 2017 Sep 27]; Available from: https://dhsprogram.com/pubs/pdf/PR80/PR80.pdf). There is very limited literature available on possible prevalence of adequate knowledge on SRH among refugee populations in particular girls and young women, considering their possible circumstances, we used a slightly lower prevalence than general population of 25%. A convenient sampling helped us to reach the groups of interest (e.g. girls different refugee communities, age groups and school/out of school population).

Using the using Cochran’s (1963) formula for cross sectional studies we estimated the sample size. This formula is given as:

\[ n = \frac{Z^2P(1-P)}{d^2} \]
n = minimum sample size required;

Z = a statistic for a standard normal distribution. It is desirable to obtain results with a 95% level of confidence, such that the z-statistic is 1.96;

P = the anticipated prevalence of adequate knowledge on SRH among adolescent refugee girls. d = the margin of error in estimating P which will be set at 5%.

Therefore, the minimum sample size for our study is 289.

Taking into account a refusal/attrition to participate, we approached 300 participants and received replies from 268, from which 260 with complete and correctly filled questionnaires.

2. The manuscript lacks information on why was the particular area selected for the survey, how was the sampling done?

Response: Uganda is one of the African countries that hosts a large number of refugees from different neighboring countries in conflict. Nakivaale settlement is the oldest and largest refugee camp in Uganda. Most refugees here have stayed for more than a year and are in recovery from post conflict trauma. In order to approach girls, we have involved community mobilizers from different refugee communities and school teachers. We have this information in the methods section.

3. You told that the same girls from the quantitative survey were also interviewed for qualitative survey? This is quite irrelevant. You could have taken another set of girls?

Response: we think it is important to mention as we were able to select girls from the quantitative study and make deeper inquiries into the topic via qualitative interviews. Also it helped us to establish trustful relationships with girls who already participated in the quantitative data collection, and they felt more comfortable to share their experiences during qualitative interviews.

4. what was the cronbach's alpha score of the validated questionnaire you used for the quantitative survey?

Response: We thank you for the comment. We did not calculate the cronbach’s alpha for all the items in the questionnaire because the measures varied (multiple options, open ended questions, etc.). However, we have evaluated the Cronbach’s alpha score for the four question components having an ordinal outcome that describe knowledge on transmission, prevention, STI’s and contraception respectively. For this outcome data set we obtain an alpha level of 0.704 and a bootstrap based confidence interval using 1000 bootstrap samples of (0.632, 0.760). Thus, we could infer that the four question components have relatively high internal consistency, or we have a high proportion of shared covariance measuring the same underlying concept through
these components. The Spearman Rank correlation for the four components are also presented in the table below:

<table>
<thead>
<tr>
<th>Components</th>
<th>Transmission</th>
<th>Prevention</th>
<th>STI</th>
<th>Contraception</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission</td>
<td>1</td>
<td>0.34</td>
<td>0.24</td>
<td>0.31</td>
</tr>
<tr>
<td>Prevention</td>
<td>0.34</td>
<td>1</td>
<td>0.34</td>
<td>0.45</td>
</tr>
<tr>
<td>STI</td>
<td>0.24</td>
<td>0.34</td>
<td>1</td>
<td>0.45</td>
</tr>
<tr>
<td>Contraception</td>
<td>0.31</td>
<td>0.45</td>
<td>0.45</td>
<td>1</td>
</tr>
</tbody>
</table>

5. **Some grammatical errors**

Response: thank you, the article was edited by a native speaker.

6. **In the title and objective it was mentioned SRH needs but in the entire article, I could not find any data on SRH needs? How was it assessed?**

Response: thank you for pointing this out. Needs is a general umbrella that includes for example contraception needs, availability of menstrual products etc. However, we took out this word from the title and abstract and instead used knowledge, experiences and access to services.

7. **In the discussion section, menstrual hygiene management and Female genital mutation has not been described. why?**

Response: usually discussion section is meant to address and reflect on some findings considered relevant by the authors. We intended to cover as much as possible in this section, however, there is also some space (section size) limits which have to be respected.

8. **How was the qualitative data analysed? using excel sheet manually or software and how was it ensured that during the recoding from different languages into one language English, important information is not lost?**

Response: we added more information to the manuscript about qualitative data analysis. Data were analyzed manually using colored codes in Word and Excel sheets. The transcription was done by field workers who collected the data and made notes. Each of four field workers was proficient in English and at least one local language in which interview was performed. The transcripts were checked by the local researchers who are also proficient in more than two languages.
9. The author didn't mention where were the quantitative data collected? at home or school. Because such SRH related data are difficult to collect at households with parents around or how did investigator ensured privacy for data collection?

Response: at page 5 of the manuscript we mentioned this information: Respondents comprised a convenience sample of girls recruited in the different camp communities, e.g. Burundi or Congolese communities, and schools with the help of local community mobilizers. Data were collected in schools and in communities – public gathering places. Parents/caregivers were not present during the data collection for both qualitative and quantitative parts. The data were collected in private environment, e.g. in a separate room in school or outside “under the tree” far from other children. We added the information on privacy.

10. The title mentioned about SRH knowledge. however, the questions were limited to HIV/STI and contraception. This doesn’t cover complete knowledge about SRH.

Response: we did not aim at covering all possible SRH knowledge. We included the main topics such as HIV (prevention, transmission, myths etc.), contraception, STIs. We based our knowledge questions on the questionnaires previously used in the same context (see methods section). As a suggestion for future research, the list of SRH knowledge could be expanded.

Reviewer #3:

You present interesting findings on a topic that is of critical importance today. I believe more background is needed on certain topics and there is a need for clarification of certain points, but overall, the article is well-written.

Response: Thank you very much for your suggestions.

Background:

* You present some very compelling data here. However, the manuscript would benefit from the inclusion of a bit more information on the landscape of SRH and other health services that are available in refugee settlements. For example, you mention SRH clinics throughout subsequent sections, so it would be helpful to know more about those clinics, i.e. where are they located, are services free, are they run by aid organizations or the government (similarly are staff generally short-term aid workers or longer-term personnel), how many of them are there, do adolescents need parental consent for services, languages of services provided, etc. Also, it would be helpful background information to have more statistics on HIV and STIs among refugee populations or adolescent girls in Uganda if that data is available.
Response: thank you for this suggestion. Indeed, as we mentioned in the article the information on SRH and services for refugees in Uganda is limited especially in this setting. Nevertheless, we added some available information on SRH services in the refugee camp as you suggested.

* In the first sentence of the section, I suggest editing "Till June 2018" which is an unclear timeframe.
Response: we corrected it.

* I suggest rephrasing the second to last sentence of that paragraph as it is currently unclear.
Response: we rephrased it.

Methods:

* I suggest including more information in the Study Setting section about Nakivale and its residents that will give context to the findings you present later. For example, later you describe schools as an important source of SRH information, so I recommend including a brief overview in this section about education rates (you have some information in the discussion section, but I would mention it earlier). Similarly, you might include some brief data on wealth or poverty levels, mobility of residents (will refugees in the settlements be there and need services long-term), and employment or education opportunities for girls and women.

Response: we tried to add suggested information. Unfortunately, there are only reports from UNHCR about the camp based on the household surveys and it is challenging to find up-to-date descriptive information about the settlement.

* In the last sentence of the Study Setting section, it is unclear if the 50.2% is among the total population or just among women and girls.
Response: among the total population, we clarified it in the manuscript.

* In the Quantitative Data Collection and Analysis section, what do you mean by "unaccompanied adolescents"? Are you referring to adolescents who do not live with parents or family members (and if so, is that including partners), or to adolescents who were not able to have an adult present at their interview?
Response: we mean adolescents without parent or legal caregiver to provide an informed consent for under 18 years old girls. Partners were not considered as legal caregivers. Parent/caregiver/adult were not present during interviews.

* I suggest briefly listing the topics discussed in the survey tools and explaining whether all the topics you highlight are from the surveys or whether you included topics that seemed relevant to the specific population.

Response: we provided a brief description of the data we collected in the survey. The topics were mostly based on the two validated surveys we mentioned in the methods. However, we added some questions about HIV myths or FGMs.

* Is there a reason you used a scale for SRH knowledge based on a sum of scores from the four components instead of average scores? It seems like you are actually more interested in the average scores.

Response: We thank you for your comment. We tried to allocate the gradings based on the four question-based components in a way to assign equal weight to each question. In this process, using mean scores (sum of scores in four components/4) yields the same classification as using the “sum of scores in four components” since the denominator is a constant. We also implemented the classification based on the average score and indeed, we arrive as the same classification based on our assumed rules described in the paper.

* For your qualitative data, I recommend including a brief description of how you developed your interview guide.

Response: thank you, we included a brief description.

Results:

* I suggest clarifying the four SRH knowledge questions a bit more. For example, for the knowledge of STIs, were you asking about transmission or just for people to name STIs? Also, for the knowledge of contraception, did you only count modern contraceptive methods in your tally?

Response: we clarified this in the methods section, as we think it fits better there. We asked about all contraception methods including traditional and modern. We asked names of STIs.

* In the line, "The knowledge of girls about STIs was limited to HIV and syphilis for a vast proportion." I recommend stating that proportion.
Response: we added the numbers.

* You use the quotation ("I cannot use family planning methods…") as an example of misconceptions about family planning. However, I recommend explaining that quotation more or giving a longer version, as the quotation as written now does not necessarily support your point about misconceptions. "They are not good" and "They can affect life" might not be misconceptions if the participant suffers negative side effects of a contraceptive method she has tried.

Response: this participant is not sexually active yet and has never used contraception, nevertheless she already has a misleading information about family planning methods. We specified this in the description to the quotation.

* Can you clarify if SRH information from teachers/school was from a formal sexuality education class/discussion or from advice seeking from teachers or school personnel? If SRH information is instructed in school, are there abstinence-only requirements or norms in schools?

Response: we had a question in the questionnaire with multiple options including just teacher/school, so from there we can not specify if it was during specific class or after-school elective. However, from the qualitative interviews we found out that girls ask sometimes advice from teachers or teachers provide a short class on SRH issues. It varies from teacher to teacher and school to school. There is no abstinence only requirement in school, however the girls are advised by some teachers to remain from sex before marriage.

* I recommend explaining a bit more participants' reporting of mistreatment in SRH services if you have that information. By mistreatment, are participants referring to stigma and discrimination from health care personnel, or physical or sexual abuse, or something else?

Response: yes, mistreatment refers to judgmental attitudes and rudeness. We added this explanation.

* You say "among sexually active girls, some were forced into intercourse between the age of nine and 12." Please specify how many.

Response: 3 girls experienced intercourse at 9 and 12 years of age. We added this in results section.

* With such a large proportion of sexually active girls in the study who had experienced forced intercourse, I would think that an important component of SRH services would be
trauma counseling and linking to mental health care. Did your interviews or surveys find any information about care seeking after experiences of sexual violence or about linkages to counseling or other mental health care? In general, it would be good to include some information about care and services available for victims of violence whether in this or the background section.

Response: during the qualitative interviews girls who experienced violence were asked by the field workers if they received help or if they would like to have an assistance to arrange a meeting with camp psychologist/social worker. We had a list with contacts. Majority of girls said that it happened a long time ago and they do not need help anymore. According to UNHCR report mentioned in the background section of the manuscript almost 100% of victims of sexual and gender-based violence in Nakivale received necessary psychological help and 27% health services.

Discussion:

* In the first paragraph, can you clarify the finding of sexual violence as a "rite of passage"? Is that from a quotation a participant said?

Response: this is not a direct citation rather an overall term we used to describe violence that girls faced related to life-cycle changes or moving to another social group/tribe.

* I suggest rephrasing the last sentence of the first paragraph.

Response: thank you, we rephrased it.

* You recommend improving "linkage of adolescents to a wide range of SRH services." I recommend being more specific on the types of services. It seems like linkages to mental health care, maternal health care, possibly emergency contraception, and education would be particularly important given your findings.

Response: thank you, we incorporated your suggestion.

* In your discussion, I think it would be worth considering implications not only for SRH services, but also for underlying issues such as gender inequalities and marginalization of refugees. It seems like many of the issues that may be prevalent among adolescent girls - particularly experiences of sexual violence, FGM, and low contraceptive use - stem from girls' social position and low position of power, and so I would encourage more discussion of possible strategies to address those underlying issues.

Response: Thank you for this suggestion, we reflected briefly on it in the discussion section.
* Are there any areas you identified that need further research?

Response: We think that a longitudinal intervention study to assess effectiveness of targeted SRH educational interventions on utilisation of SRH services and sexual behaviours in this vulnerable group would be helpful. This could be considered as a potential research line.

* In your Limitations section, you mention that interviews were orally translated for languages other than English. Was your questionnaire pre-tested in the other languages?

Response: the questionnaire was in English, however each of four filed workers was proficient in English and one or two other local languages. Before data collection, the training was provided during which the main terms/words in the questionnaire were translated and discussed in local languages with broader research team from Mbarara University.