

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

### ARTICLE DETAILS

#### Title (Provisional)

High burden of teenage pregnancy and low modern contraceptive methods uptake in refugee settlements of Northern Uganda in the post COVID-19 era Between 2020 and 2023

#### Authors

Donald, Otika; Odongo, George; Muzaki, Ruth Mary Mary; Lamwaka, Beatrice Oweka; Bongomin, Felix; Pebolo, Francis Pebalo

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### VERSION 1 - REVIEW

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| <b>Reviewer</b>    | <b>1</b>   |
| <b>Name</b>        | <b>Bakesiima, Ritah</b>  |
| <b>Affiliation</b> | <b>Makerere University, College of Health Sciences, Clinical Epidemiology Unit</b> |
| <b>Date</b>        | <b>26-Jun-2024</b>   |
| <b>COI</b>         | <b>No</b>  |

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This is a good research topic and of great relevance in these particular times where teenage pregnancies are on the rise, especially among refugees. The manuscript is mostly well written, but could be improved with some of these suggestions below.

General: The authors are advised to do a thorough grammar check including sentence completion, tenses, and punctuation. For example, titles should not have full stops.

Title: Use of the terms “contraceptive method uptake” sounds like a repetition of sorts. It would be better to just say “contraceptive uptake”.

Abstract:

i) Methods: You mention that this was a cross-sectional descriptive study, and yet you intend to look for factors associated with teenage pregnancy. This disqualifies it from being a descriptive study only, but adds an analytical aspect.

ii) Results: Line 39 seems incomplete

Background: it is not necessary to add information from South Asia, since it is out of context.

## Methods:

- i) Design: All cross sectional studies are observational and quantitative, so it is not necessary to repeat those terms.
- ii) Setting: It would be expedient to add information on the number or proportion of teenagers in these camps, and how many are females, how are the communities in the camps arranged, are they in zones and blocks or villages, how many health centres are in the camp, and what level are they? Do they all provide family planning services to adolescents?
- iii) Population: Why did you exclude adolescents below 15 years? I understand that there are some adolescents below 15 who are sexually active or have ever been pregnant.
- iv) Sample size: The formula you have stated is by “Kish Leslie”. This is one person, and not two, as it may appear in your statement.
- v) Sampling: Since you used multi-stage sampling (cluster and convenience sampling), you ought to account for design effect in your sample size calculation, usually by multiplying your estimated sample size by 2. This would mean that your sample size may be inadequate to answer your objectives.
- vi) Analysis: Why did you use the modified poisson regression analysis, and not the ordinary logistic regression? It would be good to state why.
- vii) Analysis: Didn’t you check for confounding and interaction?
- viii) Ethics: You need to add a section on ethics in the manuscript.

## Discussion:

- i) The discussion should start with a summary of your results.
- ii) Lines 261 to 267: this sounds like a recommendation. You should not make recommendations in the discussion. So I advise that you move this to the recommendation section.
- iii) Lines 269 to 272: this looks like another recommendation. In the discussion, you should only explain your results, compare them to other similar studies, and explain why there may be any contradictions with other findings.
- iv) Another recommendation from lines 276 to 286, and several other paragraphs within the discussion. These should be moved to their rightful place.

Conclusion: this section should be written as “conclusions and recommendations” as these usually go hand in hand, unless the journal guidelines mention otherwise.

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|-----------------|----------------------|
| <b>Reviewer</b> | <b>2</b>             |
| <b>Name</b>     | <b>Logie, Carmen</b> |

|                    |   |
|--------------------|---|
| <b>Affiliation</b> | <b>University of Toronto, Factor-Inwentash Faculty of Social Work</b> |
| <b>Date</b>        | <b>22-Jul-2024</b>  |
| <b>COI</b>         | <b>none</b>   |

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This is a very important topic that is understudied, with a key population of adolescent girls in humanitarian settings.

Background: Overall this is clear and well written. It would be great if you could even include 1-2 articles about teen pregnancy among refugee girls and young women in Uganda, to draw the paragraphs together on teen pregnancy in Uganda and linkages with poorer outcomes, and the SRH disparities in humanitarian settings. What are some underlying drivers of teen pregnancy that we know about in refugee and humanitarian settings, and how might these be shared and differ from host national communities?

Methods: Please describe more about how you used convenience sampling to select study participants: what did that look like in practice? How did you identify people to participate, and what was the participation refusal/acceptance rate? I think it is more accurate to say you used convenience sampling as a sampling method than cluster sampling, as ultimately this is not a random sample.

Other methodological information would help with assessing your findings:

- For research instruments, please provide more detail about how you assessed each variable (e.g., please describe for each variable how you measured it, including abuse, contraception use, alcohol use, peer pressure, and in this description please note if the outcomes were binary, categorical, continuous etc.). Were any of the research instruments previously used in this setting, and were any of the measures based on validated tools? For instance, how was peer pressure assessed? What were the exact questions on physical and sexual abuse and the timeframes?
- Please provide more information on where the survey was conducted, if there was gender matching with the participant and data collector, and how issues of privacy and confidentiality were managed regarding the abuse questions.
- For the informed consent, was consent obtained from parents or was that waived by the research ethics board? How did you manage ethical risks if the participants disclosed sexual and physical abuse and were under the age of 18 (was there duty to report?)
- Was research ethics approval obtained from both Gulu University and UNCST (Uganda National Council for Science & Technology)?
- How did the REB navigate the ethical issues regarding 15-19 year olds being asked about sexual and physical abuse? Especially as participants described this abuse by a relative: were they offered support and how did data collectors navigate this?

- Please write out each of the research questions and hypotheses that were tested in statistical analyses
- Were there differences by refugee settlement? Please include those details if socio-demographic or health outcomes varied between the 2 settlements

## Discussion

As your study is not representative of all girls in the refugee settlement, it is best practice to not compare the prevalence you note with the prevalence nationally or globally. That would be extending the findings beyond where you can speak to as it is not comparable, so it would be more accurate to speak specifically to what the findings mean for the setting and the design of the study you conducted.

It would be helpful to situate your studies within other literature of drivers of sexual and gender-based violence among young people in Uganda and Bidi Bidi, as there is a lot of literature that discusses contextual factors that shape violence. As violence is deeply rooted in gender inequities, situating the first paragraph in that gender-transformative approach (see Andy Gibbs work for instance on transforming masculinities) is key as what is really needed is to change the social drivers of violence (e.g. gender inequitable norms, values etc.) Please situate the findings within other studies on violence in Bidi Bidi and with Ugandan refugee youth, as that seems to be missing a bit in the discussion.

It would also be helpful to reference the literature on root causes of forced, early and child marriage in Bidi Bidi and among Ugandan refugees; the literature that has been published could help you better contextualize the findings. Referencing evidence based solutions and peer reviewed articles is needed in your discussion, particularly regarding solutions to child marriage. There also needs to be more critical exploration of barriers to contraceptive use; there have been publications on adolescent sexual and reproductive health stigma as barriers to engaging in SRH care, so instead of focusing on what the girls need to do (use contraceptive) you could also discuss how to create an enabling environment and context that addresses the barriers (which are many, and largely stigma related) for contraceptive use.

On page 18, it feels like there is a move toward editorializing ("it is high time") rather than situating key findings in the state of the current literature. I recommend you significantly revise the discussion to be very clearly succinct paragraphs that detail: 1) what did you find in this study; 2) what are the key 3-4 points and how do they align with (or build on/disagree with) past research very specifically on your topic and population (refugees in Bidi/Northern Uganda and Uganda), referring the literature and how you corroborate/build on this; 3) what are implications for practice (this can be where you draw on evidence based practices on child marriage in humanitarian settings for instance, on how to reduce SGBV in humanitarian settings, drawing on the evidence base which is very rich in Uganda); 4) you need a more fulsome limitations section, particularly regarding convenience sampling, and how you approached people, the acceptance rate, the lack of validated scales etc.

The conclusion needs to be more modest and speak to your limitations in design, so not comparing the prevalence in your relatively small non representative sample to global and national averages, speaking to the people you surveyed. If you can tie your conclusions into the existing literature on reproductive health and barriers among refugee youth in Uganda that would be great, as there are review papers out there on the larger social contexts and barriers to sexual and reproductive health (e.g. see Neha Singh's systematic reviews on humanitarian settings and how adolescents are understudied).

Overall there is really important information here, so I hope the comments can help you strengthen the methods and discussion. All the best in the revision process.

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## VERSION 1 - AUTHOR RESPONSE

**Reviewer 1:** Miss Ritah Bakesiima, Makerere University, College of Health Sciences.

Thank you so much for taking the time to review this paper. We appreciate the fruitful comments we have received from you and have taken a keen interest in every detail. We have addressed all areas as follows;

**Comment:** General: The authors are advised to do a thorough grammar check including sentence completion, tenses, and punctuation. For example, titles should not have full stops.

**Response:** Thank you so much. This has been addressed.

**Comment:** Title: Use of the terms “contraceptive method uptake” sounds like a repetition of sorts. It would be better to just say “contraceptive uptake”.

**Response:** The study title has been revised and this repetition addressed.

**Abstract:**

**Comment:** Methods: You mention that this was a cross-sectional descriptive study, and yet you intend to look for factors associated with teenage pregnancy. This disqualifies it from being a descriptive study only, but adds an analytical aspect.

**Response:** This has been revised and the term ‘descriptive’ removed, to reflect the analytical aspect of the study.

**Comment:** Results: Line 39 seems incomplete

**Response:** This has been revised and is now complete.

Background: it is not necessary to add information from South Asia, since it is out of context.

**Response:** This has been removed.

## Methods:

**Comment:** Design: All cross sectional studies are observational and quantitative, so it is not necessary to repeat those terms.

**Response:** Thank you so much. We have excluded the words observational and quantitative.

**Comment:** Setting: It would be expedient to add information on the number or proportion of teenagers in these camps, and how many are females, how are the communities in the camps arranged, are they in zones and blocks or villages, how many health centres are in the camp, and what level are they? Do they all provide family planning services to adolescents?

**Response:** All this information has been included in the revised manuscript. Lines 119 to 125.

**Comment:** Sample size: The formula you have stated is by “Kish Leslie”. This is one person, and not two, as it may appear in your statement.

**Response:** Thank you so much. This has been revised appropriately.

**Comment:** Analysis: Why did you use the modified poisson regression analysis, and not the ordinary logistic regression? It would be good to state why.

**Response:** We have added a reason as to why we chose modified poisson regression over ordinary logistic regression. Lines 173 to 176.

**Comment:** Ethics: You need to add a section on ethics in the manuscript.

**Response:** We have a section of ethics in the manuscript. It is the second last section, from lines 424 to 436.

**Discussion:**

**Comment:** The discussion should start with a summary of your results.

**Response:** This has been revised accordingly.

**Comment:** Lines 261 to 267: this sounds like a recommendation. You should not make recommendations in the discussion. So I advise that you move this to the recommendation section.

**Response:** We have removed this and moved it to the conclusion and recommendation section accordingly.

**Comment:** Lines 269 to 272: this looks like another recommendation. In the discussion, you should only explain your results, compare them to other similar studies, and explain why there may be any contradictions with other findings.

**Response:** We have removed this and moved it to the conclusion and recommendation section accordingly.

**Comment:** Another recommendation from lines 276 to 286, and several other paragraphs within the discussion. These should be moved to their rightful place.

**Response:** We have removed this and moved it to the conclusion and recommendation section accordingly.

**Comment:** Conclusion: this section should be written as “conclusions and recommendations” as these usually go hand in hand, unless the journal guidelines mention otherwise.

**Response:** This has been revised too

**Reviewer: 2.** Prof. Carmen Logie, University of Toronto, University of Toronto

Comments to the Author:

**Comment:** This is a very important topic that is understudied, with a key population of adolescent girls in humanitarian settings.

**Response:** Thank you so much for the positive comment.

#### **Background:**

**Comment:** Overall this is clear and well written. It would be great if you could even include 1-2 articles about teen pregnancy among refugee girls and young women in Uganda, to draw the paragraphs together on teen pregnancy in Uganda and linkages with poorer outcomes, and the SRH disparities in humanitarian settings.

**Response:** This information has been added in lines 100 to 105.

**Comment:** What are some underlying drivers of teen pregnancy that we know about in refugee and humanitarian settings, and how might these be shared and differ from host national communities?

**Response:** This too has been added to lines 107 to 111.

#### **Methods:**

**Comment:** Please describe more about how you used convenience sampling to select study participants: what did that look like in practice? How did you identify people to participate, and what was the participation refusal/acceptance rate? I think it is more accurate to say you used convenience sampling as a sampling method than cluster sampling, as ultimately this is not a random sample.

**Response:** Thank you so much. This has been addressed in lines 158 to 162.

**Comment:** Other methodological information would help with assessing your findings: For research instruments, please provide more detail about how you assessed each variable (e.g., please describe for each variable how you measured it, including abuse, contraception use,



alcohol use, peer pressure, and in this description please note if the outcomes were binary, categorical, continuous etc.). Were any of the research instruments previously used in this setting, and were any of the measures based on validated tools? For instance, how was peer pressure assessed? What were the exact questions on physical and sexual abuse and the timeframes?

**Response:** This information has been added in lines 163 to 169.

**Comment:** Please provide more information on where the survey was conducted, if there was gender matching with the participant and data collector, and how issues of privacy and confidentiality were managed regarding the abuse questions.

**Response:** A private and comfortable room was acquired and used during the process of data collection to ensure privacy and confidentiality (as stated in lines 458 to 459). Much as we didn't consider gender matching, the research assistants were trained on ethical principles and were well equipped with the knowledge of privacy and confidentiality regarding all respondent information.

**Comment:** For the informed consent, was consent obtained from parents or was that waived by the research ethics board? How did you manage ethical risks if the participants disclosed sexual and physical abuse and were under the age of 18 (was there duty to report?)

**Response:** Written informed consent was obtained from respondents who were 18 or 19 years. For respondents below 18, a written informed ascent was obtained from a parent / guardian who also consented to allow their daughter participate in the study, and participation was free and voluntary. Detailed information pertaining informed consent is provided in the ethical considerations section in lines 459 to 462.

Regarding ethical risks for minors disclosing sexual and physical abuse, we didn't have the duty to report as this was not within our jurisdiction, however, we provided counselling to the victims, and information on appropriate legal channels to take in order to report such incidences

to higher authorities.

**Comment:** Was research ethics approval obtained from both Gulu University and UNCST (Uganda National Council for Science & Technology)?

**Response:** We only obtained ethical clearance from Gulu University Research Ethics Committee (lines 453 to 454).

**Comment:** How did the REB navigate the ethical issues regarding 15-19 year olds being asked about sexual and physical abuse? Especially as participants described this abuse by a relative: were they offered support and how did data collectors navigate this?

**Response:** Again, as earlier stated, we provided counselling to the victims, and information on appropriate legal channels to take in order to report such incidences to higher authorities.

**Comment:** Please write out each of the research questions and hypotheses that were tested in statistical analyses

**Response:** This has been added in lines 192 to 194.

**Comment:** Were there differences by refugee settlement? Please include those details if socio-demographic or health outcomes varied between the 2 settlements

**Response:** We actually did not do sub analyses to see differences by refugee settlement. Since the settlements were randomly selected, we considered the entire population to be homogeneous.

## **Discussion**

**Comment:** As your study is not representative of all girls in the refugee settlement, it is best practice to not compare the prevalence you note with the prevalence nationally or globally. That would be extending the findings beyond where you can speak to as it is not comparable, so it would be more accurate to speak specifically to what the findings mean for the setting and the design of the study you conducted.

**Response:** This has been revised to suit only the context in which our study was conducted.

Lines 281 to 282.

**Comment:** It would be helpful to situate your studies within other literature of drivers of sexual and gender-based violence among young people in Uganda and Bidi Bidi, as there is a lot of literature that discusses contextual factors that shape violence. As violence is deeply rooted in gender inequities, situating the first paragraph in that gender-transformative approach (see Andy Gibbs work for instance on transforming masculinities) is key as what is really needed is to change the social drivers of violence (e.g. gender inequitable norms, values etc.) Please situate the findings within other studies on violence in Bidi Bidi and with Ugandan refugee youth, as that seems to be missing a bit in the discussion.

**Response:** Information from other studies in Bidi Bidi has been added in the discussion as advised. (lines 304 to 311).

**Comment:** It would also be helpful to reference the literature on root causes of forced, early and child marriage in Bidi Bidi and among Ugandan refugees; the literature that has been published could help you better contextualize the findings. Referencing evidence based solutions and peer reviewed articles is needed in your discussion, particularly regarding solutions to child marriage.

**Response:** This has been revised and suggestions included. (lines 304 to 311).

**Comment:** On page 18, it feels like there is a move toward editorializing (“it is high time”) rather than situating key findings in the state of the current literature. I recommend you significantly revise the discussion to be very clearly succinct paragraphs that detail: 1) what did you find in this study; 2) what are the key 3-4 points and how do they align with (or build on/disagree with) past research very specifically on your topic and population (refugees in Bidi/Northern Uganda and Uganda), referring the literature and how you corroborate/build on this; 3) what are implications for practice (this can be where you draw on evidence based practices on child marriage in humanitarian settings for instance, on how to reduce SGBV in

humanitarian settings, drawing on the evidence base which is very rich in Uganda); 4) you need a more fulsome limitations section, particularly regarding convenience sampling, and how you approached people, the acceptance rate, the lack of validated scales etc.

**Response:** The discussion section has been revised accordingly as advised (lines 281 to 331).

**Comment:** The conclusion needs to be more modest and speak to your limitations in design, so not comparing the prevalence in your relatively small non representative sample to global and national averages, speaking to the people you surveyed. If you can tie your conclusions into the existing literature on reproductive health and barriers among refugee youth in Uganda that would be great, as there are review papers out there on the larger social contexts and barriers to sexual and reproductive health (e.g. see Neha Singh’s systematic reviews on humanitarian settings and how adolescents are understudied).

**Response:** This has been revised in lines 348 to 352.

**Comment:** Overall there is really important information here, so I hope the comments can help you strengthen the methods and discussion. All the best in the revision process.

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## VERSION 2 - REVIEW

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|--------------------|--|
| <b>Reviewer</b>    | <b>1</b>   |
| <b>Name</b>        | <b>Bakesiima, Ritah</b>  |
| <b>Affiliation</b> | <b>Makerere University, College of Health Sciences, Clinical Epidemiology Unit</b> |
| <b>Date</b>        | <b>08-Nov-2024</b>   |
| <b>COI</b>         |  |

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Lines 32 to 34: In the abstract, you state that you used  $p < 0.2$ , and the you add that the p-value was set at 0.05. This sounds confusing, and yet I know you meant that the  $p < 0.2$  was used for bivariate analysis, while  $p < 0.05$  was used for multivariate analysis. Modify this statement to bring this out better.

Line 206: In your explanation as to why you used modified poisson regression analysis, you mention that you chose it because the “incidence rate was high”. However, this is a cross sectional study which cannot estimate incidence, but rather, prevalence. So you should

instead say, that you chose modified poisson regression because the prevalence rate was high.

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## VERSION 2 - AUTHOR RESPONSE

**Reviewer 1:** Miss Ritah Bakesiima, Makerere University, College of Health Sciences.

Thank you so much for taking the time to review this paper. We appreciate the fruitful comments we have received from you and have taken a keen interest in every detail. We have addressed all areas as follows;

**Comment:** Lines 32 to 34: In the abstract, you state that you used  $p < 0.2$ , and the you add that the p-value was set at 0.05. This sounds confusing, and yet I know you meant that the  $p < 0.2$  was used for bivariate analysis, while  $p < 0.05$  was used for multivariate analysis. Modify this statement to bring this out better.

**Response:** Thank you so much for this comment. This section has been thoroughly revised and now brings out exactly what was done at every stage of analysis. (Lines 32 to 36).

**Comment:** Line 206: In your explanation as to why you used modified poisson regression analysis, you mention that you chose it because the “incidence rate was high”. However, this is a cross-sectional study which cannot estimate incidence, but rather, prevalence. So you should instead say, that you chose modified poisson regression because the prevalence rate was high.

**Response:** Thank you so much for this comment. This is true. We have revised this part and replaced the word incidence with prevalence. (Line 205).

**Comment:** If you have selected ‘Yes’ above, please provide details of any competing interests.:  
Not Applicable.

**Response:** This must have been an oversight. Thank you so much and we have revised it accordingly.