Reviewer's report

Title: Sexual Violence against Female Sex Workers in The Gambia: A cross-sectional examination of the associations between victimization and reproductive, sexual and mental health

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Reviewer: Elizabeth Comrie-Thomson

Reviewer's report:

The article is clearly written and contains well-developed arguments supported effectively by the evidence. The standout issue requiring further consideration is the fact that forced sex by a non-client was not measured in data collection.

• Major Compulsory Revisions
The author must respond to these before a decision on publication can be reached. For example, additional necessary experiments or controls, statistical mistakes, errors in interpretation.

1. It is necessary to explain the use of forced sex by a client, rather than simply forced sex, as the primary study outcome. This is of particular concern since it is conceivable that FSW are also more vulnerable to experiencing forced sex from non-clients (e.g. by partners, police officers, and/or strangers) and if this were the case then it would be expected to confound findings. Was information on forced sex by a non-client collected? If so, how was this factored into analysis? If not, then is there information available on the prevalence of forced sex by a non-client (or forced sex generally) in this population, or a similar population? This information should be included and integrated into the discussion of findings. I note that the lack of data collection on forced sex by a non-client is mentioned (in Limitations, para. 2 and Conclusions, para. 1), but the implications of this omission need to be comprehensively discussed. I would suggest including this discussion in the sections Outcomes, Statistical Analysis, and Results, as well as Limitations.

2. The authors mention sexual violence, and physical and sexual violence, when introducing the research problem, but discuss only forced sex as a primary study outcome (e.g. Introduction para. 1, Conclusion para. 1). If the article begins by referring to physical and sexual violence then it would be useful to add an explanation and justification for how forced sex fits within the broader topic of physical and sexual violence victimisation, and to justify the use of forced sex rather than the broader spectrum of sexual violence (or physical and sexual violence).

3. I think that it is important to be clear that induced abortion is not, in itself, a poor reproductive health outcome (see, for example, Introduction para. 2). The evidence included in the article from the literature and the present study supports the notion that induced abortion can be a marker for poor reproductive health.
outcomes – for example, in settings where access to abortion is restricted and many abortions are unsafe, or where induced abortion is associated with forced sex and unplanned pregnancy. That said, I think it would be wise to explicitly reject the implication that induced abortion is a negative health outcome in itself.

4. The title refers to mental health outcomes associated with victimisation and I would suggest making these more prominent in the abstract (perhaps in para. 4, the first sentence could refer to ‘poor sexual, reproductive, and mental health outcomes’).

5. Given that both a non-probability method (i.e. chain-referral) and a quasi-probability method (i.e. randomised time-based sampling from pre-identified venues) were used in sampling, it would be helpful to include an overarching statement of the likely representativeness of the sample (e.g. in Methods, para. 1). It would also be useful to report the number and proportion of FSW recruited with chain-referral as opposed to randomised time-based sampling from sex work venues.

6. It would be good to report refusals or exclusions by reason (e.g. in Methods, para. 1 or para. 2 – suggest also including a flow diagram). In particular, for someone not familiar with this setting it would be helpful to know the proportion and number of FSW excluded due to being aged less than 16 years, as well as the proportion and number excluded due to language requirements (i.e. are there ethnic minority groups who are likely to be under-represented in the sample).

• Minor Essential Revisions

- The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

7. The terms violence, physical and sexual violence, sexual violence, forced sex, rape, and assault are all used in the article. I would suggest tightening the use of terminology, perhaps to using only sexual violence and forced sex. Moreover, where physical violence is mentioned, there is not a clear rationale for this as the majority of the paper addresses sexual violence (in the form of forced sex) only; I would suggest either adding a rationale, for example by linking this more explicitly with the data collection and results on beatings and torture, or removing the references to physical violence.

8. I think it is important to define the term ‘street females’ (Introduction, para. 2) and clearly explain the relevance of this population to FSW.

9. There appears to be an error in the figure used for either the study population, or the number of study participants reporting forced sex, in the study of street females in Ethiopia (Introduction, para. 2). Please double-check the figures from this study.

10. When reporting findings from the study of FSW in Nepal, it would be useful to clarify how violence was defined (e.g. physical and/or sexual) and in particular to clarify any results from this study relating to forced sex victimisation as a discrete outcome; if forced sex was not measured as a stand-alone outcome in this study, I would suggest noting this when reporting the findings (Introduction, para. 3).
11. Please clarify whether data collection was conducted by male or female interviewer(s), or both (Participants/Collection Methods, para. 2).

12. Please clarify whether the interview protocol included appropriate referral mechanisms for study participants reporting violence.

13. Please explain which features of the interview protocol were designed to increase the reliability of findings, particularly relating to the reporting of physical and/or sexual violence victimisation. I note that this issue is mentioned in Limitations, para. 2, but I suggest that it is useful to mention what was done to address the issue (e.g. in Participants/Collection Methods, para. 2).

14. I think it is important to explain how torture (as in, ‘had ever been tortured as a result of selling sex’) was defined, or not defined, during data collection. Again, I note that this is mentioned in Limitations, para. 2, but I think it should be made explicit earlier (e.g. in Outcomes, para. 1).

15. The outcomes relating to difficulty of accessing condoms are reported differently in three different sections of the article (Abstract, para. 3; Outcomes, para. 2; Results, para. 3). I think it is important to use one categorisation (e.g. ‘no access’, ‘difficult access’, ‘somewhat difficult access’) consistently.

16. Please clarify that previous research on condom non-use during forced sex (Discussion, para. 2; references 13 and 35) is transferable to the study population of this study.

17. It is important to make explicit the argument that poor mental health outcomes among FSW are a problem in themselves, rather than leaving open the implication that poor mental health outcomes are problematic largely because of their association with future poor sexual health outcomes (Discussion, para. 3).

18. The limitations arising from chain-referral sampling are discussed (in Limitations, para. 1) without reference to the randomised time-based sampling that was conducted. I suggest that it would be useful to mention both methods at the same time, and discuss their combined implications for the likely representativeness of the sample.

19. Given the findings of the study as well as the title of the article, references to sexual and reproductive health should also include mental health as appropriate (e.g. in Conclusion para. 2). For example, if the authors think this is reasonable, recommendations for the provision of specific services (EC and PEP) could also refer to mental health crisis services as appropriate (see Abstract para. 4; Conclusion para. 1).

• Discretionary Revisions

These are recommendations for improvement which the author can choose to ignore. For example clarifications, data that would be useful but not essential.

20. When describing the findings of the study of street females in Ethiopia (Introduction, para. 2), it would be useful to clarify the reporting of the proportion of women who experienced forced sex in their lifetime for whom a condom was never used. It reads like it is 100% of the 24% who have ever experienced forced
sex, but this is a little bit unclear.

21. I think it would be helpful for the reader to know whether the interviews took place at venues from which study participants were recruited, or elsewhere.

22. It is potentially unclear on first reading that the level of educational attainment reported for study participants (Results, para. 1) is the highest level attained, i.e. that the categories are mutually exclusive. It could be useful to clarify this.

23. It would be useful to clarify the statement that FSW who have experienced forced sex are 2 to 5 times more likely to report depression compared with FSW who have not experienced forced sex (Discussion, para. 3). As it currently reads, the comparator group it is potentially unclear.

24. The authors may wish to consider including some more specific recommendations for services to address the mental health needs of survivors of violence at community level (Discussion, para. 3). Additionally, the statement that the recommendation for community-based interventions to address mental health would also be beneficial for the general population would be strengthened with reference to the prevalence of depression and other common mental disorders in the general population of The Gambia (if this is available).

25. The discussion of the observed association between forced sex and access to condoms and receiving STI test in the previous 12 months would (Discussion, para. 4), in my opinion, be strengthened by an explicit discussion of the inability to determine the direction of these associations with the present study design. I note that this is included in the Limitations section, but given that Discussion para. 4 speaks directly to prevention I think it would be useful to mention the issues of direction and causality at the point of interpreting these findings.

26. I would suggest referring to either chain-referral or snowballing sampling consistently. Currently, the term snowball sampling is used for the first time in Limitations, para. 1.

27. I think it would be useful to explain why Respondent Driven Sampling was not used for this study, given that it is mentioned as a desirable sampling method for future use (Limitations, para. 1).

28. It would be helpful to include some additional information about the 'strategic plan' (Conclusion, para. 2) – is it a national-level government plan? Does it have a title, or if not then what specific area(s) does it address?

• Minor issues not for publication

Spelling, typographical errors, grammatical errors, stylistic suggestions etc.

29. I would strongly suggest the use of 'whom' (or 'who') rather than 'which' when referring to study participants (e.g. Results, para. 1; Introduction, para. 2).

30. Please consider using whole numbers in statistics reported in Introduction, para. 2 to match the rest of that section of the report.

31. One sentence in Statistical Analysis, para. 1 (beginning ‘Age of entry was controlled for…’) is a little bit unclear. Suggest revising sentence to read something like ‘…higher levels of reported abuse and drug and alcohol use, as
well as abuse in childhood and depression as an adult’.

32. Multiple minor spelling, punctuation and grammatical errors which would be picked up by a close proof-reading.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.