Reviewer’s report

Title: Extent of induced abortions and occurrence of complications in Kinshasa, Democratic Republic of the Congo

Version: 1 Date: 04 Jan 2019

Reviewer: Brooke Levandowski

Reviewer's report:

This is a very interesting manuscript, and I agree that it would be important to share this information. The second version of the manuscript is much improved with the addition of important detail. There are, however, remaining comments to address.

Major comments:

Overall, a Background section needs to pull the reader into the story, moving from general statements to more specific ones about why the study was done. As it stands, the background gives some detail about how unsafe abortions lead to maternal death, describes the AICM and then states "therefore the ATPR" methodology was used. But why was ATPR used and not AICM? It's an awkward transition.

This would be a much stronger section if the Background discussed maternal deaths due to unsafe abortion, how knowing the magnitude of unsafe abortion can save lives, how it's not easy to estimate induced abortions (especially in countries where it's illegal and highly stigmatized), and how the ATPR has been historically used to estimate induced abortions particularly in countries where abortion is illegal in most cases. The limits of the AICM in countries were access to safe induced abortion is severely restricted is that it's difficult to get permission from the MOH to measure cases of postabortion care in their clinics, and providers often will underreport cases of postabortion care and induced abortion cases for fear of losing their medical license or going to jail. In cases where it's unlikely for the AICM to yield accurate information, ATPR can be effective in providing a baseline estimate of induced abortion.

A few questions/challenges remain with the methods section.

1. Efforts have been made by authors to clarify the Sampling section. However, it remains unclear how or if authors used both respondent-driven sampling and the random sampling strategy, as you would typically use one or the other.
a. It appears that authors used a random sampling strategy to choose one woman of childbearing age per household (within health zone strata, within health areas, within avenues, and within parcels/residences) to answer the survey. If the authors are indicating that the "respondent-driven sampling" comes into play because women were only choosing to discuss some confidents, this is an incorrect interpretation of the phrase "respondent-driven sampling". "Respondent-driven sampling" refers to selecting and interviewing a group of key stakeholders. Afterwards, the stakeholders name a group of people who should be interviewed next, and so forth. There is no indication from the information given that "respondent-driven sampling" was indeed used in this study. If this is indeed true, please remove this phrase.

b. As a second point to the sampling, if the random sampling strategy was indeed employed as described, it does not appear in the methods section that the complex sampling strategy was applied to any of the calculations. This is curious, and calls into question why such a complex sampling strategy was used in the first place. Authors need to explain this discrepancy.

c. As a third point, there is reference to citation #17, in French, on line 174 about the sampling being non-probabilistic, which may be the reason why the sampling structure and weights were not applied to the data. However, non-probability sampling points to choosing a convenience sample of participants who are easy to capture. Non-probability appears to indicate that indeed "Respondent-driven sampling" was employed. This is becoming a circular argument and circular question about what indeed was done, and why, in the sampling strategy. If the sample was respondent-driven, it was indeed non-probabilistic, non-representative, and would not apply sampling weights. If the sample was randomly selected, then sampling weights need to be applied.

d. As a last point, if random sampling was employed, please cite the source of the demographic weights. Did they come from census data? DHS? Some other demographic survey?

Minor comments:

Abstract:

1. The original version of the plain English summary, naming "confidents" instead of "all women of childbearing age" is clearer. However, it calls into question the denominator of the abortion rate. Is it 1000 women of childbearing age in DRC? Kinshasa?

2. The key word "extent" is not in the MeSH browser and therefore not recognized as a key word
3. The authors have done a good job adding limitations. However, social desirability bias isn't addressed. You only know the information respondents "could" and were willing to report on their confidents. Suggest adding the phrase "and were willing to report" to limitations.

Background:

1. Cite Guttmacher for the AICM.
2. Cite Clementine Rossier and Guttmacher for ATPR.

Methods:

1. ATPR is already defined in the introduction.

2. It's unclear why bullets show up in the methods section. Please remove and format as paragraphs.

3. It's unconventional to include the sample size calculation and formula in the peer-reviewed literature. If authors want to continue to include it, then they need to cite the sample size formula.

4. Remove "information was collected from 2015" from line 102. Then, change line 155 to "form, asking respondents to recall the characteristics of induced abortion for their confidents during the year 2015."

5. Change line 123 to "for the random selection of respondents, the sample size was calculated…"

6. Change line 128 to "The minimal sample size calculated was 384 women of childbearing age. We added 20% (n=76) to the sample to account for non-respondents, yielding a total sample of 460.

7. You can then remove (384+76) from line 138, as that's confusing placement.

8. Change line 153 to "randomly and interviewed"

9. The text on lines 158-161 are much improved and helpful. It would be clearer if the names for spontaneous abortion and induced abortion was provided in the local language, if possible. If there are a variety of local languages, this may become awkward.
However, adding this detail reduces misclassification bias and assists further research in DRC.

10. The section on "Data collection, information sources" has two sentences at the end, neither which comprise complete paragraphs in and of themselves.

11. While authors added a sentence about how induced abortion was calculated (lines 175-176), it remains unclear how the rate of induced abortions was calculated.

12. Since authors did not use a priori variables in their regression model, change line 180 "all" to "only" to clarify for the reader.

Results:

1. Thank you for adding respondents and mean to the results section. Instead of placing this information throughout the beginning, start with line 192 to say "A total of 460 respondents reported on 1444 confidents, with a median of 3 (IQR:2-4) confidents."

2. The format of this section is confusing, with headings and table names inserted in a repetitious fashion. Since each section only has 1-2 sentences, it's unclear why the headings are necessary.

3. For the rate of induced abortion, is that calculated for Kinshasa or DRC as a whole? Please add this distinction to line 195.

4. Lines 211-214. Change 3 words of "risk" to "odds" since odds ratios were calculated, not risk ratios.

Discussion:

1. The authors did not respond to this comment in their response, so I have included it again here, as it still applies: The discussion section posits that DRC is different from other countries but it's unclear what the authors are saying here. In the DRC study, 50% of induced abortions were reported to be self-induced. However, since this is a confidante study, the method of induction can only be truly "known" for the women who reported on themselves, if they decided to be truthful. There is more reporting error bias for those women reported on by the interviewees, as the friend or sister may not have told the interviewee the truth. This social desirability bias exists in all the other studies as well (citations 23-26). Also, citations 23-26 appear to only refer to studies done in one facility, not country wide studies, which indicate who performed the induced abortions in
those facilities, not for the entire country, as implied by the sentence. The truth is that we will never really know the reality of induced abortions in any setting, as long as abortion remains so stigmatized, as well as illegal, in many settings. Please clarify these assertions in the text.

2. Line 231: While it is clear the % for Malawi, Tanzania, and Rwanda are for rates of induced abortion rates are typically presented in a x per 1000 women of childbearing age, not a %. This citation gives the abortion rate for Malawi: The incidence of induced abortion in Malawi. Levandowski BA, Mhango C, Kuchingale E, Lunguzi J, Katengeza H, Gebreselassie H, Singh S. Int Perspect Sex Reprod Health. 2013 Jun;39(2):88-96. doi: 10.1363/3908813.

3. Lines 246-252, change 3 uses of "correlation" to "association" since these studies and your study did not calculate correlations or linear regressions.

4. sentence about Dragoman's work remains unclear. Lines 254-257 are confusing

5. change line 264 to say "poor quality of the abortion procedures by abortion providers in these neighborhoods."

6. Line 269, change "women" to "confidents"

7. Lines 274-275 are unclear

8. Add limitation to line 281. "population. Respondents could only report what they knew about their confidents and what they felt safe reporting to researchers."

Conclusions:

1. The conclusion still lacks clear recommendations. What are the current family planning interventions that are occurring in DRC? What constitutes "major surgeries" in DRC? It's unclear what health package the authors are referring to, and what could be done about this at the country level. Suggest the authors frame their recommendations to the readership of the journal, the majority of whom have never been to DRC and are unfamiliar with the current health system and specifics of how it could be improved to address maternal mortality due to unsafe abortion.

Table 1.
1. Add note to table explaining "eccentric quarters and of extension"

2. Change "patient abortion background" to "confidante abortion background"

Table 3.

1. Authors note in their response that "generally" women only reported one method used to induce the abortion. Since this is the only information we have about abortion in DRC, it's important to be specific. If more than one method was mentioned for any woman and included in the table, please make a note i.e. more than one method was reported for 5 confidents

2. Add note to indicate that high doses of drugs were administered orally (as per author response)

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