Reviewer's report

Title: Risk Factors of Induced Abortion among Preparatory School Female Students, Guraghe Zone, Southern Region, Ethiopia: Cross-Sectional Study

Version: 2 Date: 30 Aug 2018

Reviewer: Heidi Jones

Reviewer's report:

The authors implemented a population-representative cross-sectional study of adolescent girls attending preparatory schools in the Gurage Zone of Ethiopia to assess the prevalence of induced abortions and their complications, as well as predictors of abortion to enable targeting of interventions. The authors have collected valuable data that will be a nice addition to the literature. However, the paper needs editing for grammar and word usage; I recommend finding/hiring an English language editor to help with the text. Additionally, I have a few substantive comments to strengthen the paper:

1. In the Background section, I am not clear what the authors are trying to say in the first paragraph where they say that half of all maternal deaths are due to unsafe abortion (this part is clear), but the second half of the sentence and how it relates to the first half (14% in sub-Saharan Africa) is not clear.

2. In lines 12-18, please make it clear that you are talking about complications under unsafe conditions. Induced abortions under safe conditions have an extremely low rate of complications (far lower than complications from pregnancy/childbirth). See for example paper by Ushma Upadhyay et al in Obstetrics & Gynecology, "Incidence of Emergency Department Visits and Complications after Abortion". This paper found major complication rate to be 0.23 cases per 100 women (0.23%) in other words one quarter of one percent - extraordinarily low, as these can be extremely safe procedures.

3. It is also unclear if you are suggesting that getting an abortion causes adolescents to suffer from emotional problems - is there evidence to suggest that when they get abortions in a safe and supportive environment they have emotional problems? If so, please include the references for data that support this.

4. In the second paragraph, is there evidence that abortion rates are higher in rural areas in Ethiopia? If so, please add a reference to the first sentence. Also, the information on legal status of abortion belongs in this paragraph, with additional information about the number of abortions that are legal versus illegal and whether abortions that are occurring are likely to be occurring in a clinic with qualified health care providers or whether these are being done outside of the clinic setting. The high rates of complications suggest that
they are not being done by clinicians with appropriate training. Again, in settings in which it is legal and trained providers do abortions, complication rates are extremely low.

5. In general, the background section does not tell a cohesive story. It would benefit from editing so that it is clear how the paragraphs fit together as the background rationale for the current study.

6. On page 7 line 13 - I am very confused what the authors mean by being 'aware about when life begins'. This is a religious/philosophical debate that does not have a known correct/wrong answer. Please clarify what you mean. You need to rephrase these findings as when respondents 'believe' life begins not when they 'know' life begins.

7. On page 7 line 31, there is no such thing as 'confounding factors' when you are running predictive statistical model (confounding is only relevant when you are trying to identify causes based on causal hypotheses - see Schooling & Jones, "Clarifying questions about "risk factors": predictors versus explanation" In Emerging Themes in Epidemiology 2018:15:10 for more information about this). Please rephrase to say, "In fully adjusted logistic regression models, living relationship... were excluded."

8. Table 1 should include row percentages - not total percentages. So for example, for <17 28/(28+167) = 14.4% have had an induced abortion / 167/195 = 85.6% have not. These are the percentages to include next to the counts. For >=18 27/(27+182)= 12.9% have had an induced abortion / 182/209=87.1% have not. You could then run a chi-squared statistic to see whether 14.4% is statistically significantly different from 12.9% - that is whether age is associated with having an induced abortion and include it in the table. All of the percentages should be calculated in this manner. The N for yes / no for abortion should be at the top of the table in the header rather than included as the last two rows of the table.

9. Table 2 should be reformatted in the same fashion as suggested for Table 1. Also some of the categories here need to be clarified. For example, I do not understand what "Enforcing to abortion" means. I find it very interesting that 32 of the girls who had an abortion said that they never agree with having an abortion. This shows the extent of stigma around abortion; it is this stigma which could lead to emotional harm, from my perspective. It might be useful to discuss this finding a little.

10. Table 3 - for this table I would present column percentages - as you have done for some of the variables such as abortion frequency - only I would present column percentages for all of the variables. (That is the percentages should sum to 100% within each column for...
a given variable) - you should include chi-squared statistics comparing the distribution among girls who had an abortion vs. those who did not in this Table as well.

11. The number of girls who reported rape as a reason for pregnancy is quite high - 18% of those who had an abortion. This is something it may be worthwhile to include in the discussion. Should interventions target ensuring girls' safety?

12. In table 3, abortion complications yes/no should be in the same column under induced abortion. It would be interesting for the authors to include the complications by safe/unsafe, as it seems as though girls with 'safe' abortions also had complications (which should not be the case), unless these girls are reporting pain.

13. The discussion should talk a bit more about the implications of the findings from this study. How can these findings be used to target interventions?

Here are some specific suggestions for grammar and word usage:

Page 2, Line 3 it should read 'spontaneously or intentionally induced' - not 'suddenly'. The official term for miscarriage is spontaneous abortion.

The first sentence should read, "Abortion is defined … weight; spontaneously or intentionally induced in either safe or unsafe conditions."

Page 2, Line 7 - should be 'practice' not 'practices'

Page 2, Line 10 - 'may lead to' not 'leads'

Page 3, Line 60 - should read 'Centers for Disease Control and Prevention'

I hope these comments are helpful.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
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No

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