Author’s response to reviews

Title: Prevalence and determinants of menstrual regulation among ever-married women in Bangladesh: evidence from a national survey

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Dear Prof. Belizan,


We thank you for the opportunity to resubmit our manuscript and for the considered comments of the reviewers. We have addressed each of these point by point below and a revised version of the manuscript is submitted for your consideration.

Editor-in-Chief:

Please use only 1 digit after a decimal point.

Response: Thank you for your guidance. We have used only 1 digit after a decimal point for descriptive statistics (Table 1 and in-text).
Reviewer #1:

1. The study has extracted data from the latest and nationally representative 2014 Bangladesh Demographic and Health Survey (BDHS). However, the data is about 5-6 years old.

Authors’ Response: We agree with the reviewer. However, the fact is that any Demographic Health Survey (DHS) data across the world takes few years to be publicly available. Such that the BDHS-2014 is not 5-6 years old. For example, the data collection of BDHS 2014 has started on June 28, 2014 and completed by November 9, 2014. The final report published in 2016 and the dataset was publicly available in March 2016. Therefore, we believe the BDHS 2014 is still the latest available dataset since the new BDHS data has not been appeared yet.

2. The authors define the outcome variable from a question "have you ever used MR?" and this question was asked to those women who have ever heard of menstrual regulation (MR). If a woman ever heard of MR then how she would give a response of using MR. There will be chance of many false positives and false negatives response from the women that will create bias in the results.

Authors’ Response: The BDHS used the validated questionnaire of DHS developed by the panel of experts and implemented across the world. We believe that this is an appropriate approach to ask ‘whether you know or hear of MR’ before asking, “Have you ever used MR”. Otherwise, respondents might give positive answers without understanding about it. The former question confirms and validates responses, which, in fact, reduces biases.

Secondly, the authors did not collect the data themselves, and the DHS/BDHS always used standardized questionnaire and data collection procedure for ensuring integrity of the data as well as minimizing any sort of biases.

3. The authors mentioned, "this study extracted a subsample of 8,430 ever-married women aged 15-49 years". Besides, the authors mentioned the mean (standard error) age at first marriage of the women was 16.19 (0.04) years. It appears the data is skewed in the left side.

Authors’ Response: It is not quite clear whether this is simply a comment or suggestion made by the reviewer. However, the trend analysis of 7 waves of BDHS data (1993-2014) that included 48,877 women aged 15-49 years, demonstrated that the mean age at first marriage in Bangladesh was 15 years (Islam, MM, Islam, MK, Hasan, MS, Hossain, MB, (2017) Adolescent motherhood in Bangladesh: Trends and determinants. PLoS ONE 12(11) e0188294.). So, the age at first marriage of 16.19 years in the latest BDHS 2014 is expected as we used only the latest dataset.
Secondly, our outcome variable of ‘MR’ is not continuous that might be influenced by the skewed age at first marriage data.

4. The overall prevalence of MR was 12.26% (95% CI 207 11.13-13.38%) among the ever-married women in Bangladesh. Again, the authors mentioned in the introduction "The abortion ratio (the number of abortions per 100 live births) has increased from 18 in 2010 to 35.5 in 2014”… This is a big gap between the numbers. Need explanation.

Authors’ Response: The difference of prevalences between MR and abortion is expected due to the difference of the use of outcome definitions. In BDHS, abortion includes both self-induced (MR) and spontaneous (miscarriage) abortions, including stillbirth, which is problematic as stillbirth and miscarriage cannot be separated from MR in the BDHS. To avoid this, we have operationalized our main outcome measure ‘MR’ that is different from the ‘abortion’. Thus, MR is more appropriate measure compared to abortion to reduce the effect of misclassification and measurement error.

5. The authors mentioned in the discussion section "MR services are available in the capital city of Bangladesh due to the highest concentration of most of the public and private clinics, hospitals, and NGOs than other divisions." Therefore, this could be a reason for high prevalence of MR in Dhaka city compared to the other cities. It is also not clear whether the authors took migration between cities into account for their analysis.

Authors’ Response: We appreciate this point but there is no data associated with migration between cities in the BDHS 2014. However, we have adjusted for clusters/regional variations, which accounted reviewer’s comment and strengthen our argument related to spatial differences.

6. Avoid bringing the issues that the authors did not consider in the analysis. For example, the authors mentioned "family member of husband such as in-laws may have an influence on the decision-making process regarding use of MR by women due to the existing sociocultural settings".

Authors’ Response: Thank you for raising this point. We brought this issue because we created one of our explanatory variables “woman’s empowerment” based on four questions associated with woman’s involvement in the decision-making process i) about her (woman) own and ii) children’s health care seeking behavior, iii) the decision to visit relatives and other family, and iv) decision to buy large household goods, e.g., house or/and land. If a woman has no involvement in decision-making process of these areas was considered that she was not empowered, if she took decision jointly with her husband or other family members was
considered moderately empowered, and if she took decision independently was considered that she was highly empowered. Since the ‘woman’s empowerment’ variable was created by different questions related to decision making process mentioned above, this validates our statement. [The description is already in the manuscript page 9, lines 207-214].

7. There is always a relationship between level of education and employment of women. But the authors found level of education far from significance whereas the employment status is significant. Need explanation.

Authors’ Response: We appreciate reviewer’s concern about this issue. The relationship between ‘level of education’ and ‘employment’ is theoretically true but may not be true in Bangladeshi context where large number of women working in paid employment (especially in garment sectors) are illiterate, while many women are highly educated but not engaged in paid employment (just involve in unpaid household activities). For instance, about 37% women are working in manufacturing industries mainly in the garments with no education or primary education (Ref. 34. Rahman, RI, Islam, R, Female Labour Force Participation in Bangladesh: Trends, Drivers and Barriers, International Labour Organization, DWT for South Asia and Country Office for …2013). Our data below also support this argument where women with no education were more likely to be involved in employment compared with highly educated women. So, one cannot be used as a surrogate of other, which was explained why MR was associated with employment status but not with the level of education.

Table (Word file of "Response to the Editor and Referee Comments" is attached as the personal cover letter because we cannot post table here in the "Response to Reviewers" box).

8. The background justification to the article is weak. It does not sufficiently well describe the context of the project, i.e. why you are proposing this research, why it is important/necessary, or who will benefit from this research and how.

Authors’ Response: We believe that the objective of our paper was to focus on only MR, which is robust, compared with studies that included broad term of abortion. So, literature associated with MR is scant in Bangladesh. Therefore, we provided a sort of background of abortion why this need to be addressed.

In page 5, lines 123-134, we said “Bangladesh has a restrictive abortion law, that means abortion is illegal in Bangladesh unless it is necessary for saving life of a woman [6]. However, abortion-related deaths and complications remain a major maternal health problem in Bangladesh though the overall maternal mortality has declined considerably in the last two decades [5]. The incidence of abortion and proportion of abortion-related maternal deaths has increased from 2010
The abortion ratio (the number of abortions per 100 live births) has increased from 18 in 2010 to 35.5 in 2014 while the proportion of abortion-related maternal deaths has increased from 1% in 2010 to 7% in 2016 [7–9]. In 2014, about 1,194,000 induced abortions occurred in Bangladesh, and most of them were not attended by skilled personnel and were conducted in unsafe conditions, which causes severe medical complications including incomplete abortion, hemorrhage, cervical lacerations, sepsis, uterine perforation, bladder injury and shock [10, 11]."

In pages 6-7, lines 152-168, we have detailed the existing problem of MR research and justification of doing this study in Bangladesh:

“…..a recent study based on health facilities and health professionals’ surveys have reported that the rate of MR has declined, and rate of abortion has increased [7, 14]. This facilities and providers-based survey has limitations as the providers often underreport MR procedures that do not fully comply with government regulations [7, 16, 17].”

Newly included lines 155-158 in the page 6:


Previous lines 158-168 in pages 6-7: “At the same time, these facilities and providers-based surveys are providing little insight regarding the demand side issues, i.e., what factors are influencing the demand of the MR services among women.

Objective of the study

Thus, this study aimed to know the proportion of reproductive aged ever-married women who have used MR service and identify the determinants of accessing MR service in Bangladesh using a nationally representative sample from household survey. The findings of this study are important for health policy implications as it can help to design increasing use of MR services, which can reduce maternal morbidity and mortality in Bangladesh.”

In page 7, lines 166-168, we have described who will benefit from this research and how: “The findings of this study are important for health policy implications as it can help to design increasing use of MR services which can reduce maternal deaths in Bangladesh.”
8.1 There is a fact sheet from Guttmacher mentioned that "The annual rate of MR in 2014 was 10 per 1,000 women aged 15-49, down from 17 in 2010." (https://www.guttmacher.org/sites/default/files/factsheet/menstrual-regulation-unsafe-abortionbangladesh.pdf). But the authors found it 12.26% (95% CI 207 11.13-13.38%) among the ever-married women. Why the prevalence between two studies are different?

Authors’ Response: We agree with the difference in the prevalence between two studies. But they cannot be comparable due to many reasons e.g. representativeness, recruitment process, sample size etc. The BDHS is a nationally representative survey conducted following rigorous sampling procedure by the panel of experts that may capture the true prevalence compared with Guttmacher institute’s study.

In our earlier version, we referred both the fact sheet (mentioned by the reviewer) based on a health facilities and health professionals survey, and a journal article published from this study (Reference #7, page 18, lines 424-426 and Reference #14, page 19, lines 445-446). The survey was conducted based on a sample of 829 health facilities that provide MR or postabortion care services and a survey of 322 professionals knowledgeable about these services in 2014. Then they estimated the annual rate of MR based on the given MR services reported by those health facilities and professionals. There could be more reporting bias than the self-reported study.

We agree with the reviewer that MR has declined from 2010 to 2014 that has been acknowledged in our manuscript in page 6 (lines 152-158) with limitation of the study as follows:

“This facilities and providers-based survey has limitations as the providers often underreport MR procedures that do not fully comply with government regulations [7, 16, 17].”

Newly included lines 155-158 in the page 6: “Moreover, it may not estimate the true prevalence because women always do not take MR services from the health facilities and it could be self-induced or by unskilled providers due to social stigma and denial of MR services by health facilities [16–18].”

Therefore, we think our prevalence rate is more representative, reliable and has less reporting bias compared to the study mentioned by the reviewer.

9. The authors mentioned they used multivariate mixed-effect logistic regression for their analysis. Mixed means there should have fixed and random terms in the model. I don't understand where they have found a random term in a cross-sectional survey?

Authors’ Response: Mixed effects logistic regression is used when data are clustered. The researcher consider a variable a random effect factor if the variable has a group of possible levels but the researcher only sample a random collection (e.g., subjects, clusters etc.) and though these
samples will have some idiosyncrasies, they generally won’t care about them, with the goal of
generalizing to the broader population (e.g., all people, all clusters). Such that using a random
term in our study is justified as the BDHS do not collect data from all subjects or all clusters.


2.  Breslow NE, Clayton DG. Approximate inference in generalized linear mixed models. J

Reviewer #2:

You missed a section on 'Objectives of the study'. You need to add this after the background. I
recommend to edit the articles and resubmit.

Authors’ Response: Thank you for pointing out the problem in the formatting. We have included
a section in page 7 'Objectives of the study' after the background as reviewer suggested.

Line 42

Add 'extracted from survey sample of 17,000

add this other method related section.

Authors’ Response: We appreciate this comment and addressed accordingly in the abstract page
2, lines 47-49 “…the study used a sub-sample of……extracted from survey sample of 17,863”

and other method related section in page 7, lines 176 “…extracted from survey sample of
17,863…”.

Results

Line 46,

Mention population with rate i.e. 12.26% among ever married women.

Authors’ Response: Thank you for this feedback. We have now included both populations in the
abstract. In addition, we have included 95% CI, which is important because we missed the 95%
CI in the abstract in earlier version: in page 2, lines 53-54 and in page 10, line 249-250
“…12.3% (95% CI: 11.1-13.4%) among (991/8,084) ever-married women”.
Line 48 and all relevant sections

Complete the range of CI where you wrote 95% CI 0.36-0.7

Authors’ Response: We appreciate this detail comment. We have completed the 95% CI and edited the displacement of 95% CI in the abstract and all relevant sections (Lines 55-56, page 2; 271-272, page 11).

Line 65, 105

Abortion is not absolutely illegal in Bangladesh. Add 'except to save woman's live' after 'abortion is illegal in Bangladesh.

Authors’ Response: In page 3, line 76 and page 6, line 136, we have added 'except to save woman's live' after 'abortion is illegal in Bangladesh.

Conclusion

Line 78,

Revise the recommendation based on your study findings. You jumped to a recommendation for 'legalization of abortion in Bangladesh', which is very important from general sense and from other study findings, but this does not directly relate to your data and findings.

Authors’ Response: We acknowledge this point and included following proximal recommendation based on our findings along with the distal/general recommendation in page 3, line 64-68; page 4, lines 91-95, and page 15, lines 356-360.

“…. prioritize in reducing spatial and socioeconomic inequalities in MR services by ensuring accessibility and availability of MR services, especially in suburban divisions. Furthermore, abortion should be legalized that will ultimately reduce the morbidity and mortality related unsafe abortion.”

Line 113

Replace the sentence ending with '10 weeks if provided by family welfare visitors' with 10 weeks if provided by mid-level providers. Please consult the government circular on this.

Authors’ Response: In page 6, lines 143-144, we have consulted with government circulars, revised and written the following:
“…“up to 12 weeks after a woman’s last menstrual period if provided by a physician, and up to 10 weeks if provided by a family welfare visitor, a type of community-level provider” [12, 13].”

Line 116, Government is actually expanding provider base through training mid-level providers like nurses and midwives on MR services. Consider re-phrasing the lines.

Authors’ Response: we have rephrased the following text accordingly, in page 6, lines 148-151:

“…include training of existing mid-level providers such as nurses and midwives, recruiting more MR service providers, making MR services free of cost, increasing the time frame for allowing MR, developing national MR guidelines on service provision and quality of care, and introducing medicinal MR [11, 14, 15].”

Line 275 – 277, Is this statement supported by your data, if not consider omitting the argument.

Authors’ Response: Yes, the statement now in page14, lines 319-321 is supported by our data (please see below cross tab, however, not provided in the manuscript). Moreover, it is supported by the literature, which is now referenced in the manuscript as reference#34. (Rahman, RI, Islam, R, Female labour force participation in Bangladesh: trends, drivers and barriers, International Labour Organization, DWT for South Asia and Country Office for …2013).

Table (Word file of "Response to the Editor and Referee Comments"is attached as the personal cover letter because we cannot post table here in the "Response to Reviewers" box).

Statistical Analysis

Line 178-191

Comment: Control variable is not clear, clarify.

Authors’ Response: We have clearly mentioned about the control variables in page 9, line 221:

“…. explanatory factors for MR.”

In page 10, lines 229-232:

“Therefore, division, place of residence, wealth quintile, employment status, parity, NGO membership and women’s empowerment were controlled for the adjusted multivariate mixed-
effect logistic model. The multilevel modeling accounts for potential between-clusters variations.”

In addition, we consider this approach as one of the limitations and added following text in page 15, line 346:

“Moreover, the inclusion of all potential explanatory variables might introduce table two fallacy.” (Daniel Westreich and Sander Greenland 2013. The Table 2 Fallacy: Presenting and Interpreting Confounder and Modifier Coefficients).

However, the explanatory variables were selected to give an answer to the study objective. Hence, the study controlled all potential explanatory factors in the context of Bangladesh based on previous studies to critically compare our results.

Line 303

BDHS collected relevant data from ever married women only, this is a limitation for not capturing information of MR that might happen to any un-married women. Pregnancy out of marriage is unacceptable in Bangladesh, is true but not relevant as a cause of exclusion from survey. BDHS survey main objectives are producing FP related data, Government does not provide FP service /commodities to un-married women/men so they are included in the survey.

Comment: Rewrite the section with clarifying understanding

Authors’ Response: Thank you for this detail point and we have rewritten the section for clarification in page 15, lines 348-350:

“Since the BDHS collected relevant data from ever-married women only, this is a limitation for not capturing information of MR that might happen to any unmarried women or pregnancy outside of marriage that……..”