Manuscript ID PONE-D-23-17327 entitled "Assessing the pattern of key factors on women’s empowerment in Bangladesh: evidence from Bangladesh Demographic and Health Survey, 2007 to 2017-18" which you submitted to the PLOS ONE, has been reviewed and will be reconsidered for publication after the completion of the major revisions as noted. The comments of two reviewers are included at the bottom of this letter. My attempts at obtaining some other reviewers to improve your paper were not successful. Rather than postpone the review process further, I have decided to serve as the 3rd reviewer to increase the quality of this paper.

The paper investigated significant factors of women’s empowerment and at the same time, assessed the pattern of potential factors affecting women’s empowerment in Bangladesh using four cross-sectional waves of Bangladesh Demographic and Health Surveys (2007, 2011, 32 2014, and 2017-18) data. Despite being a significant concern for Bangladesh, this topic has already received considerable attention from numerous earlier and recently published studies.

<https://www.tandfonline.com/doi/abs/10.1080/00036846.2015.1051657>

<https://bmjopen.bmj.com/content/11/8/e049167.abstract>

<https://link.springer.com/article/10.1186/s12905-020-00952-4>

<https://www.emerald.com/insight/content/doi/10.1108/JHR-11-2020-0559/full/html>

The purpose of the study has also been used in the past to explore comparable issues utilizing earlier data on Bangladesh. As a result, the paper's main original addition appears to be its comparison between different survey data, and its conclusions largely—and not surprisingly—reflect those of previous research. The paper needs to be thoroughly proofread by a professional or expert. It is not written to a high degree for academic writing, and there are several grammatical/spelling errors, which frequently make claims and arguments less clear. Additionally, the authors ought to eliminate any similarities from this work. Numerous times, the way that statistical results are interpreted is also wrong. The introduction fails to effectively justify the need for studying the issue, tables and results are not focused on the title, many unusual tables and results are included in the main manuscript, and the paper's findings by themselves are insufficient to support the conclusions.

Below are some comments with more information:  
  
**Abstract**  
The methods, results, and conclusion need to be re-written. Please check previously published papers from PLOS ONE.

**Introduction**

Overall, the introduction is so long. Please reduce some text or concise it. In many places of the introduction, citation is needed. Please check and provide the appropriate citation.

Lines 117-118: “At the same time, an evaluation of women's empowerment in Bangladesh over the past 10 years, from 2007 to 2017-18 has also been observed here.” As you compared 4 surveys and it is not time series data, so, 10 years explanation in the title and objective is not acceptable.

Please specify the research gap. Why this study is necessary and so on. I didn’t find it in your introduction.

**Data and Methodology**

**Data**

Table 1 is not needed here as all procedures are shared on the BDHS report. Those who want to check that they will check in the reports. Rather, it is better to show a flow chart of how you reached your final sample (every step of inclusion-exclusion)

**Outcome variable**

Lines 163-165: “We proposed a total of nine questions which were classified into two broad dimensions; household decision-making and attitudes toward wife beating”. Is it the authors' proposal or followed some published papers, please re-check it.

Lines 179-183: “For creating the women’s empowerment index (WEI), principal component analysis (PCA) has been used with all nine indicators (4 decisions and 5 reasons), where the first principal component was regarded as the women’s empowerment score (WES). The WES was further broken down into 3 quantiles; labeled low, middle, and high for domains below the first, in between the first and second, and above the second quantile, respectively.”. Please explain more about this procedure. How many variables remained after PCA, how did the authors do that, and what’s the methodology of doing it? How did you categorize that on what basis, etc.?

Lines 183-186: The author should write “Finally, our preferred outcome metric is the score index with three ordered categories (i.e., low, medium, and high), where these categories indicate order-wise how empowered a woman is (i.e., low means women have low empowerment)”. Only citation is not appropriate here. As you did your own PCA, you should have a different score from the others. So, please explain your score to categorize them.

**Covariates**

Lines 191-195: “Based on some previous works of literature, the covariates included in this study are age at first marriage, spousal age gap, respondent’s education level, education gap, respondent’s current working status, number of living children, religion, number of household members, division, place of residence, media exposure, NGO membership, wealth index, husband’s occupation, relationship with household head, and sex of household head.” Please cite all of the previous works after those lines.

Table 2 is not enough to explain the details about covariates. Please cite the appropriate BDHS methodological reports to explain the categories. Or if you follow other reports to categorize them, you can also make them in citation. To remove any confusion, follow this: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-15617-8

**Statistical analysis**

Please provide some model evaluation techniques (AIC, BIC, AUROC, and others…..) to justify that you used an appropriate model to explain your results. In addition, explain about level of significance in statistical analysis.

**Ordinal logistic regression model**

No need to explain in detail the ordinal logistic regression model, as it is a common method to us. The authors can explain the application of it.

Please explain why the authors used two statistical software, if you just need two software, please explain which statistical analysis performs with which software.

**Results**

There are some issues with the representations and interpretations of the results.

**Univariate analysis**

Table 3 is not appropriate in this paper. Please represent Table 3 with the outcome variable and show the P-value in this same table. We need to see the change in women's empowerment situation overtime over the socio-demographic variables. The explanation of Table 3 is too large. Please reduce it by a significant variable. Explain only significant variables by performing a chi-square test on it.

**Bivariate analysis**

Lines 280-283: **“**In the bivariate analysis, an attempt has been made to out find the significant exposure factors to women’s empowerment. To evaluate how much a woman's background characteristics influence her level of domestic empowerment in Bangladesh, Pearson Chi-square test was applied.” Please remove these lines from here, because it is a methodological sentence.

Merge Table 4 in Table 3. No need to show a chi-square test value. Show only the P-value (from the chi-square test) for significant tests.

**Multivariate analysis**

**Instead of “multivariate analysis”, please explain it as multivariable analysis.**

The authors said before in lines 207-208; “The covariates that were significantly associated with the outcome variable, have been included in the regression model”. However in regression analysis, the authors include all variables.

The representation of Table 5 needs to be followed in a standard format. Please follow this paper’s Table 3 and Table 4 reporting style: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0242864

Use <0.001 when it is less than 0.001/<0.01. Explain the P-value as 3 decimal points.

It also seems that the author didn’t maintain the serial of explanation of Table 5 or vice versa. Please, to catch the reader’s interest please keep the flow similar to the table and interpretation.

No need to explain whether it is a 1% or 5% significant level. You should follow only one level of significance when you explain.

The interpretation of table 5 is also very long. Please explain only key significant variables and key findings.

**Discussion**

The discussion part should be rewritten and should focus on outcome variables. It will be better to discuss the information of supplementary tables and be more specific on the outcome variable. The authors discuss the reason for each association in the discussion part.

**Major findings of this study**

All explanations of figures need to be replaced in the results section. The quality and the representation of the figure are not good.

**Conclusion**

The conclusion needs to be more specific and highlight key findings. This should support the result. They are suggested to provide less discussion in the conclusion part. I will suggest providing no citation in the conclusion part.

You can follow the below publication with BDHS/MICS data, try to represent in these styles:

<https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-15617-8>

<https://aidsrestherapy.biomedcentral.com/articles/10.1186/s12981-022-00495-8>

<https://www.frontiersin.org/articles/10.3389/fpubh.2022.985445/full>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0242864>

These suggestions aim to enhance the study's coherence, precision, and informative value, ensuring it provides valuable insights.