

## Peer Review File

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### **Reviewer A**

Comment 1: Overall, I found the paper to be very interesting and relevant. Some sections will quite a lot of revision to improve the manuscript.

Reply 1: We thank the reviewer for this positive feedback on the potential value of our manuscript.

Changes in the text: N/A

Comment 2: Overall, the abstract and key messages read very well.

Reply 2: We are very pleased to hear that our abstract and key messages read well.

Changes in the text: N/A

Comment 3: The meaning of “cultural climate” seems quite vague for the abstract – as a reader, I don’t have enough context to fully understand what this means. Consider using different wording or add more context.

Reply to 2: We appreciate this suggestion and agree that the meaning of “cultural climate” in this context should be explicit. We opted to use other wording, rather than expanding on this point, in order to keep the abstract concise.

Changes in the text: Please see Page 2, line 44-45: “American women have grown concerned about data privacy and have even deleted MC tracking apps following the overturning of Roe v. Wade.”

Comment 4: Not clear what kind of women were in the study – area? Age?

Reply 4: We thank the reviewer for this suggestion. Our abstract now includes an updated description of the sample, including age range and menopause status.

Changes in the text: Please see Page 2, line 50-51. We have revised this sentence: “A total of 206 women ages 18-60 who identified as pre- or perimenopausal completed an anonymous, cross-sectional survey between August and November 2022.”

Comment 5: The feasibility is cited as being “fairly low” compared to what? What are we comparing this to? Need a statement of comparison.

Reply 5: A statement of comparison regarding the feasibility has been added to the abstract.

Changes in the text: We have modified our text as advised: “Overall, the feasibility of menstruation-related research that includes mobile apps is fairly low, given women’s current comfort with this technology compared to the Roe era, and there is a need to establish criteria and protections for use of mobile apps in women’s health research.” Please see Page 2, line 56-58.

Comment 6: Citation missing for line 88

Reply 6: We have a reference to support this claim. Specifically, we referenced a syllabus released by the United States Supreme Court (No. 19-1392): United States Supreme Court, 2022.

Changes in the text: The sentence, “On June 24, 2022, the United States (U.S.) Supreme Court overturned its prior decision in *Roe v. Wade*, ending federal protections for women’s right to abortion and related healthcare that were established in 1973 (6),” now includes a citation. Please see Page 4, line 101-103. This reference appears on Page 20.

Comment 7: Citation missing for line 101

Reply 7: We have added an in-text citation at the end of this line. Specifically, we referenced: Kim, 2022; Duff-Brown, 2022; Garamyolgyi, 2022.

Changes in the text: Please see Page 5, lines 113-115: “New outlets and social media brought attention to this issue and MC tracking app users may now be fearful of how their personal health information could be used against them in a hypothetical criminal case about abortion (7-9).” These are included in the References on Page 21.

Comment 8: Citation missing for line 109

Reply 8: We have added an in-text citation at the end of this line. Specifically, we referenced: Sutton et al., 2021.

Changes in the text: The sentence on Page 5, lines 125-128 now reads: “This review concluded that women are motivated to track their MC for a variety of reasons: to understand their body across MC phases, to be prepared so their period doesn’t surprise them, as a method of contraception, to conceive, and to inform fertility treatment or conversations with a healthcare provider (11).” This reference appears on Page 21.

Comment 9: Once loss to follow up is abbreviated, it should read “LTFU” throughout the manuscript.

Reply 9: We are not sure what the reviewer refers to here, as we cannot find “loss to follow-up” in the manuscript (and this concept is not relevant to our cross-sectional design). We will be happy to edit with clarification from the reviewer.

Changes in the text:

Comment 10: I think a critical bit that is missing here is information on MC app usage. You've clearly articulated why app use is important and how *Roe v Wade* jeopardizes that but aside from one line about downloading of apps (line 77), there is little mention of evidence of actual usage and/or perceptions. This is particularly important as one of your main result findings look at this.

Reply 10: We agree that this is useful information. In response, we have removed some content from the Discussion (see Comment 13 below) and added it to the Introduction. These added sentences provide evidence of the usage of menstrual cycle tracking apps prior to the overturning of *Roe v. Wade* and associated perceptions of women using such apps.

Changes in the text: We have added the following to Page 5, lines 117-123: "For example, a study was conducted in 2017 to investigate how women track their MCs. At that time, less than half of survey respondents (47%; 313 out of 687) used an mHealth app for MC tracking. Other methods cited by participants were digital calendars (12%), paper diaries (8%), following cues in birth control (12%), noticing symptoms (7%), or simply remembering (19%), and a small subset (11%) did not track their MC (3). In 2018, a survey study of 241 women showed that just over one-third of participants used an MC tracking app; of that subset, 98% found the apps to be useful, informative, and educational (10)." Please also Page 5-6, lines 129-134 for additional editing of the Introduction: "Also of note, there has been a general growth in the accessibility of mHealth apps over time. As of July 2019, 49 apps were commercially available in the Google Play and Apple App stores, with many app features and functions offered for free (13). The current landscape of women's reproductive healthcare in the U.S. may contribute to – and likely inhibit – how mHealth apps are used in clinical health care, research, and practice moving forward."

Comment 11: What is PA tracking? Please spell out in full when first mentioned.

Reply 11: We thank the reviewer for calling our attention to the incorrect use of this abbreviation. The abbreviation PA has been spelled out and removed from the manuscript.

Changes in the text: We have revised lines 163-167 on Page 7: "Physical activity tracking, for example, was included in the study description because some physical activity monitors and apps also allow MC tracking; this allowed the research team to capture all users and experiences of MC tracking features that may be embedded in mHealth technologies other than those apps specifically advertised for self-monitoring of the MC."

Comment 12: Would be good to include the messaging tools used as an additional file or an example as a figure in the paper.

Reply 12: We appreciate the reviewer's suggestions with respect to the messaging tools used by the participants enrolled in this study. We agree that the app name/company are potential influences on our intended outcomes, as certain companies may have different rules/regulations

with respect to data sharing policies. To keep the survey brief, app name was not included as a survey question. We have added this as a limitation in the appropriate section. If we have misunderstood the reviewer's intention with reference to "messaging tools," we will be happy to continue revising with clarification.

Changes in the text: We have added lines 388-392 on Page 17: "Also, to keep the survey brief, MC tracking app name and/or company was not included as a survey question. It is unclear what apps were used by participants enrolled in this study. As certain apps and companies may have different rules and regulations with respect to data sharing policies, this may influence our intended outcomes, and is therefore a limitation of the current study."

Comment 13: (Results) really well-written

Reply 13: We thank the reviewer for this positive feedback.

Changes in the text: N/A

Comment 14: I think lines 285 – 292 would be better placed in the background. This gives context to your work. In the discussion, this should really be cut to 1-2 lines highlighting how your findings compare. Your discussion really only starts at line 300.

Reply 14: We thank the reviewer for this suggestion and have revised the Introduction and Discussion as advised.

Changes in the text: The Discussion now starts on Page 12, line 279. As suggested, lines 285-292 were removed. This information now appears in the Introduction on Page 5, lines 117-123: "For example, a study was conducted in 2017 to investigate how women track their MCs. At that time, less than half of survey respondents (47%; 313 out of 687) used an mHealth app for MC tracking. Other methods cited by participants were digital calendars (12%), paper diaries (8%), following cues in birth control (12%), noticing symptoms (7%), or simply remembering (19%), and a small subset (11%) did not track their MC (3). In 2018, a survey study of 241 women showed that just over one-third of participants used an MC tracking app; of that subset, 98% found the apps to be useful, informative, and educational (10)."

Comment 15: What do you mean when you say "the popularity of MC apps" – do you mean their abundance in variety or high usage? If it is the latter, doesn't that negate your findings?

Reply 15: Thank you for this point. We meant that there has been an increase in the accessibility and awareness of apps that are commercially available to menstruating women (as for many technologies). As a result, we suspect that more women have been exposed to the idea of using such an app. We do not believe this negates our findings. Although the availability and awareness of MC apps have increased with time, our findings suggest that women are more skeptical of using them post-Roe, which is extremely useful information for researchers, clinicians, and policy-makers.

Changes in the text: We have edited throughout the manuscript to clarify. Please see Page 5-6, lines 129-132: “Also of note, there has been a general growth in the accessibility of mHealth apps over time. As of July 2019, 49 apps were commercially available in the Google Play and Apple App stores, with many app features and functions offered for free (13).” See Page 12, line 286-289: “Yet, findings from the present study show that, despite the widespread availability of mHealth apps MC tracking, a large subset of menstruating women in the U.S. have concerns about app-based MC tracking, including MC data collected for personal health management and data collected in a research context.” Also, Page 14-15, line 337-339: “These findings confirm that, despite the availability and utility of MC tracking apps, many women in the U.S. have concerns about electronic MC tracking, including reproductive health data collected in a research context.”

Comment 16: Line 456 - 459 – “Findings from the present study...” This conclusion cannot be made based on the results and discussion. Only 13 participants spoke specifically about Roe v Wade and while the ex-use of apps aligns with the Roe v Wade decision, I don’t think we can make the leap that this was the main reason. I think the conclusion and some of the text in the discussion should reflect that they could be a myriad of other reasons e.g. changes in T&Cs for social media platforms or more awareness of how govt use data

Reply 16: We appreciate the reviewer’s point. We have been very careful not to draw the broad conclusion that our findings are *due to* the overturning of Roe v Wade. The sentence in question indicates only that we collected the present data after its overturning, and that relative to before the Dobbs decision, comfort with using MC tracking apps is low. We have edited to ensure that our meaning is clear.

Changes in the text: We have revised this sentence on Page 18-19, lines 428-431: “Findings from the present study show that in the 3 months after the 2022 U.S. Supreme Court decision that allows states to restrict access to women’s reproductive healthcare, many women were concerned about MC apps for personal use as well as for use in the context of research participation.”

## **Reviewer B**

1. The Abstract should be structured with “Background, Methods, Results, Conclusions”.

Reply: We have modified our abstract as advised. Please see Page 2, lines 40-61. This change to the enclosed manuscript is highlighted in red text.

2.  $M_{age}/M_{BMI}$  should be defined upon first use in the Main Text.

Reply: Thank you for this suggestion. This change to the enclosed manuscript is highlighted in red text on Page 11, line 260.

3. Please provide the name of the IRB which approved this study.

Reply: This study was approved by the Rowan University IRB. We have removed the word, “relevant” institutional review board and replaced it with Rowan University in the enclosed manuscript. This change is highlighted in red text on Page 9, line 180-181.

4. Please provide a link for Ref 18 in the bibliography.

Reply: We have provided a link for reference 18. This change is highlighted in red text; please see Page 24.

5. Table 4 should be rearranged as a column should not have multiple headers.

Reply: Thank you for this feedback. We have edited Table 4 as advised. Please see the attached document titled mHealth-23-31\_Tables.

6. All the abbreviations in the tables should be defined in the explanatory legend.

Reply: We appreciate this suggestion. We have defined abbreviations under each table. Please see the enclosed document.