Peer Review File

We thank you for the opportunity to revise our manuscript, and for the constructive critiques provided by the reviewers of our previous edition. We have made every effort to address these in the revised manuscript, and believe this has resulted in an improved paper. We provide below a point-by-point response to these critiques, with reviewer comments in *italics*, and our response in **boldface**.

Reviewer #A:
Text messages remain a basic tool for health providers and research into understanding how, why and for whom they work is needed.   Some comments to consider are:

1. *An integration of the broader literature on SMS for uptake of other relevant routine medical treatments, other than pap smears.*
   We have added the following: Text messaging has also been shown to be effective in increasing rates of colonoscopies in the veteran population in the US. (Rogers)

2. *It's not clear how the randomization was conducted? From table 1 there are clearly significant differences in demographics, was this a result of the sample selection process?*
   There was no randomization conducted, but given that participants had to opt-in to receive text messages may have contributed to the significance in demographics.   The statement has been corrected as follows: Participants were selected for receipt of text messages from a sample of patients who had opted-in to receive text message alerts in the last year.

3. *Why were only three demographic factors examined? Especially given the significant literature on the importance of other factors like race, education, etc. This is also confusing as the introduction makes a point of discussing disparities.*
   This information was not collected by our population health database, as such the introduction has been edited to state the following "an area of significant disparities based on socioeconomic status, and place of residence in the United States (U.S.) (4,5,6)" to better address the scope of the paper.

4. *In the discussion it would be important to reflect on the different contexts in which SMS had been found to be effective. Are there perhaps differences in health systems, infrastructure, other factors that could explain the results.*

   The following has been added to the discussion: "Most of the studies that have shown positive results in increasing cervical cancer screening rates

included other interventions in addition to text messaging. The studies that involved only text messages included multiple messages over the course of the study (12, 13). It may be that a single text message alone is ineffective in increasing cervical cancer screening but that multimodal interventions including multiple text messages and other interventions such as phone calls, education, or transportation vouchers would yield results similar to those in other countries. Further studies are needed to identify whether text messages and other interventions would be effective in a U.S. context for cervical cancer screening."

5. *It would be helpful to include some reflection on the intervention modality. For example, have other interventions found 1 message to be sufficient? Is there any evidence for specific wording?*

   Most of the studies that have shown positive results in increasing cervical cancer screening rates included other interventions in addition to text messaging. The studies that involved only text messages included multiple messages over the course of the study (12, 13). It may be that a single text message alone is ineffective in increasing cervical cancer screening but that multimodal interventions including multiple text messages and other interventions such as phone calls, education, or transportation vouchers would yield results similar to those in other countries. Further studies are needed to identify whether text messages and other interventions would be effective in a U.S. context for cervical cancer screening. While a number of other studies have shown an increased uptake in international settings (14-20), only one study in our literature search found text messages to be effective for increasing annual cervical cancer screening in a U.S. context, specifically women living with HIV in Nevada (21). A study in migrant Chuukese women in Guam did not find text messaging to be effective in increasing cervical cancer screening uptake (23). A study by Le found that by focusing on a spiritually based text message about the risk of cervical cancer had high acceptance among African-American women and helped to increase their knowledge about cervical cancer.   To our knowledge, this is the first study that has evaluated the effectiveness of text messages in increasing cervical cancer screening uptake in an average-risk population in the continental U.S.

6. *In addition, the conclusion extends the results to general preventative reminders. This seems quite a strong statement given the study focus and findings.*

   This statement has been removed from the conclusion and clarified that future research should be conducted to encompass diversity of text message interventions to include different topics and languages.

Minor comments:

7. *The abstract should not include references.*
   References have been removed from the abstract.

8. *What is the discover Population Health application?*

   The manuscript has been updated to replace "Discover Population Health application" with "population health database" for clarity.

1. *The merit of the proposed approach is supported by the results, but I miss on the paper a bit more discussion on why these techniques were chosen for this problem and had not been considered before. This however is more of a nitpicking than a detrimental comment.*
   Our health system initially did not have the technological capability nor patient consent perform this intervention earlier. As soon as we were able to perform this intervention with patient consent, we did want to evaluate its efficacy.

2. *The abstract should mention significance of your study, like why this topic is important, method used why etc.*
   The abstract has been updated to address the concerns. Cervical cancer continues to be one of the leading causes of death among women in many parts of the world. With increasing proliferation of mobile technology, text messaging interventions have been effective in improving Pap Smear uptake in international populations. This study evaluated whether text message reminders from a health system in Galveston, Texas, USA increased uptake of cervical cancer screening as compared to usual care. A single text message reminder was sent to 16,002 unique patient phone numbers using the Televox Communication Program from February 20, 2019 to April 4, 2019. The institution's population health database was subsequently used to determine if patients received cervical cancer screening (Pap smear) following the text message transmission. Patient demographics within text message and control groups were compared using Chi-square tests. Our text messaging intervention to improve Pap smear rates did not show a statistically significant difference between the intervention group receiving a text message and the control. However, there were significant interactions between text messages and age, financial class, and county (P value = 0.0023, 0.0299, and <0.0001, respectively). Text messaging did have a positive impact on our most vulnerable patient populations given that the text messaging intervention showed a marginally higher rate of Pap smear among Medicaid and Low-income/Uninsured

(MLIU) patients. Text messaging interventions do have effectiveness in increasing Pap smear uptake in populations which are most impacted by health disparities.

3. *The introduction is not clear and very less literature is used. Follow this instruction: The introduction should briefly place the study in a broad context and highlight why it is important. It should define the purpose of the work and its significance, including specific hypotheses being tested. The current state of the research field should be reviewed carefully, and key publications cited. Please highlight controversial and diverging hypotheses when necessary. Finally, briefly mention the main aim of the work and highlight the main conclusions. Keep the introduction comprehensible to scientists working outside the topic of the paper.*

    Thank you for your suggestions. We have restructured our introduction to make it clearer, strengthen the flow, to ensure that relevant literature is included, and to make the aim of the study more prominent.

4. *In the introduction, what key theoretical perspectives and empirical findings in the main literature have already informed the problem formulation? What major, unaddressed puzzle, controversy, or paradox does this research address?*

    We have adapted the introduction to make it clearer and to highlight the empirical findings in the main literature. The second paragraph of the introduction reviews the existing literature on text messages to increase cervical cancer screening uptake, and the last sentence ending of the second paragraph of introduction highlights the unaddressed question that our research addresses: "However, a current literature gap exists in addressing whether text messages are effective in a U.S. context for increasing routine cervical cancer screening in average-risk women."

    At the end of the third paragraph of the introduction, we further clarified the research question, "Given the low cervical cancer screening rates, we sought to evaluate whether text message reminders would increase uptake of cervical cancer screening as compared to usual care."

5. *Authors should further clarify and elaborate novelty in their contribution.*

    We have added the following sentence to the discussion, "To our knowledge, this is the first study that has evaluated the effectiveness of text

messages in increasing cervical cancer screening uptake in an average-risk population in the continental U.S."

6. *What are the limitations of the present work?*

    Our limitations are listed as follows: "There are limitations to our study. Our study focused on a text messaging intervention at a single institution, which limits its generalizability. Further, patients may have received cervical cancer screening through other health systems after the text message reminders. Our study was limited to English speakers and those who had the capability to receive text messages, further limiting generalizability. Text messages were only sent once, without repeated reminders, and a 90% transmission rate does not necessarily mean 90% uptake. These factors can contribute to selection bias in our study."