Author’s response to reviews

Title: Gender differentials in readiness and use of mHealth services in a rural area of Bangladesh

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To,

Bach Tran, PhD

BMC Health Services Research

Subject: Re: Your submission to BMC Health Services Research - BHSR-D-17-00232.Gender differentials in readiness and use of mHealth services in a rural area of Bangladesh.

Dear Bach Tran,

Thank you for your continued interest in our paper and the opportunity to address the reviewer comments and your own comments in our manuscript. We have addressed these comments and included tracked changes in the manuscript.
We thank the reviewers for their constructive comments and recognizing that this paper reports on a substantive range of empirical data points to assess gender differentials in use of mHealth services in Bangladesh. We have responded to each reviewer as follows:

Editor Comments:

BMC Health Services Research operates a policy of open peer review, which means that you will be able to see the names of the reviewers who provided the reports via the online peer review system. We encourage you to also view the reports there, via the action links on the left-hand side of the page, to see the names of the reviewers.

Reviewer reports:

Neda Ratanawongsa, MD, MPH (Reviewer 1):

The authors use cross-sectional survey data to analyze gender disparities in ownership and use of mobile phones and knowledge of mHealth services in rural Bangladesh. The authors articulate the rationale for the study and describe the methods and results clearly. The findings add to the international literature about disparities in mHealth uptake related to gender, education, and SES. Suggestions for enhancing the manuscript follow.

Methods:

- The authors should include additional information about the method for data collection. Although the other reference is mentioned, it would be helpful to include just a few more details about the field collection.

→ Response: We have include details of data collection in methods section in page # 5 and 6.
On p5, the authors should include more detail about the HealthLine 789 and Upazila Health Complex services and cost. Knowledge of a service may spread more rapidly with high utility and low barriers to use, and the authors need detail about these services - particularly since it appears HealthLine 789 has for-profit sponsorship - to understand whether women would find the services useful or accessible.

→ Response: We have included the description of detail about the HealthLine 789 and Upazila Health Complex services and cost in the page #6, paragraph #3 and 4.

Statistical analysis, Results, and Tables

- The authors present a large amount of data and multiple analyses for each of 4 questions (ownership of mobile phones, technological "capabilities" of mobile phone owners, awareness of use of mobile phone for healthcare, knowledge of HealthLine 789, Knowledge of government mHealth services, and intention to use mHealth services in the future. For the readers, I might recommend focusing on the adjusted analyses, moving the univariate results to an Appendix. This would allow the readers to focus on the main findings. The figures offer an easier way to view the Table results, so another option would be to convert some of the Table data into bar charts.

→ Response: We agree. We have moved 3 univariate analysis (table 4, 6 and 8 as appendix 1, 2 and 3 respectively) in the appendix according to suggestion.

- The Tables and Figures should have additional detail added to the titles to allow them to stand alone ("...in a household survey in rural Bangladesh")

→ Response: We added the text ("...in a household survey in rural Bangladesh") in the title of all tables and figures and made edits to ensure the titles can now be understood stand-alone.

- The authors should attend subheadings for the results or add paragraph breaks to help readers parse the 6 key result sections.

→ Response: We have broken the results section accordingly and provided headlines for every section.
Discussion

- On p21 1st paragraph, the authors suggest "one option is to create a mechanism for men to share their phones with female family members" and then "Involving the male for maternal and child healthcare could be a possible solution for increasing female participation in mHealth-based healthcare services." This seems to simplify the barriers to mHealth use to one of access and knowledge. In particular, the suggestion to share one device for accessing potentially sensitive health services raises concerns about the privacy and confidentiality of health data and healthcare utilization by women in the household. The authors should consider other strategies that would permit safe, private, confidential access to mHealth among women, independent of relationships with men.

- On a similar note, the authors should consider whether it is not simply access to mobile phone and knowledge, but also the design of the health IT / mHealth platform and available services which should be reconsidered in bridging the gender, education, SES gaps. Even if every women had a phone and knew about the service, this would not ensure that the services were medically and culturally tailored to deliver the care needed by low-income women in rural Bangladesh. So, the technology is simply the gateway to the larger intervention, and for this to be successful, stakeholder engagement is needed at all stages of intervention development to ensure appropriate uptake of mHealth facilitated services. (Example: https://implementationscience.biomedcentral.com/articles/10.1186/s13012-016-0426-2)

→ Response: Reviewer has raised valid points. We have made changes in the discussion section and included these caveats to our potential solution. See page number #23, paragraph 1.

Balthasar L. Hug, MD, MBA, MPH (Reviewer 2): Review BHSR-D-17-00232

"Gender differentials in readiness and use of mHealth services in a rural area of Bangladesh" by Khatun et al

General: The authors describe a well written study of 4915 randomly selected individuals in rural Bangladesh regarding their mobile phone health care resources use with a special focus on gender disparities. The study is timely, interesting to read and provides an important piece of knowledge to the accessibility of health care resources in Bangladesh.

However, there are some points that still need addressing, above all the patient selection process and the socioeconomic data. These points are outlined below.
Methods:

- Patient selection:

- P. 5, lines 10-11: Patient selection should be described in a few sentences according to ref 42. It is not enough to reference that paper not explaining how patients were selected for this study. The authors write that "A total of 4915 randomly selected respondents.." were analyzed. Randomly selected of which kohort? What was the return rate of their question-naire? How did the randomisation take place?

→ Response: A total of 5,152 respondents (2189 adult males and 2964 adult females) were randomly chosen from 62,458 household members aged 18 years and above living in 20,124 households in the Chakaria HDSS. Two separate sampling frames for males and females, stratified by age groups, were used for sampling. We have expanded the description of our methods and have included sample selection and data collection procedures in the method section page # 5, paragraph #2 and #3. Data were collected by interviewers. Males were hard to reach for interviews for their absence in the household during daytime; three repeated visits were made to minimize the rate of non-response. A total of 4915 (4915/5152) respondents (1964 males, 2951 females) were interviewed through household visits with an overall response rate of 95%. We have included this in page # 8, paragraph #2.

- A sample questionnaire with its translation from Bangla into English should be provided as supplementum.

→ Response: The questionnaire has been added to the appendix section.

- Informed consent (last line p. 5, first line p. 6): The authors write "Written informed consent was obtained from each of the study participants ." and in table 2 we learn that 883 men and 1452 women have had no education at all. How can these illiterate participants give written consent?

→ Response: In case of illiterate study participants, we allow thumb impression (left) in the consent form which is a standard procedure in Bangladesh. We have included this in the in manuscript page #7, paragraph #1.
- What do the authors call a "rural area"? Is there a definition for the international reader? How do the authors differentiate rural from e.g. a suburban area? Are there some kind of administrative area zones in Bangladesh?

Response: Chakaria Health and Demographic Surveillance Systems covers eight unions of Chakaria Upazialla located in rural area. Union is the smallest rural administrative and local government unit in Bangladesh. We now clearly mention in the method section of the manuscript that the study area are located in rural Bangladesh in page #5, paragraph #2.

- Socioeconomic status/asset index: How was this entity defined? The reader just learns about the stratification into the five strata, but how an individual is stratified is outlined nowhere in the paper.

Response: We have included the process of asset index calculation in page #7, paragraph #3.

Results:

- There are nine tables in the paper. I suggest to move four of them into a supplementum section e.g. tables 8 and 9 addressing the intention to use mHealth in the future.

Response: We have moved 3 tables in the appendix. It is also recommended by reviewer 1.

- Table 6 extends over two pages; a table should match into one page only.

Response: Table 6 has now shifted to appendix according to the suggestion of reviewers and in the publication format it will fit in one page.

References:

- Ref 27: the link to the online resource is missing: http://www.gsma.com/mobilefordevelopment/wp-
Response: Thank you for pointing out this. Reference link is now included, reference number 27 on page #26.

We have now included a declarations section in the manuscript with the mandatory subsections as directed. In the 'Availability of data and materials' section we have noted that icddr,b has data restrictions on depositing data in publicly available repositories. However, data are available upon request from the Research & Clinical Administration and Strategy (RCAS) of icddr,b.

We believe we have addressed all the comments from the Reviewers and Editor.

Thank you for your supportive and constructive comments.

Kind regards,

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