Title: Assistive technology use and human rights enjoyment: A cross-sectional study in Bangladesh

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Response to reviewers’ second reports

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Comment by Reviewer 1

Major compulsory revision

The revised manuscript must reflect the issues raised in the earlier review and how the authors have chosen to address them with specific mention of the appropriate section (page & paragraph). e.g. timing and methodology for administering the questionnaire.

The timing and methodology for administering the questionnaire is described in the section Procedure, pages 9-10. A sentence has been revised and now reads "Verbal interviews based on the questionnaire were conducted at the respondent’s home at a single occasion."

The reasons for not addressing some of the previous issues have been explained earlier. However, the issues of stigma and discrimination as well as similarities and differences among users of hearing aids and wheelchairs are addressed below. The sentences on what proportion of people being recruited by what method is found in the first paragraph on page 8 and reads: "The proportion of people being recruited by what method is unknown. However, there was no obvious difference in the chance to be included in those registers because of use of assistive technology or not."

On page 7, the intended population (people with hearing and ambulatory impairments) is mentioned in the second paragraph stating that: "The sample in this study was derived from a survey which aimed at exploring the relationships between the use of assistive technology and the enjoyment of human rights and the economic situation in a population of people with hearing and ambulatory impairments living in Bangladesh."

The way the sample was derived is described on pages 7-9 and its limitations are discussed on pages 21-22.

The related paper addressing the relationship between assistive technology and negative attitudes should be cited in this manuscript.

A reference to the related paper is made in the first paragraph on page 19 stating that: "The results complement a previous report from the same sample, which found that assistive technology use is associated with better opportunities to do things one has reason to value and with better attitudes from neighbours [38]."

In response to a request that the similarities and differences among users of hearing aids and wheelchairs in relation to human rights should be clarified the authors stated that this issue had already been addressed “satisfactorily” – i.e. to the authors’ satisfaction. Please state the relevant section(s) of the manuscript where this information can be found to enable the reviewer determine if this is truly satisfactory for the benefit of the readers.

The similarities and differences among users of hearing aids and wheelchairs are not explicitly mentioned for reasons previously mentioned. However, they can be found in the Results section of the Abstract ("The adjusted likelihood of reporting greater enjoyment of human rights was significantly higher among people using hearing aids compared to non-users for all outcomes..."
except working status. Compared to non-users, users of wheelchairs reported a significantly higher adjusted likelihood of good ambulatory performance and a significantly lower adjusted likelihood of reporting a positive working status.

Starting on page 16, it is written: "People using hearing aids were more likely to report a high standard of living, OR=2.1 (1.2-3.7), that they often receive necessary medical care, OR=1.8 (1.0-3.3), good physical health, OR=1.8 (1.1-3.0), and good mental health, OR=2.0 (1.2-3.5). Although wheelchair users also tended to score higher on these outcomes compared to non-users, the differences were not significant.

Compared to non-users of hearing aids, users were more likely to report that they can read, OR=5.0 (2.9-8.8), have completed primary education, OR=3.8 (2.2-6.7), and have a high participation in school, OR=5.2 (1.6-17.0). Among users and non-users of wheelchairs, there were no significant differences in educational outcomes.

Respondents using hearing aids were more likely to report a high level of participation in work compared to non-users, OR=4.9 (1.3-18.6), while the difference in reported work status was not significant. Compared to non-users of wheelchairs, users were less likely to report that they work, OR=0.59 (0.36-0.98). The difference in reported work status between hearing aid users and non-users was not statistically significant.

Hearing aid users were much more likely to report good listening performance compared to non-users, OR=13.6 (7.3-25.5). Users of hearing aids were also more likely to report high participation in using public transportation, OR=2.1 (1.2-3.4), and more likely to report good ambulatory performance compared to non-users, OR=6.1 (2.5-14.6). There were no statistically significant differences between users and non-users of wheelchairs in terms of participation in using public transportation, while users were more likely to report good ambulatory performance, OR=3.0 (1.8-5.0)."

The statement “we followed the method usually practiced in Bangladesh” as regards the issue of patient consent is vague. The subject of valid/informed consent especially in a paper that is being considered for publication in a journal on human rights cannot be treated lightly. More so as the objective of this study was to determine the enjoyment of human rights in Bangladesh – a country where the authors themselves have reported significant deficiencies. For example, is thumb printing culturally forbidden in Bangladesh as an alternative to written consent? Verbal consent is not consistent with Helsinki Declaration on research ethics which requires non-written consent to be formally documented and witnessed if consent cannot be obtained in writing. It would appear that this research was not subject to rigorous ethical scrutiny by the overseas authors’ institutional ethical committee regardless of the local practice in Bangladesh or that the authors have exploited the current situation by failing to follow established guidelines.

We are very concerned about conducting research in an ethically appropriate manner. How participants were invited and gave their consent are described in the section Ethical considerations on page 8.

The Helsinki declaration emphasizes informed consent, i.e. adequate information should be given to the participants regarding the purpose of the data collection and the practical issues it entails. Moreover, it should be very clear that participation is voluntary and that an individual does not risk any negative effects whatsoever, if they choose not to participate. In addition, they should be informed that the information obtained will be treated so that full confidentiality is respected. All those issues were taken into careful consideration in the study.
The balance between harm and benefit of participation should also be considered. The risk of harm because of participating in the study was judged as very small, since no biological specimens were obtained (i.e. blood samples, etc) and no other invasive procedure was performed, nor any drugs were given which could have potential side effects. On the contrary, participating in the study could mean that previously unmet needs regarding an assistive device or adjustment thereof, was handled. Also, the target group will have potential beneficial effects of the study when policies aiming at better meeting the needs of assistive technologies are more efficiently implemented.

A research ethics board in Sweden was in fact approached for advice, but responded that since all the ethically issues pertained to research activities which entirely took place in Bangladesh, they fell under the jurisdiction of the proper authorities in that country.

Comment by Reviewer 2

Minor essential revision
The numbering of the items in Appendix 2 is confusing.
A clarification has been made in Appendix 2 stating: “Only those items of the questionnaire that were used as principal outcome questions in this particular study are reproduced below. Therefore, the numbering of the items may seem inconsistent.”

Comment by Reviewer 3

The main weakness is related to the vagueness of the sample and consequent difficulty with generalizing and interpreting the results.
We agree that this is a weakness and already discuss its implications. However, it is not possible to change the sampling at this stage.

The sample is highly nonrandom and indeed, rather erratic (“The way people had been included in the registers varied between and within the organizations.”). The way it was obtained does not guarantee lack of selection bias. E.g. the fact that part of the sample was obtained “during community meetings attended by people with disabilities” might mean that these persons were those that were more active than average disabled person in the area surveyed. True, there were also other methods of accruing the questioned persons (“information provided by community people, home visits based on information from local people and authorities, people with disabilities voluntarily approaching the organizations, people with disabilities referring other people with disabilities, and surveys”) but it is not clear how many of them were selected by which method and if the use of different selection methods was balanced through the area surveyed (indeed, if the data collectors had any control of the selection method at all). This is important both for representativity of the results and for being able to defend the use of the statistical methods (any statistical methods, not just logistic regression), at least to some extent. If the selection was nonrandom and/or biased e.g. to those more active or less severely disabled, then it would be impossible to generalize the results to the population of disabled as a whole. It would be very likely that it is not clear what population the sample represents at all. These problems should be resolved first, demonstrating fairness of selection, lack of selection bias and representativity for a population of interest (what population is of interest should be clearly specified and any problems with representing it evenly in the sample should be clearly stated as major limitations of the study).
We agree with the reviewer’s concerns and we have attempted to describe the sampling and its limitations in the manuscript. On page 7, second paragraph the population has been described more explicitly “a population of people with hearing and ambulatory impairments living in
Bangladesh". Further details about the population (i.e. age group and geographic location) follow already in the text. We are aware that respondents being enlisted in various ways in the existing registers is problematic. This is the reality in many countries. However, we have already mention that "there was no obvious difference in the chance to be included in those registers because of use of assistive technology or not". The limitations of representativity and bias are already discussed in the Limitations section starting on page 21. In the last paragraph on page 21, a clarification of the population has been inserted "we must be cautious about generalizing the findings to all people with hearing and ambulatory impairments in Bangladesh."

Representativity should not be confused with the validity of the results, where the latter is more important. The question is whether there is a reason to believe that there was a systematic selection of participants where the relation between assistive technology use and outcome was different from what could be expected from the population. If the result is to be explained largely by selection bias, a very systematic selection factor is probably needed. However, as the sample has little systematic characteristics, this seems very unlikely. On the other hand, it is perhaps uncertain whether the sampling generated a representative sample, but it is not so important if the studied relations are focused. Representativity is indeed important if you intend to identify the prevalence of a certain factor in a population. However, this was not the objective of the study.

Comment by Editor

There are identical text passages in this and a companion manuscript. The identical text passages are mainly found in the Method and Limitations sections of the two manuscripts. The reason for this is that they are based on data collected from the same sample at the same occasion. The text in the companion manuscript has been slightly changed.