PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Developing and testing community-based tuberculosis (TB) screening intervention to increase TB referral, case detection and knowledge among sexual minority people in urban Bangladesh: A mixed-methods study protocol
AUTHORS	Sarwar, Golam; Reza, Masud; Khan, Mohammad Niaz Morshed; Gourab, Gorkey; Rahman, Mahbubur; Rana, A K M Masud; Khan, Shaan; Irfan, Samira; Ahmed, Shahriar; Banu, Rupali; Banu, Sayera; Khan,, Sharful Islam

VERSION 1 – REVIEW

REVIEWER	Dr. Ekta Gupta Hamdard Institute of Medical Sciences and Research (HIMSR), New Delhi, India
REVIEW RETURNED	12-Feb-2020

GENERAL COMMENTS	1. The screening intervention has not been explained in detail. What will be the components of intervention package? 2. The timeline of project completion is not mentioned..The progress of the project can be represented using a Gantt chart.

REVIEWER	Jianming Wang Nanjing Medical University, China
REVIEW RETURNED	22-Feb-2020

GENERAL COMMENTS	COMMENTS TO AUTHOR The manuscript entitled "Developing and testing community-based tuberculosis (TB) screening intervention to increase TB referral, case detection and knowledge among sexual minority people in urban Bangladesh: A mixed-methods study protocol" was aimed to develop and assess a community-based TB screening approach to enhance TB referral for increasing case detection among sexual minority people. However, several questions need to be addressed. 1. In the part of 'Introduction', the authors can update the data of Global Tuberculosis Report 2019. Are there any references for 'Bangladesh is a country with generalized TB epidemic, though it has a low HIV prevalence of less than 0.01% among general populations.'? 2.Paragraph 4. The authors may describe more data about the description of 'Experiences of some countries have shown the successful implementation…'.

	3. Please add a section to describe the community-based TB screening approach.
	4. Page 12. Please check the formula of n.
	5. Page 13. When estimating the sample size, you described that 'in order to detect 20% changes (1-way change detectable)', and 'the knowledge of cause, routes of transmission and prevention of TB ranged from2-44%,22-88% and 14-68%'. Please explain the reason of applying these parameters.
	6. It's better to perform a cost-effective analysis for policy makers.

VERSION 1 – AUTHOR RESPONSE

Comment of reviewer: 1(Dr. Ekta Gupta)
Please state any competing interests or state 'None declared': None declared

Response: Thank you for this comment. The necessary revision has done as per the reviewer's comment. Please see page #24.

1. The screening intervention has not been explained in detail. What will be the components of intervention package?

Response: Thank you for this notable comment. The community-based screening intervention will actually be developed based on the findings generated from the first phase of the study. Please see page # 11, 12 for the explanation of the intervention and the components of intervention package (attached below).

A community-based TB screening model will be developed based on the first phase findings. At the beginning of the second phase, researchers will develop a training module for the peer educators (PEs) based on the need assessment, map TB DOTS centers and devise DOTS referral strategies. Sensitization sessions will be conducted with the DOTS service providers and community leaders. Researchers will train PEs of the intervention area on the TB screening process and then be assigned to serve a separate list of sexual minority people. A work plan will be formulated to screen all sexual minority people at least once during the intervention period. After taking their verbal consents, they will be screened at spots/residences/dera (residence of hijra leader) using a simplified structured verbal TB screening form, while maintaining confidentiality. If the case is negative, post-screening information and counseling will be provided and they will be encouraged to seek support if suspected with TB symptoms. If screened positive, they will undergo counseling and be referred to the nearest TB DOTS center for testing, either through self- or accompanied referral. After the test results are ready, the PE or the sexual minority people themselves will collect the report, and if anyone is tested positive s/he will be linked to nearby TB DOTS center for treatment and followed up for adherence. PEs will also conduct specialized educational sessions on TB at outreach sites where they will distribute visual materials and discuss TB risks and routes of transmission.

2. The timeline of project completion is not mentioned. The progress of the project can be represented using a Gantt chart.

Response: Thanks for your comment. The project is expected to last until June 2020, as specified in page #14. Now, in this revised version, we have attached a Gantt chart (Table 2), illustrating the project timeline in page # 14, 15.

Comments of reviewer: 2 (Jianming Wang)
Please state any competing interests or state 'None declared': None declared

Response: Thank you for this comment. The necessary revision has done as per comment. Please see page #24.

1. In the part of 'Introduction', the authors can update the data of Global Tuberculosis Report 2019. Are there any references for 'Bangladesh is a country with generalized TB epidemic, though it has a low HIV prevalence of less than 0.01% among general populations.'?

Response: We apologize for this mishap. We have now added references for the aforementioned statement. Please see page # 7. We have also updated the data according to the Global Tuberculosis Report 2019. Please see page #6, 7 for the necessary revision.

2. Paragraph 4. The authors may describe more data about the description of 'Experiences of some countries have shown the successful implementation…'.

Response: Thank you for this comment. Now this section has been further elaborated and enriched (attached below) with more literature (please see page #8).

Experiences for some countries have shown that successful implementation of active case finding strategies, resulted in increased TB case detection, especially for hidden and/or hard-to-reach populations. For example, a recent study conducted in tribal India showed that active case finding interventions contributed to a 52% increase in testing rates and 84% increase in TB case notifications. Similarly, a recent quasi-experimental study that was conducted in Cambodia showed that the TB case notification rates were significantly higher ($p < 0.05$) among the intervention group (which adopted active case finding) compared to the control group (which employed passive case finding). Likewise, a recent cohort study conducted in China documented that early case detection rates significantly increased among the higher-risk groups, such as PLHIV.

3. Please add a section to describe the community-based TB screening approach.

Response: As mentioned in a previous response (comment 1 of reviewer 1), the community-based TB screening approach would be based on the findings generated from the first phase of the study. Please see page # 11, 12 for the description of the community-based TB screening approach.

4. Page 12. Please check the formula of n.

Response: Many thanks. This formula has been checked and found ok which is explained as below: According to the nature of research design of this study, a standard formula was used to calculate sample size. The formula was taken from: Amon J, Brown T, Hogle J, et al. Behavioral Surveillance Surveys BSS. Guidelines for repeated behavioral surveys in populations at risk of HIV. 2000, page 47, https://www.who.int/hiv/strategic/en/bss_fhi2000.pdf?ua=1

Moreover, it was found that when the manuscript was uploaded the sample size formula is not clearly seen in the PDF version like the word document. For convenience the picture of sample size formula is given in the attached file for kind consideration.

5. Page 13. When estimating the sample size, you described that 'in order to detect 20% changes (1-way change detectable)', and 'the knowledge of cause, routes of transmission and prevention of TB ranged from2-44%,22-88% and 14-68%'. Please explain the reason of applying these parameters.

Response: Thank you for this comment. The reason for applying these parameters is described below. Now, the necessary revision has been incorporated in this revised version with insertion of a table of literature review (Table 3) with references (Please see page#16, 17). The explanation is given below:

The statement 'in order to detect 20% changes (1-way change detectable)' refers to the improvement in the outcome variables (knowledge on the cause, route of transmission and method of prevention of TB) that was expected at the endline compared to the baseline.

The statement 'the knowledge of cause, routes of transmission and prevention of TB ranged from 2-44%, 22-88% and 14-68%' refers to the estimated values from different studies. The ranges indicate the lowest and the highest values of the outcome variables found in various studies. This range of values does not refer to the changes between two time points, endline vs. baseline.

6. It's better to perform a cost-effective analysis for policy makers.

Response: This is an excellent point; we thank the reviewer for this valuable suggestion. The current study objectives are limited to the development and piloting of community-based TB screening intervention solely targeted towards sexual minority people, therefore cost-effectiveness analysis was not a part of this study. Moreover, a cost-effectiveness analysis would require an additional methodological process to be incorporated in the current study protocol. The proposed intervention has just been piloted and an endline survey is currently ongoing. If significant changes are to be found in the outcome measures between the intervention and comparison groups, and if the piloted intervention is proven to be successful, a cost-effective analysis of the proposed approach could be planned as a future research initiative. We could add an additional objective to the research protocol and make the according methodological adaptations after attaining approval from the Institutional Review Board. Alternatively, if the outcome measures are demonstrated to be successful, a separate study could be launched, which is focused on performing a cost effective analysis of the proposed intervention.

Few minor changes:
1. Page 5 (line: 10) –Rephrasing done.
2. Page-7 (line: 12) - Rephrasing done.
3. Page-19 (Line: 12-14): Added a new sentence "Similar sample size and sampling method will be used to conduct end line survey both in intervention and comparison areas" for more clarification.

VERSION 2 – REVIEW

REVIEWER	Dr. Ekta Gupta Hamdard Institute of Medical Sciences and Research (HIMSR), New Delhi, India
REVIEW RETURNED	11-May-2020

GENERAL COMMENTS	1. Study limitations should be added and how the authors plan to overcome them.

VERSION 2 – AUTHOR RESPONSE

Comment of reviewer# 1: Dr. Ekta Gupta
Please state any competing interests or state 'None declared': None declared

Response: Thank you very much for this comment. As suggested by the reviewer, necessary changes have been made on page # 24.

1. Study limitations should be added and how the authors plan to overcome them.

Response: Thank you very much for this notable comment. We completely agree with the comment of the reviewer. Therefore, a separate paragraph has been written on study limitations and the plan to overcome those limitations (attached below). Please see page # 22, 23.

Limitations:

One of the major limitations is unlike RCT, the quasi-experimental study design is unable to establish a strong causal association between intervention and outcome due to the lack of randomization. However, to overcome this limitation, a similar comparison group will be assigned, which will not receive the intervention. Moreover, qualitative methods will be integrated with quasi-experimental methods to support or refute the findings of the quantitative evaluation and to assess the effectiveness of the intervention. Thus, the causal inference will be strengthened. Another potential limitation might be the chance of insufficient control of some confounding factors, which may influence or contaminate the outcome. This limitation will be mitigated through employing pre- and post intervention measurement, and statistical analyses that adjust ('control') the confounder(s). In addition, any positive or negative findings that may influence the expected outcome will be documented and reported to describe the context broadly within which generally causal relationships are constructed and deconstructed. Since the study will adopt the non-probabilistic purposive sampling approach because of the stigmatized and hidden nature of the sexual minority people, this may incur selection bias. Therefore, maximum variation sampling will be attempted to minimize this bias.