Author's response to reviews

Title: Strengthening monitoring and evaluation (M&E) and building sustainable health information systems in resource limited countries: lessons learned from an M&E task-shifting initiative in Botswana

Authors:

Mulamuli Mpofu (mulamuli.mpofu@itech.org.bw)
Bazghina-werq Semo (bazsemo@u.washington.edu)
Jessica Grignon (jgrignon@uw.edu)
Refeletswe Lebelonyane (rlebelonyane@gov.bw)
Steven Ludick (sludick@gov.bw)
Ellah Matshediso (ellah.matshediso@mopipi.ub.bw)
Baraedi Sento (bmogomotsi@yahoo.co.uk)
Jenny H Ledikwe (Jledikwe@gmail.com)

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Author's response to reviews: see over
Dear Jane M. Dalumpines

Thank you for forwarding comments by two reviewers on our manuscript *Strengthening M&E and building sustainable health information systems in resource limited countries: lessons learned from an M&E task-shifting initiative in Botswana* for publication with BMC Public Health

Attached please find a revised manuscript, considering all the points raised by the reviewers. Below, we clarify changes made in response to each point raised by the reviewers. Responses to each of the reviewer comments are in bold while the text added to the manuscript is italicized.

**Referee 2**

**Reviewer's report**

Reviewer: Julia V Ershova

Reviewer's report:

This study focuses on the qualitative assessment of the effectiveness of task-shifting initiative with regards to improving health information system and data quality in Botswana. The assessment was conducted three years after the initiative was implemented and was a part of a larger evaluation of the health information workforce established in the country. The researchers described achievements of this new workforce and documented lessons learned during its establishment and implementation. The findings of this study demonstrated that on-job training of university graduates can be an effective approach for developing a professional workforce within a national health program. The results of this study are very important and timely for developing countries that experiencing a high demand of the trained specialists in the area of health informatics to support long-term sustainability of health information systems.

The authors are encouraged that this reviewer found the study important and timely for developing countries.

**Major Compulsory Revisions**

Question posed by the authors was well defined and objectives of the study were clear. However there are major recommendations to Methods, Results and Discussion sections.

**Methods**

More information about study design is required, including clarification on sampling strategies for in-depth interview and focus groups discussions.

1. If the interviewees were purposively sampled, what was the sample size? Why only 12 senior officers were interviewed? If the saturation strategy has been used for the interview sampling, it should be clearly described along with the major questions used for this strategy

The reviewer raises a good point. The authors have included information on how the interviewees were purposively selected and the number of interviewees successfully interviewed. Specifically, the following text is included in the revised manuscript: “A total of 18 potential interviewees
were purposively sampled through identification by the M&E technical working group overseeing this assessment. They represented government institutions, donor agencies, and technical organizations involved in the development of the cadre through training, mentoring, or supportive supervision. All organizations which worked closely in the development and implementation of the cadre were represented. Twelve of the 18 potential interviewees were available and interviewed (response rate =67%); eight from government institutions, three from technical organizations, and one from a donor agency.”

Since a saturation strategy was not used for the interview sampling, modifications to the text were not made.

2. Is the response rate (67%) related to 12 officials who was interviewed or to all officials who participated in the development of the new cadre?

   The response rate of 67% is related to the officials interviewed. This was clarified for readers through the following text: “Twelve of the 18 potential interviewees were available and interviewed (response rate =67%); eight from government institutions, three from technical organizations, and one from a donor agency.”

3. How many districts were within 80 kilometers radius of the two districts selected for the focus group discussions?

   The methods were revised to include the total number of districts within an 80 km radius of the focus group discussions. Specifically, the following text has been added: “Six focus group discussions (FGDs) were conducted in the two main urban districts of the country. The eleven districts within an 80 kilometre radius of the two urban districts were invited to participate. Of these 11 districts, 10 participated in the FGDs, representing 33% of 29 districts in the country. This included six rural and four urban districts.”

4. What was the representativeness of rural and urban districts during the focus group discussions?

   As stated in the response to the previous question, the text was modified to clarify that this included “six rural and four urban districts”.

Results

More details are required to adhere to the relevant standards for reporting and data deposition; the provided results are not supported adequately by information received during the interview and focus group discussions.

1. Information about the interviewees and focus group discussion participants should be provided:

   • What is the total number of officials involved in the recruiting the new cadre (a pool for interviewees)?

     The officials involved in the recruitment of the cadre had a minimal role in the project. They had a purely human resources role that was administrative. To help readers better contextualize the pool of interviewees the text clarifies that 18 individuals were identified by the technical working group overseeing the assessment as having been involved in the development of the cadre. Clarification was also made
to indicate that “development” is refereeing to the “training, mentoring, or supportive supervision” of the cadre, which does not include recruitment.

- Which organizations interviewees represented and how many interviewees from each organization participated in the interview?
  
  While the authors appreciate the importance of helping readers contextualize which organizations were represented in the interviews, it is important that specific information not be provided to prevent identification of participants. Therefore, general information was added to help readers better understand the types of organizations included in the assessment. The following modifications were made to include this information: “A total of 18 potential interviewees were purposively sampled through identification by the M&E technical working group. They represented government institutions, donor agencies, and technical organizations involved in development of the cadre through training, mentoring, or supportive supervision. All organizations which worked closely in the development and implementation of the cadre were represented. Twelve of the 18 potential interviewees were available and interviewed (response rate =67%); eight from different government entities, three from technical partners, and one from a donor agency.”

- How many district M&E officers, program officers and health managers participated in focus group discussions?
  
  The text was modified to indicate the number of district M&E Officers, program officers, and health managers participating in the focus group discussions. The methods section now includes the following sentence: “The FGDs were conducted with three separate cadres purposively selected from the participating districts. This included 12 district M&E officers, 15 district program officers coordinating health programs, and 12 district health managers in charge of health services.”

2. More details on each topic of the Achievements and Lessons Learned subsections are needed. It may be reasonable to separate results of in-depth interview and focus group discussion, since the objectives of those were not 100% overlapped.

  Given that this was a qualitative study, substantial details are provided in these sections through text and direct quotes from participants. These two sections are quite lengthy…over 2000 words and constituting over 50% of the text. It is unclear what additional details the reviewer was hoping for, particularly since lack of detail was not identified as an issue by the other reviewer.

  Separating the results by method would increase the amount of text; but not provide more detail given the nature of qualitative data analysis. Data triangulation is an important part of qualitative research and is a strength of the paper. No modifications were made based on this comment.
• It should be described how the provided topics were derived from the common themes identified during the in-depth interview and focus group discussions

   The topics that were provided were derived from the common themes using a general inductive approach which is described in the following text: “A general inductive approach was taken for analyzing the qualitative evaluation data from the in-depth interviews and focus groups [29]. This involved the manual coding of textual data and identification of common themes, in order to condense the data into a summary format and establish links with the evaluation objectives.”

• Each topic should be supported by data in terms of number of respondents provided the information

   This was a qualitative assessment, which is quite different from a quantitative assessment. The authors feel it would not be appropriate or meaningful to quantify the number of focus group participants or interviewees who felt a certain way about each theme as the data were not collected for that type of analysis. While that would be appropriate for a quantitative assessment, this is qualitative work. The discussion section does state that “The lack of quantitative data to provide an objective measure of data quality is yet another limitation to this assessment.” But does add that “Use of iterative questioning during data collection, and triangulating findings from focus group discussions and in-depth interviews strengthen the validity of the results.”

• It may be useful to have a table(s) with the list of common themes/topics and the major responses with the number/percentage of respondents to support the results.

   Again, this was a qualitative assessment which is quite different from a quantitative assessment. The authors feel it would not be appropriate or meaningful to quantify the number of focus group participants or interviewees who felt a certain way about each theme as the data were not collected for that type of analysis.

• For district-led operational research activities it would be helpful to know how many projects were initiated/completed per each district

   The authors acknowledge the need to provide such information. Operational research activities emerged as part of the achievements during the discussions and interviews but it was difficult to establish the actual number completed by district.

   Once again, this was a qualitative assessment which is quite different from a quantitative assessment. The authors feel it would not be appropriate or meaningful to quantify the number of operations research activities.

Discussion

1. The discussion section should be enhanced with the data from the result section (recommendations are above).
The authors appreciate this comment, but as stated above, feel it would not be appropriate to quantify the data as suggested by the reviewer in previous recommendations.

2. The limitations of the work are stated, but should be properly addressed

The authors appreciate this comment. Limitations have been addressed by indicating how trustworthiness of the results was ensured. The following text was added in the discussion: “Use of iterative questioning during data collection, and triangulating findings from focus group discussions and in-depth interviews strengthen the validity of the results”. The discussion section also indicates that “there is need for further research to assess whether alleviation of such M&E tasks from other health workers results in improved quality of patient-level care and health outcomes”; which helps address the limitations.

3. The generalizability of the results should be discussed, since only 33% of the health districts were represented in focus group discussions and it is unknown how many rural districts were among them.

This is highlighted as a limitation in the discussion with the following text: “Convenience sampling of M&E officers, program managers, and district managers for the focus group discussions from the vicinity of the two urban areas may have resulted in the lack of reporting of certain unique factors affecting the success of district M&E officers in the rural districts.”

The authors clearly acknowledge any work upon which they are building, both published and unpublished.

The title and abstract accurately convey what has been found; minor comments to the title of the manuscript and the abstract are provided in the next section.

Minor Essential Revisions

Title:
1. M&E should be spelled out in the title

The authors agree with this comment. M&E has been fully spelt in the title. The title now reads: “Strengthening monitoring and evaluation (M&E) and building sustainable health information systems in resource limited countries: lessons learned from an M&E task-shifting initiative in Botswana”

Abstracts:
1. Background: It would be useful to include information on the number of the M&E officers recruited (51).

The background section of the abstract was modified to include the number of officers recruited. The following text is now included in the
abstract: “To improve monitoring and evaluation (M&E) of health programs in Botswana, 51 recent university graduates with no experience in M&E were recruited and provided with on-the-job training and mentoring to develop a new cadre of health worker: the district M&E officer.”

2. Methods: Spell out number of interviews and fit it in the statement appropriately

The authors appreciate this comment. Modifications were made and addressed under major revision 1 of the methods.

Introduction:

3. Change the words order in the 1st sentence of 3d paragraph as follows: ‘To improve data quality in resource-limited settings’

This modification was made. The respective sentence now reads: “To improve data quality in resource-limited settings, it is important to address the shortage of trained human resources.”

4. Although the reference to the previous publication was provided ([28]), it may be helpful to add more information about the established M&E workforce, since the objectives of the study are concentrated on its assessment.

The authors appreciate the reviewers comment on revisiting the background but feel there is sufficient information about this cadre in the original text that is relevant to this manuscript. However, different text from the article has been added under different comments from this reviewer and the second reviewer.

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests: I declare that I have no competing interests

Referee 1
Reviewer: Stephanie Davis
Reviewer’s report:
This paper is well-written, clearly organized, and reports on a valuable M&E project.

The authors appreciate the reviewer’s positive feedback.

Major compulsory revisions:
1. Please provide a bit of background about what the M&E responsibilities and if possible, challenges, of the previously responsible cadre were before the project, so that readers can understand the changes in context.

The authors acknowledge that this is important information to contextualize the project. The following text was added to provide background related to the M&E responsibilities and challenges of the previously responsible cadre (nurses): “The goal was that the district M&E officers would assume data-related duties that had previously been
secondary responsibilities of other health workers, such as nurses. These health workers had been challenged in fulfilling M&E responsibilities because of the increasing workload associated with health program expansion as well as limited training in M&E.”

2. Please specify the sampling approach in more detail.
   • **Individual interviews**: Were 18 people sought for individual interviews because they constituted every person closely involved in development/implementaiton? If not, why were only 18 sought and what other criteria were used to select them?
     
     A similar point was also raised by referee 2. The text has been modified to provide further detail on the sampling approach for the individual interviews. The following was added: “A total of 18 potential interviewees were purposively sampled through identification by the M&E technical working group guiding this assessment. They represented government institutions, donor agencies, and technical organizations involved in the development of the cadre through training, mentoring, or supportive supervision. All organizations which worked closely in the development and implementation of the cadre were represented.”

   • **Focus groups**: Does convenience sampling refer to the choice of districts, or the choice of participants within the districts, or both? This appears to be a two-stage sampling procedure; please specify how selections were made at each stage, including response rates if possible.
     
     A similar comment was made by reviewer 2. Text was added to clarify that districts chosen to conduct the focus group discussions represented the two main urban districts in Botswana, with all 11 districts within an 80 kilometer radius invited to participate. Additionally text was added about the response rate. “Six focus group discussions (FGDs) were conducted in the two main urban districts of the country. The eleven districts within an 80 kilometre radius of the two urban districts were invited to participate. Of these 11 districts, 10 participated in the FGDs, representing 33% of the 29 districts in the country; four urban and six rural attended the FGDs.”

**Minor Essential Revisions:**

3. Please specify how many district M&E officers took initial contract positions and whether they were distributed one per district or more/less.

   The following sentence was added to the background section to specify the number of officers and their distribution in the country: **A total of 51 were initially employed, with most of the districts in the country receiving two officers.**

**Discretionary Revisions:**

4. If any responses were collected addressing whether the number of M&E officers per district was sufficient for the primary goals of the project, or whether a smaller or larger cadre would have been ideal, this would be valuable information for others trying to replicate this program.
Information on adequacy of the number of M&E officers was not collected during this assessment. This was not a theme that emerged from the data, therefore the authors are unable to provide information related to the adequacy of the cadre in terms of the number of officers.

5. As this project is introduced as a task-shifting approach, it would be helpful to make it clear earlier in the paper (when task-shifting is introduced) what cadre the tasks were shifted from.

Yes, this is an important point. The text in the introduction was modified. It now reads as follows: “The goal was that the district M&E officers would assume data-related duties that had previously been secondary responsibilities of other health workers, such as nurses. These health workers had been challenged in fulfilling M&E responsibilities because of the increasing workload associated with health program expansion as well as limited training in M&E. The duties of the M&E officer cadre were to strengthen data collection, ensure regular and timely reporting and feedback, promote a culture of data utilization and evidence-based planning, and build M&E capacity within the health system.”

Level of interest: An article of importance in its field
Quality of written English: Acceptable Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests: I declare that I have no competing interests.