Author’s response to reviews

Title: Can sexual health interventions make community-based health systems more responsive to adolescents? A realist informed study in rural Zambia

Authors:
Chama Mulubwa (cmulubwa@hotmail.com)
Anna-Karin Hurtig (anna-karin.hurtig@umu.se)
Joseph Mumba Zulu (josephmumbazulu@gmail.com)
Charles Michelo (ccmichelo@yahoo.com)
Ingvild Fossgard Sandoy (Ingvild.Sandoy@uib.no)
Isabel Goicolea (isabel.goicolea@umu.se)

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To the Editor,

RE: Resubmission of the manuscript entitled "Can sexual health interventions make community-based health systems more responsive to adolescents? A realist informed study in rural Zambia"

Thank you for your helpful comments on our manuscript. Kindly find below the responses to the comments. We have marked grey in the manuscript the places where we have made changes.

Reviewer 1

Comment 1: First, as currently framed there is no stated reason for program theory development except to do it. Unless this activity is more clearly framed, e.g., how developing program change theory will be used for evaluation or program design/adjustment purposes, the reader wonders why this activity was undertaken. It is not clear, for example, how theory development contributes to or will be used to inform the larger RISE RCT study. Or, was it done to provide a concrete way for stakeholders to talk about adolescent SRH activities as a pathway to build CBHS?

Response: The Programme theory presented in this paper was developed for two reasons. First, to evaluate (using RISE as a case) how SRHR interventions such as RISE can contribute to transforming “ordinary” CBHS into systems that are responsive to the SRHR of adolescents. The programme theory was developed as the first step in our evaluation and will be tested in the subsequent steps. Second, we
think the programme theory also provides a concrete way for stakeholders to talk about adolescents’ SRHR activities as a pathway to build CBHS. Therefore, this programme theory is not only meant for stakeholders implementing RISE but also stakeholders involved in similar interventions.

To address this comment, the manuscript has been revised (see page 8 line 26 to page 9 lines 1-5) to state that: “Programme theories can be used as a planning tool or as an evaluation tool. The program theory developed in this article is the first step in an ongoing evaluation and will be tested in subsequent steps. Realist evaluation relies on eliciting program theories from similar interventions, so we consider that the programme theory presented in this study can be a useful tool for planners, implementers and evaluators of similar adolescents SRH interventions, especially in the context of SSA”.

Comment 2: Second, program change theory depends on good definition of activities being implemented as part of the intervention. It appears that important program components # 3 and 4, the material and financial support to families (page 8, lines 11-13), are not included in theory development. Yet these activities could have a considerable effect on intermediate effects and outcomes.

Response: Providing economic support (namely support of paying school fees, limited monthly financial support and limited school material) to the girls who were participating in the intervention and their respective families was expected to create an enabling climate or context in which girls would have an opportunity to continue going to school (Page 18 lines 9-25). The financial components of the intervention were thus, considered as being part of the context/conducive environment for girls to continue attending school.

Our study, however, focused on the components of the intervention that targeted the community-based system and not selected individuals. For example:
1) The youth clubs and community meetings were not meant for only the girls who received financial help but for all school and non-school going boys and girls
2) Community meetings included all community members and not only the parents whose children received financial help form the project.
As our focus was on understanding how CBHS can be made more responsive to the sexual and reproductive health of adolescents, we focused on components of the intervention that were targeted at the CBHS (community meetings and youth clubs).

We are also aware that the financial transfer received by the girls participating in the intervention could have contributed to making the girls and their families more prone to participate in the activities organized by the intervention, but not per se into the transformation of the CBHS which was our focus. As such, we edited the manuscript to highlight this (Page 18 lines 9-25).

Comment 3: Finally, the concept of mechanisms, as I understand it, is more typically linked to program activities and their effects. It is hard to understand when activity effects are defined as people, as shown in Figures 1. (See Dalkin et al. Implementation Science (2015) 10:49 'What's in a mechanism? Development of a key concept of realist evaluation' for the issues and clarifications of defining mechanisms.) People implement activities, of course, but to visualize project stakeholders as effects as in done in Figure 1, and not the effects engendered by activity implementation, is not how I see this core concept of realist evaluation in practice. This distinction is clearer in Figure 2. Since Figure 1 was used as a visual aide in the FGDs, this needs to be explained better how the tool does not reflect a realist evaluation approach but was used to elicit responses on effects. Then Figure 2 is more reflective of actual mechanisms/effects.

Response: We agree with the reviewer that the actors mentioned in Figure 1 are not mechanisms. We
used the map as a tool during the interview guide, in order to explain the intervention components, the actors involved and the anticipated outcomes. We then asked the participants to identify the mechanisms (“something within the actors”) that would make the intervention to work or not. Since we see that figure 1 can be misinterpreted, we have removed it from the manuscript. We also revised the manuscript (page 12 lines 1-4) to increase clarity on how the conceptual map was used. The manuscript now states: “The conceptual map depicted all the intervention inputs, the actors involved in the implementation process and the anticipated outcomes of the project. The conceptual map helped the researcher to explain to the participants the intervention components and to solicit for mechanisms”.

Comment 4: All that said, perhaps pertinent information from the FGDs exists to revise the article framing. But the absence of several activities/inputs in theory development (second issue, above) is a significant gap in the application of realist evaluation approaches.

Response: Thank you. We have revised the article framing (page 8 line 26 to page 9 lines 1-5) and some text in the manuscript to include the financial activities/inputs (page 18 line 9-25).

Reviewer 2

General comment: I enjoyed reading this paper, as it examines a very interesting and practically important research question around the circumstances that may determine whether complex SRHR interventions targeting adolescents succeed or fail. This topic is important considering global discussions around attaining universal healthcare coverage for all by 2030, and what the next iteration of SRH-related global, regional, and local-level commitments will entail. Additionally, the use of a qualitative, iterative approach is appropriate given the authors are aiming to uncover detailed information about the context in which the RISE initiative is implemented to shed light on how, why and under what circumstances SRHR interventions can transform the CBHS. I also recognize that the authors built the dependability of the case study data in the research analysis process through meetings to get feedback from co-authors, and later, other independent researchers. I applaud that the framing of the findings through the CBHS lens is comprehensive and multi-sectoral. Lastly, the paper is generally well-written and well-structured.

Below, I discuss my main comments and suggestions, which will hopefully prove constructive as you continue to revise your manuscript.

Response: Thank you for taking time to review this manuscript.

Overall strategy

Major

Comment 1. Clarifying the goal of the paper in relation to RISE implementation. I struggled to understand, at times, how "transformation of the CBHS" was derived as the overall outcome of community based SRH interventions, and of RISE, in particular, from the two main expected outcomes pointed out by participants. This was further exacerbated by differing explanations of the goal of the study: "to explore why, how and under what circumstances complex interventions such as the combined intervention arm of RISE succeed or fail" versus "circumstances [under which] community-based health systems are responsive to the sexual reproductive health of adolescents"). Success was pre-established, it seems, as the intervention's ability to transform the CBHS (e.g. this became a programme theory), even though this may not have been an explicit goal of RISE. The discussion recognizing that interviewees may have found it difficult to discuss more abstract health system
outcomes rather than the narrower RISE outcomes with which they are intimately familiar made me question, then, the fidelity of the mechanisms captured in the paper, and whether the themes that have been captured are connecting the right intervention/context/actors to the right outcomes. In other words, can RISE's intervention components be mapped to CBHS transformation as an outcome, considering its stated outcomes and who is being interviewed (those involved in RISE)? I recommend a succinct, but more robust discussion or defense at the beginning of the paper that "transformation of the CBHS" is an implicit outcome of a complex intervention like RISE, and it is thus suitable and appropriate to map to RISE's intervention components, context, and actors.

Response: We have clarified on page 8 (line 18 to 20) that transformation of the CBHS is an implicit outcome of interventions such as RISE. The text now reads as follows:

“In order to improve girls’ SRHR, interventions such as RISE have to change the approach of the CBHS into a CBHS that is responsive towards adolescents’ SRHR needs. Since “transforming of the CBHS” is an implicit outcome of complex interventions such as RISE”

We have also added text on page 8 line 26 to page 9 line 1-5 to explain why we developed the programme theory, as follows:

“Programme theories can be used as a planning tool or as an evaluation tool. The program theory developed in this article is the first step in an ongoing evaluation and will be tested in subsequent steps. Realist evaluation relies on eliciting program theories from similar interventions, so we consider that the programme theory presented in this study can be a useful tool for planners, implementers and evaluators of similar adolescents SRH interventions, especially in the context of SSA”.

Comment 2: Anchoring in the case study approach. One of the main strengths of the paper - its deep exploration of the relationships between different parts of the RISE intervention and the context surrounding its implementation as a case study- is currently under-utilized. While the findings shed light into the rich local context of RISE, this section could be strengthened with short signals, when appropriate, to the reader about which component or aspect of the RISE intervention is being discussed or touched on by any given quote, since information about RISE as an intervention is provided only at the very beginning of the paper.

Response: As explained in the paper, we used the RISE project as a case to solicit for mechanisms at a higher level. The stakeholders used their experience of implementing RISE to reflect on how other interventions similar to RISE could work. As such, the mechanisms were abstracted into a programme theory which is important but not specific to our case (RISE intervention).

We have read through the paper and identified the quotes in which the participants referred to a specific component of the RISE project. See page: 22 line 1-2 and line 26; and page 23 line 18-19

Comment 3: Acknowledging nestedness of mechanisms. The authors grouped mechanisms at the individual and collective (interrelationship) levels, and later discussed how individual mechanisms would trigger collective mechanisms. Might these mechanisms be nested, rather than sequential? Authors should consider re-visiting Figure 2, which presents the individual-level (adolescents) and collective level (parents, CBHWs, and Teachers) mechanisms as opposing forces, when authors imply that these mechanisms have a sequential (and perhaps, even nested) relationship.

Response: Thank you for your observation. We have added a statement on page 20 (lines 21 to 22) to explain that the mechanisms are not sequential but rather inter-related/nested. The manuscript now reads:

“Although the mechanisms are presented in a sequential way, we consider them nested, and not following a step-wise approach”.
We have also edited Figure 2 (now labelled as Figure 1) to reflect that the mechanisms are nested.

Minor

Comment 4: Revising Figure 1. In line with #1 above, I would recommend amending the "outcomes" in Figure 1 to align with language in the rest of the paper and clarifying the difference between "CBHWs" and "health care workers." It is also not clear what the acronym "ARCBHS" stands for in this conceptual map.

Response: As stated above, we have removed Figure 1 because it can easily be misinterpreted. On page 12 (line 1-4), we have explained how we used the conceptual map to solicit for information from the participants. The manuscript has been revised to include:
“The conceptual map depicted all the intervention inputs, the actors involved in the implementation process and the anticipated outcomes of the project. The conceptual map helped the researcher to explain to the participants the intervention components and to solicit for mechanisms”

Data

Major

Comment 5: Providing more information about participants. Readers do not know who the 16 interviewed stakeholders generally were in relation to the intervention, and thus, to what extent they were qualified to speak to different aspects of RISE or whether certain types of stakeholders are over-represented. While the study authors provide reassurance that stakeholders were selected based on their relevance to the study and involvement with RISE, adding some more detail about what aspects of RISE or the CBHS these stakeholders were involved would increase confidence in the findings.

Response: We have revised the manuscript by adding a table (on Pages 10 and 11) that includes the general description of the key stakeholders who were interviewed. We made the table as generic as possible so as to uphold confidentiality.

Comment 6: Mitigating social desirability bias. Due to limited information about the qualitative procedures of the study, it's unclear to what extent social desirability bias may have played a role in the themes and proposed mechanisms stakeholders offered. To this end, I suggest including information about any additional procedures which assured participants that their responses would not affect their professional involvement or reputations, for example, to allay bias concerns.

Response: We agree that social desirability could have occurred. However, at the beginning of each interview, we explained to the participants that we were not focusing on discussing the RISE project but were using RISE as a case. We encouraged the participants to reflect broadly (on how other interventions such as RISE could work or not) using their experiences from implementing or developing RISE. Using this approach, we think that we were able to capture the critical voices. In the manuscript, we have edited the text on Page 31 (lines 2-5) to explicitly state that: “We tried to minimize social desirability trough emphasizing that our evaluation was not an evaluation of RISE but how interventions such as RISE can transform the CBHS. Further, all the interviews were conducted by the first author who was not involved in the implementation and management of the RISE project”.

Minor

Comment 7: Making quotes more informative. Quotes in the Findings section might be more informative if attributed to domains or general roles of the interviewees, keeping in mind research
Response: Thank you for the comment. In the quotes we did not want to identify the role of the person that the quote came from, as this has a high potential of making our participants identifiable and may breach research subject confidentiality.

Analysis/methods

Major

Comment 8: Touching on strength and level of contextual factors. In discussing the authors' theories about how contextual factors enable or inhibit the successful transformation of the CHBS through RISE, it may be important to indicate - either in the Findings or Discussion section - not only the directionality of these contextual factors (e.g. presence of policies is generally good), but the valence or strength of these four dimensions from the data and the implications of that. Was one of these four dimensions indicated to be "stronger" forces than the others? Were they recognized as "stronger" forces, perhaps, amongst certain types of stakeholders, or for certain types of actors? Thinking about this might yield more novel theory.

Response: Thank you for the comment. At this stage, we are only able to identify the possible contexts in which our case, the RISE intervention was implemented and the perceptions of the stakeholders on how each specific context could hinder or promote the transformation of the community-based health system. The next step will consist on putting these potential theories into test in specific cases to assess the questions posed by the reviewer.

Comment 9: Recognizing any divergent codes. While the authors explain their use of a retroduction approach in the final stage of analysis to develop the mechanisms that are theorized to lead to certain outcomes, it's unclear how any divergent codes or themes were managed in prior steps. Including a few more sentences on the decision to merge codes into larger themes in the second to last bullet, despite potentially losing important context or nuance, would greatly help the reader track how analysis led to programme theory development.

Response: Thank you. We have edited the paper on Page 13 lines 6-9 to say:

“In this study, we brought together codes that related to different mechanisms and different actors to develop the themes. We focused on bringing both the agreeing and contradictory codes under the same theme if they spoke to that specific theme, in order to best capture nuances.”.

Thus, the process of developing the themes was not about adding more frequent codes and discarding the codes that contradicted.

Minor

Comment 10: Distinguishing actors. In the Findings-Mechanisms section, it was confusing whether the mechanisms being discussed were offered from the actors in italics or were offered about the actors in italics from all the stakeholders involved in the study. While I believe it is the latter, I recommend adding an additional sentence in the Mechanisms section introducing the reader to this format to prevent confusion in casual readers.

Response: Thank you for the valuable observation. We have added text to clarify that the individual and collective mechanisms were segregated by actors in which the mechanisms were expected to manifest, and these are highlighted in italics (see page 21 line 2).

The revised sentence now reads:

“The individual and collective mechanisms were segregated by actors (highlighted in italics) in which
the mechanisms were expected to manifest and connected with the intervention, contextual factors and outcomes (Figure 1).”

Conclusion and balance

Major

Comment 11: What next? Given practically important findings which may influence the decisions of those who work to implement similar complex interventions, I found myself yearning for more information about how these findings might be used to adapt or improve RISE, or what the testing of these theories might look like in the future. Given the paper's focus on contextual factors and mechanisms and its case study design, the authors should consider adding more practical takeaways/future steps for RISE in the Discussion and/or at least nodding to RISE as the intervention used as the case for this study in the Conclusion.

Response: We have edited the text paper on page 8 (line 26) to page 9 (lines 1-5) of the manuscript to explain that developing the programme theory is the first step in our evaluation. We think that the findings can contribute to understanding better how RISE was expected to work. The programme theory can be used to improve not only RISE but also other interventions similar to RISE.

The paper now includes the following sentences:
“Programme theories can be used as a planning tool or as an evaluation tool. The program theory developed in this article is the first step in an ongoing evaluation and will be tested in subsequent steps. Realist evaluation relies on eliciting program theories from similar interventions, so we consider that the programme theory presented in this study can be a useful tool for planners, implementers and evaluators of similar adolescents SRH interventions, especially in the context of SSA”.

Comment 12: Correcting generalizability concerns. On page 28, the authors state "Soliciting for information based on rural Zambia as the context limits the generalizability of our findings to similar settings of rural CBHSs with high adolescent pregnancies and early marriages." I encourage you to read, "Generalizability in qualitative research: misunderstandings, opportunities and recommendations for the sport and exercise sciences" (Brett Smith). Though it is not in our field, it is being cited amongst qualitative researchers because it addresses the problematic implications of applying the standard of statistical-probabilistic generalizability to qualitative research, which does not look to attain the same goal. I would strongly recommend amending this sentence - generalizability is limited in this study because of its case study design only looking at the RISE intervention, not because it was implemented in Zambia.

Response: Thank you for your suggestion. We totally agree that in qualitative research generalizability should not be considered in statistical terms. We also think that using a case study approach does not limit generalizability instead it allows researchers to explore the phenomena in its natural setting which adds to the transferability of the findings.

Since the statement on generalizability can be misinterpreted, we removed it and edited the paper (page 30 line 12-14) as follows:
“The programme theories developed in this article used an SRHR intervention implemented in rural Zambia as a case study [45]. From our findings, we have developed a programme theory, that can be used as a starting point for planning or evaluating other similar interventions”.

Minor

Comment 13: Amend Figure 2. I'd suggest a final review of Figure 2 to ensure readability, alignment, and straightening of the text boxes to increase readability.
Response: Thank you. Figure 2 (now labelled as figure 1) has been edited and is now readable.

Comment 14: Re-visit "uptake." On page 26, the authors state: "From our literature search, we found no study that has reported on factors that affect uptake of the intervention in the CBHS (as defined in our study), thus making our article distinct." This highlighted an area of ongoing concern that there seems to be a lack of clarity about whether the ultimate objective is CBHS transformation or intervention uptake/acceptability (as raised in point #1). As a reader, it seems as if this study, to me, is reporting on the factors/mechanisms that affect transformation of CBHS as a result of an intervention. Additionally, how universal is the CBHS definition used in this study? If CBHS is not generally defined in the comprehensive way it was used in this study, then this statement seems an overstatement of novelty and I suggest further amendments.

Response: We revisited and revised the sentence as:
“From our literature search, we found no study that has reported on factors or mechanisms that affect the transformation of ‘ordinary’ CBHS (as defined in our study) into systems that are responsive to the SRHR of adolescents, thus making our article distinct” (See page 28 lines 12-15).

On page 7 of our manuscript, we explained that “the general definition of CBHS tends to be similar worldwide. The characteristics that define the CBHSs include the communities in which they exist, the historic, economic and political systems, and the social and cultural norms existing in these communities [Schneider H, Lehmann U. From community health workers to community health systems: time to widen the horizon? Health Systems & Reform. 2016 Apr 2;2(2):112-8].

We therefore adopted the definition of CBHS as used by Schneider et al, 2016 and adapted it to the context of rural Zambia (page 7 line 10-19).

Comment 15: Overall, I see great potential for this study to contribute to the literature and our understanding of complex intervention implementation in different settings. Good luck!

Response: Thank you.

Reviewer 3

General comments: This manuscript explores the potential role of the different community-based health systems in advancing adolescent sexual health in a developing country setting. Adolescent sexual and reproductive health is a major public health concern most especially in sub-Saharan Africa that faces great challenges in SRH information and services access.
The study findings provide a program theory about why, how and circumstances under which SRH interventions can make CBHS more responsive to adolescents. Developing program theories that can be tested is key to finding appropriate implementing approaches.
The manuscript is well written, and I recommend it be published after the authors consider a few minor comments below.

Response: Thank you.

Specific comments:
Introduction

Comment: * Please provide the source of statistics in line 1. Young people and youth take on different meaning and it may be good to clarify or limit your statistics to adolescents


Comment: * When referencing, please use the relevant work. For example, reference 1 was a cross-sectional study among 403 adolescents from a school in Tanzania. It was not from the DHS but you used it to back up evidence from Demographic Health Surveys (line 3 and 4).

Response: Thank you. The reference has been changed to “Doyle AM, Mavedzenge SN, Plummer ML, Ross DA. The sexual behaviour of adolescents in sub-Saharan Africa: patterns and trends from national surveys. Tropical Medicine & International Health. 2012 Jul;17(7):796-807”.

Comment: Line 5/6 "in many cases they do not use any form of protection to prevent pregnancy or sexually transmitted infections [2].", the reference provided does not support this evidence. That reference was a review on mechanisms of improving adolescent access to SRH services. There is current work in these areas such as...

https://reproductive-health-journal.biomedcentral.com/articles/10.1186/s12978-017-0393-3

Response: Reference no. 2 has been replaced with the following references:


Comment: * Reference 4, lines 5-8: I am not sure about how relevant this is to the statement about adolescents engaging in nonconsensual sex and high sexual abuse. A lot of work has been done by UNICEF to quantify this challenge and the reasons why it is very prevalent. Please retrieve some of these references.

* I suggest you revisit the references. Reference 6 may not best support lines 10-13.

* Reference 4 and 6 are the same.

* Page 6 (lines 1-7), I suggest the Global strategy for Women's, Children's, and Adolescent's Health, AA-HA and the QoC guidelines for adolescents. Methods

Response: Thank you for the observation. Reference 4 has been replaced with the following two references:
We have also added the suggested reference to the text on page 6, lines 1-7.

Comment: * Under data collection (page 10), please clarify/provide more information on who the "key stakeholders" were; CBHS workers, project workers, etc. Clarification of the study participants is key to the interpretation of the final program theory. Do not stop at only gender and age.

The realist evaluation protocol that you published in 2018 may not be accessed or referred to, by all readers. Results and discussion

Response: We have provided more information on the key stakeholders that were interviewed in this study (see Table 1). As mentioned above, we described the stakeholders in a generic way as possible so as to uphold confidentiality.

Comment: * Did you find any divergent views? Please highlight this. Include in the discussion section

Response: Yes, we found very few divergent views from our participants and these have been reported (i.e. page 20 line 12-16). This could be due to the fact that, at planning stage, most of the stakeholders implementing SRHR interventions such as RISE expect them to work as planned. However, we anticipate that we will find a lot of divergent perceptions and experiences among the stakeholders when we test the programme theory in the subsequent steps planned for this evaluation.

Thank you for your consideration, and please contact me if you have questions about the above.

Yours faithfully,

Chama Mulubwa