Author's response to reviews

Title: Clinical mentorship to improve pediatric quality of care at the health centers in rural Rwanda: a qualitative study of perceptions and acceptability of health care workers

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Author's response to reviews: see over
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Dr Hayley Henderson
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Dear Dr Hayley,

Thank you for providing the review of our submitted manuscript, entitled “MS: 2068032286996205-Clinical mentorship to improve pediatric quality of care at the health centers in rural Rwanda: a qualitative study of perceptions and acceptability of health care workers”. We would also like to thank the reviewers for their insightful comments and suggestions, which we believe have significantly strengthened the manuscript. We have tried to address all the comments and our responses to each of the reviewer’s points are outlined below. Please do not hesitate to contact me with further questions or considerations.

Best Regards,
Sincerely,

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Reviewer: Joanna Armstrong Schellenberg

Minor Essential Revisions

1. Abstract: Authors should give more information about the methods and results here, and reduce the space given to other section.

We have reduced background information and extended the methods and result sections.

2. Abstract -- "Results from a separate quantitative study have demonstrated substantial improvement in IMCI quality of care after two years of the clinical mentorship and enhanced supervision at health centers (MESH) program, but little is known about health care workers’ perceptions about the strengths, weaknesses, and overall acceptability of this innovative program" In my view, the current study can "stand alone"

We have reduced level of detail in the abstract’s background and kept that level of details into the main background of the manuscript

The abstract’s background now reads as:
Despite evidence supporting Integrated Management of Childhood Illness (IMCI) as a strategy to improve pediatric care in countries with high child mortality, its implementation faces challenges related to lack of or poor post didactic training supervision and gaps in necessary supporting systems. These constraints lead to health care workers’ inability to consistently translate IMCI knowledge and skills into practice. A program providing mentoring and enhanced supervision at health centers (MESH), focusing on clinical and systems improvement was implemented in rural Rwanda as a strategy to address these issues, with the ultimate goal of improving the quality of pediatric care at rural health centers. We explored perceptions of MESH from the perspective of IMCI clinical mentors, mentees, and district clinical leadership.

3. Literature on IMCI, background. "IMCI is an algorithmic approach to pediatric visits intended for use in countries with infant mortality of 40 per 1000 live births or greater [6]. The protocol aims to improve three main components: case management skills of health workers, health system infrastructure, and family and community practices. Evidence from various countries showed that IMCI can lead to significant improvement on under-five clinical quality of care [7, 8]. "Reference 6 is a study from Tanzania; 7 and 8 are both from South Africa. These seem an odd selection to support the text here. There are numerous papers from the multi-country evaluation of IMCI which could be relevant -- including Uganda, Tanzania, Peru, Brazil, and Bangladesh. A list (not up-to-date, sadly) is available on http://www.who.int/imci-mce/publications.htm

Thank you for the suggested additional references, we have updated the references and cited couple studies on page 4, including:


4. Use of the word "significant" -- Despite the fact that this is a qualitative study, it might be better to use an alternative where possible, because readers will not otherwise know if you mean statistical significance or public health significance … three examples: -- page 4 "significant improvement"; -- page 4 "significant under-5 mortality"; -- pages 7-8 "no significant differences in meaning".

We agree with your comment. We have changed the use of “significant improvement” on page 4 into “improvement”, page 4 "significant under-5 mortality" into "high under-5 mortality", and pages 7-8 "no significant differences in meaning" into “no important differences in meaning” and in other sections of our manuscripts.

5. The accompanying paper giving results of the quantitative evaluation refers to 'nurse mentoring' -- it might be helpful if the two papers used the same term

This is a valuable comment. This study studied the attitudes of a wider range of health care workers including: IMCI nurse providers, health center directors (nurses serving as managers with extensive experience in health center management) and district medical directors (medical doctors). Therefore we think it more accurate to keep “health care workers” as a term that applies to all study participants.

6. It looks as though reference 15 and reference 18 are the same.
Thanks for catching this error. We have realized that this paper was duplicated in our library. We have fixed this issue on page 5 and updated our list of references

7. The claim of "substantial improvement in IMCI quality of care" (reference 15/18) seem to be based on an increase of about 20 percentage points overtime, assessed by the clinical mentors themselves, in assessments completed and in children correctly classified. There aren't any results reported on sick children correctly treated [for example] … so I feel that the authors may be over-interpreting the findings in saying that quality of care is substantially improved. Moreover, I don't think this claim is necessary for the current paper.

You are correct that the improvements were more specific than general “quality of care.” We have changed the sentence to make it more specific highlighting key examples on page 18. It now reads as:
The study complements results from a quantitative evaluation that demonstrated improvements in IMCI care in a variety of domains two years after the MESH program implementation. These included 1) increase in IMCI services availability (daily and by IMCI-trained nurse); 2) enhanced adherence to current clinical protocols, and 3) improved classification of the severity of illness of patients.

8. Background
"Health centers (HCs)" -- A few words on the levels of health facilities in Rwanda and what type of care they provide would be useful

We have provided a brief description of levels of health centers in Rwanda and care provided with emphasis on health centers. We have also included references. The paragraph now reads:

Rwandan health system has four levels of care facilities: HCs, District Hospitals, Provincial Hospitals and National Referral and University Teaching Hospitals. HCs provide a core set of basic curative services, preventative and limited inpatient care, including uncomplicated deliveries. The level of complexity and expertise increases to district hospitals with surgical and more extensive inpatient capacity to the highest level which functions as referral centers [20]. The majority of HCs are staffed by nurses who have a high school certificate in nursing sciences with few with higher level nursing degrees. (Drobac et al. 2013) (Anatole M. 2012).

9. Background
Not all readers will understand what is meant by quality improvement (see for example Walshe K Int J Qual Health Care 2009;21:153-159) -- a reference, and mention of PDSA cycles, might help.

Thank you very much for this comments. We have added two more references on page 5, listed in references:


10. Setting
A little more information on the context would be helpful -- maybe this is the place for the information mentioned above about the structure of the health system in Rwanda. Also, for example, what is the approximate population of each district? What is the median distance from rural households to the nearest health centre?

In addition to the paragraph added described above, the paragraph on our study setting was enhanced and now reads as follows:

This study was conducted in Kirehe and Southern Kayonza districts, two rural districts in Rwanda supported by PIH and covered by the MESH program. There are 13 health centers to support 344,157 people in Kirehe and 8 supporting 194,248 in Southern Kayonza. The median distance between the district hospital and HCs is 23 km and 21 km in each district respectively.
and the mean distance from rural households to the nearest HC is approximately 3.5 km. All health centers are staffed by nurses, most of whom have completed high school (secondary level) and few have a higher-level nursing degree. Each health center has ten nurses on average, with one to three nurses trained in clinical IMCI. HC directors are all nurses by training. Their activities include management of human resources, infrastructure, and finance with limited clinical time. No HC director was an IMCI provider during the study.

11. Participants-- limitations

Information from providers who did NOT have IMCI training or did NOT participate in MESH would have given very valuable insights -- especially as it looks as though the majority of health care providers did not participate. This could be mentioned as a limitation in the discussion.

We agree with this comment. On page 2, the following sentence was revised to reflect that as a limitation of the study:

“Only providers who were trained in IMCI and who received MESH mentoring were included. Therefore, the generalizability of our findings to health care workers not trained in IMCI and other settings is limited.

12. Page 7 - A set of open-ended questions were prepared to guide the interviews and FGDs -- would these be available on request? Yes, these are available. We have added a sentence on page 8 to indicate the source of interview guide.

The text now reads as: “An external, independent moderator facilitated discussions in Kinyarwanda while a note-taker recorded the session using a digital recorder and writing notes (FGD and IDI guides are available as supplemental materials).”

13. Page 8 "A list of codes reflecting specific study objectives was pre-defined by study investigators" -- is this available? To what extent is it the same as the five areas identified as key components, mentioned in the results?

Yes, the list is available. We have uploaded this list as supplemental materials. New codes were used using the open-coding methodology.

The five areas identified are the key emerging themes. We have changed the sentence on page 10 to avoid confusion.

Now the text reads as:

Five themes were identified as participants’ perceptions regarding acceptability and benefits of the MESH program, including 1) interactive, collaborative capacity-building, 2) active listening and relationships, 3) supporting not policing, 4) systems improvement and 5) real-time feedback. Three themes – interactive, collaborative capacity-building, active listening and relationships, and systems improvement – were pre-identified. The two themes of supporting not policing and real-time feedback emerged during FGDs and new codes were developed.
14. Page 8 -- Was the PI one of the authors? If so, give initials? Also, there is a typo: "principle investigator".

Thank you. Yes the PI was one of the authors. His initials (AM) have been added. We have corrected the typo on page 9.

15. Ethics -- Were information sheets about the study given to participants? Was consent verbal, rather than written? Why was there no attempt to seek written informed consent?

Each participant provided a written consent. We have revised the wording on page 9 under ethics. “Written, informed consent was obtained from all participants.”

16. Results -- "Five areas were identified as key components of the success of MESH, which contributed to acceptability and impact" … if these were pre-defined, then to avoid any confusion it might be good to remind the readers of this here.

Thanks for the question. The revisions as highlighted above should address the reviewer’s comment.

17. Results -- I would be interested to read more about emerging themes – those issues that were not pre-defined … maybe the authors could bring these out more specifically?

This is a very important point. The revisions as highlighted above should address the reviewer’s comment.

18. Discussion -- Could the authors add a brief comment in the discussion about the extent to which MESH is sustainable, affordable, feasible? -- if they cannot comment on that directly, maybe they could add a comment suggesting what research is needed to answer these key questions?

Cost effectiveness and scalability studies are underway. On page 21, we have added the following sentence to address your comment.

“Studies of the cost-effectiveness and scalability of MESH are underway and will add to understanding of scalability and sustainability of the MESH model.”
Reviewer: Jennifer Callaghan-Koru

1. The results section should be shifted away from description of the program activities towards more in-depth discussion of the meanings and perception of the program among participants to be consistent with the stated study aim. The authors may need additional data collection to explore these themes adequately.

Quotes that don’t really add much to understanding the perceptions and meaning of the program to participants, rather only describe the program activities, include: Quote starting page 9; Quote staring page 11, carrying over to page 12; First and second quote on page 13; First and second quote on page 15.

Thank you for this suggestion. One key component for us is what the mentees perceive to be the value added of the program including their perception of 1) what are the additional activities and 2) the benefit of these activities. Admittedly, reviewing the paper in light of the comment brought to our attention that we were more focused on #1 and that the benefit (as perceived by participants) needed enhancement.

Additional data collection is not feasible. However, we went back to the original transcripts and chose quotes that more fully illustrate participants’ perceptions of the MESH program’s meaning and value. Also, it is worth noting that many participants expressed their perceptions of the program by providing specific, functional examples of how MESH works as a way to articulate their feelings about the program’s value—we hope the new quotes also help readers better understand the meaning of these functional changes from the perspectives of the interview respondents.

**Initially Quote starting page 9.** Now on page 10, reads as:

This interactive and collaborative capacity-building was perceived as an approach to build their confidence. For example, one IMCI provider supported by the rest of providers mentioned

“They built our confidence not only in IMCI case management but also in general nursing care we provide every day. I feel proud of the work when I can handle even the complicated cases that I could not treat before due to their support.”

**Quote staring page 11, carrying over to page 12.** Now on page 13, reads as:

As one health center director stated:

...They [mentors] helped me to build a system. Before they start visiting health centers we had two bad and routine practices: 1) Children under five were on same queue as adult patients. We didn’t have a system to triage under five or any other severe cases 2) IMCI clinic was not working every day because we did not understand why having IMCI and adult consultations the same day. Now IMCI clinic is always running every day and ready to receive each under-five without waiting too long. Also, mentors helped to establish a triage system where a nurse makes a quick assessment of severe cases on queue and get them into concentration room first.
Respondents frequently gave specific examples to show how MESH helped them replace “bad” practices with stronger routine systems that allow them provide better and more efficient care.

First quote on page 13. Now on page 14, reads as:

... he [mentor] is patient, and does not bear a grudge against nurses who are inflexible. An example is when he found out that I had not implemented his previous recommendation on systematic vital signs to all children. When they came back to health centers he gave the same feedback. He never gets tired of talking or showing how to improve IMCI consultations.

Second quote on page 13. Now on page 15: this quotation reflected an important finding of the study (that frequent staff turn-over is a barrier to MESH program implementation), but we agree with the reviewer that the specific quotation does not add new information and have removed it from the results.

First quote on page 15. Now on page 16 reads as:

For example, one mentor noted:
“...I feel amazed to have reduced frequency of stock outs. No more complaints from nurses about stock-outs and no more children gets sent back home due to lack of essential drugs”.

First and second quote on page 15. Now on page 17 reads as:

“I found a combination of various techniques very effective but one condition has to be respected: Involve providers in the learning process, let them ask questions, observe and give them a time to practice to implement your feedback.”

2. The results would benefit from more comparing and contrasting of the perspectives of mentees and mentors, or of different types of mentees (nurses and directors). Were there any differences? Did they have the same perspective? This should be addressed?

We found positive perceptions from all respondents (mentees, mentors and HC directors) regarding the MESH program. The following sentence was added in our conclusion section on page 21. Now the text reads as:

We found positive perceptions and strong acceptance of the MESH clinical mentoring intervention by nurse mentees, mentors, and HC directors. Reasons for positive perceptions and acceptability of the MESH program varied between the different types of respondents: while directors mainly linked their positive perceptions to the role of mentors in improving specific health systems, IMCI mentees and mentors spent more time discussing the collaborative capacity-building, active listening and relationship-building process as the most positive aspects of the MESH program.

3. On page 10, what is meant by humility? This needs to be explored more. How do mentors demonstrate humility?
With “humility” participants meant one of qualities of mentors, the non-judgmental consideration of HCWs mentees. As stated on page 11, this was perceived as fundamental element critical to building trust and productive mentor-clinician relationships.

On page 12 the text now read as:
“As exemplified by the quotation above, participants viewed active listening and humility as fundamental elements critical to building trust and productive mentor-clinician relationships. Here “humility” was described as one of qualities of mentors, that consists of a non-judgmental consideration of HCW mentees.”

4. The section on supporting not policing, and the included quote, are interesting findings. More sections should be like this.

Thank you.

Background Section
5. Can IMCI be considered acute care?

IMCI can be considered as tool for both clinical assessment and acute care. It focuses on the child as a whole, rather than on a single disease or condition.

Methods section
6. Who are health center directors? Are they IMCI providers as well?

Health center directors, commonly called “titulaires”, are involved more with administration/management of the health centers than clinical assignments. We have included the following sentence on page 6:
“HC directors are all nurses by training. Their activities include management of human resources, infrastructure, and finance with limited clinical time. No HC director was an IMCI provider during the study.”

7. Who are the mentors? What is their background? Are they from within or outside the health system? Are they senior? This is important for understanding how they relate to mentees.

Due to limited word count for this manuscript, we provided a brief description of the MESH mentor on page 6-7 as well as the reference on page 6:
MESH mentors are Rwandan nurses with a university nursing degree and hands-on experience in their clinical area. Mentors were selected based on competency in clinical domains (written examination) and experience and competency in mentoring or coaching and interpersonal skills (interviews). These followed national hiring procedures and incorporated World Health Organization (WHO) clinical mentoring guidelines [19].

8. How were the FGDs constructed? Were health center directors and nurses in the same FGD? It is unclear how many FGDs were conducted exactly?
We have slightly modified the language in the “Data Collection” section to clarify. It now reads: “Two focus group discussions with IMCI HCWs and two focus groups discussions with health center directors from two MESH-supported districts were conducted (Table 1).”

9. **What was the size of the MESH program? Does this study cover all health centers participating? Or only a subsample?**

MESH program covers 21 health centers total. 13 in Kirehe District and 8 in Southern Kayonza district. To clarify inclusion of HCs, we have added the following to the study design “All 21 HCs in Kirehe and Southern Kayonza were included.”

10. **How was the pilot testing done?**

The following details have been added: “The guide was pilot tested with IMCI nurses who had been mentored but who were not included in the study. Data from field testing was analyzed and informed further adaptations of the guide as well as creation of new codes.”

11. **How was the setting undisturbed? Please describe the setting better? In the health center? At a separate location?**

Interviews and focus group discussions took place in a training center and district meeting room. We have specified the sentence below by including the following sentence on page 8 under data collection section: “Interviews and FGDs took place in non-clinical settings to ensure that providers were not called away to provide clinical care.”

12. **Who was the data collection and analysis team? What is their relationship to the participants?**

On page 8, we have provided a brief description of data collector: “An external, independent moderator facilitated discussions in Kinyarwanda, while an external note-taker recorded the session using a digital recorder and writing notes.”

A sentence was added under data analysis section (on page 9). Now the text reads as: “Four steps were followed during the data analysis: 1) immediate debriefing between data collectors and study Principle Investigator after each focus group, 2) listening to the tape and transcribing the content of the tape, 3) checking the content of the tape with the moderator and noting any non-verbal behavior, and 4) back translation of a sample prior data analysis, as noted above [24]. The analysis team included the MESH program management team and experienced qualitative data analysts from the National University of Rwanda School of Public Health and from Partners In Health, Boston.”

13. **How was nonverbal behavior recorded?**

Nonverbal behavior was recorded by the note taker. On page 8, we mentioned that “a note-taker recorded the session using a digital recorder and writing notes.”
Results
14. On page 10, what does “reported impact” mean? Would “perceived benefits” be more appropriate?

Thanks for the question and suggestion. Yes, with “reported impact” we meant “perceived benefits” we have changed this on page 11.

It now reads as: “Most of the FGD participants also noted the importance of active listening as a key component of relationship-building between mentors and mentees, an important factor associated with acceptability and perceived benefits.”

15. Page 16: in the first sentence under acceptability heading, do you mean to say “when asked about the acceptability of the program?”

We have clarified the sentence on page 17. It now reads: “When asked about the acceptability of the MESH program, all respondents expressed their desire to continue the program as a strategy to maintain high quality pediatric care.”

Discussion
16. Please describe the quality improvement results that are referenced

We have revised the sentence on page 19, first paragraph and included a brief description of the QI results. It now reads:

The study complements results from a quantitative evaluation that demonstrated improvements in IMCI care in a variety of domains two years after the MESH program implementation. These included 1) increase in IMCI services availability (daily and by IMCI-trained nurse); 2) enhanced adherence to current clinical protocols, and 3) improved classification of the severity of illness of patients.

Background section
17. This section would benefit from discussing the literature and supervision for quality improvement. 18. This section would benefit from a discussion of the history of IMCI in Rwanda

We recognize a need for more literature on supervision and quality improvement as well as the history of IMCI in Rwanda. Therefore, given the limited word count for this manuscript, we have provided the most essential details with useful references.

19. This section would benefit from data on quality of care in Rwanda

Thanks for the comment. We have provided available data and recommendation for more research needed.

Discussion
20. It would be good to talk about how the MESH training for mentors addressed relationships with the mentees—what should be kept and what should be changed based on these results? What specifically about the MESH program, as compared with other supervision programs, is reflected in the positive perceptions and how can it be replicated in other settings?

Thank you very much for the comment. As stated and referenced on page 6-7, MESH training for mentors was described somewhere else. This included clinical refresher training in respective domain and intensive training in clinical mentoring and quality improvement techniques. In addition to that, they had an ongoing support from technical advisors defined as expert in the same area. This training provided mentors with confidence and capacity for effective mentorship. On page 21, we have mentioned that cost-effectiveness and scalability is under way. This will inform about the explicability of the MESH program.

21. The last sentence discusses future research on patient perceptions of the program. But are patients even aware of the program?

Although patients may not be aware of the details of the MESH program, it would be interesting to understand the extent to which they have perceived and been affected by the improvements in quality of care that the MESH program has demonstrated. We have clarified this sentence so that it reads: “Further study to understand the effects of the MESH intervention on patients’ perceptions of quality of care would be valuable.”