Author’s response to reviews

Title: Evaluation of a maternal health care project in South West Shoa Zone, Ethiopia: before and after comparison

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Author’s response to reviews:

Dear Prof. Jose M. Belizan,

We are pleased to submit a revised version of manuscript REPH-D-16-00013 to Reproductive Health. We are grateful for the useful comments we received from the reviewers, and below is our point-by-point response. We have also made changes on the manuscript.

Thank you for giving us an opportunity to submit our revised manuscript.

Sincerely,

Koji Kawakami
Reviewer reports:

Reviewer #1:

This is an interesting article providing evidence of improvements in coverage and quality of maternal and neonatal health services in a country struggling to reduce high maternal and neonatal mortality. Since the strategic plan of the health sector in Ethiopia is focusing on achieving the dual goals of improving health and addressing inequalities, the five-fold increase in skilled birth attendance (SBA) is important not only because SBA is considered the most important intervention for reducing maternal mortality, but also because it is an outlier of extreme inequality in sub-Saharan African countries. Furthermore, since this increase was achieved at the health centers level (serving mainly rural poor population) while keeping SBA stable at referral hospital (serving mainly urban population), where Comprehensive Emergency Obstetric and Neonatal Care (CEmONC) services are available, it seems that improvements were achieved not only in referral system (with cases without need of CEmONC being increasingly managed at health centers level), but also in terms of better equity and sustainability of the overall health system.

Comment 1:

However, it is surprising that, while there was a five-fold increase in SBA provided by skilled health professional, no significant increase was found for routinely scheduled services, such as antenatal and postnatal care, which can be provided by health extension workers at health post and community levels. This pattern is different from what was observed in the country over the past ten years, when preventive services that can be provided at community level showed much higher coverage than those relying on functional health systems and clinical services with 24 hour availability (such as skilled care at birth). Of note is the fact that the focus of the project was both on health centers and community (page 5) and refresher training of HEWs was provided in the framework of the project (point 6 on page 7). It seems that the CUAMM project was more successful in improving health care delivery at the health center level than providing basic services at the health post level: this issue has not been fully addressed in the Section "Discussion" and better explanation should be provided on this issue. In fact, the explanation provided on page 13 ("Lack of significant change in four ANC visits was probably because the study included women who had delivered, thus some who may have attended four ANC visits in
the late intervention period were not surveyed") is not convincing since it implies that a steep increase in preventive services (four ANC visits) may have occurred only in the last months of the three-year period of the project, while this pattern did not occur for clinical services (SBA). Not only evidence for this assumption is unclear, but also it would have been much easier to explain a late peak in coverage of SBA at health center level due to the lengthy process of improving infrastructure, providing equipment and training health staff on skilled care at birth during the first period of the Project, rather than for preventive services delivered at health post/community levels. Therefore, more convincing explanation should be provided on this point.

Response:

We agree with the reviewer that the project was more successful in improving health care delivery at health centres than in providing routine preventive services at health posts and in the community. Because the greatest problem in the districts was perceived to be under-utilisation of health centres for childbirth services, we agree with the reviewer that a lot of time and effort might have been spent on improving infrastructure, providing equipment and training health staff to strengthen provision of childbirth services at health centres than on providing preventive services at health posts. We have deleted the explanation for the lack of significant increase in ANC and have inserted the following statement (page 14, from line 14):

Although the coverage of four ANC visits increased from 44.8% before the project to 59.2% later in the project, this increase was not significant after accounting for socio-demographic factors. This observation was unexpected given that it is easier to improve the coverage of services such as ANC and PNC that can be offered through outreaches than those, such as childbirth care, that are offered only in fixed health facilities [24]. Given that a steeper increase in ANC coverage seems to have occurred in the later months of the project, it could be that in the initial stages, more time and effort was spent on increasing childbirth in HCs through improving infrastructure, providing equipment and training health staff than on providing preventive services at HPs and in the community."
Comment 2:

With this regard, it may be relevant to note that the questions asked during the interviews referred to the two years prior to the two rounds of the survey carried out in February 2013 and in March 2015, respectively, and focused on details of services provided (i.e. number of ANC visits, number of days after delivery when postnatal visit took place) for which recall bias may occur (if mother health cards were not checked during the interviews), while this bias may be minimal in recalling an important event such as skilled care at birth. The recall bias, well documented for Demographic and Health Survey (DHS), may be taken into consideration also in interpreting the results of this study, although to a lower extent, given the fact that the period prior to the survey to which the questions refer is shorter in this study (2 years) than in DHS (5 years).

Response:

We agree with the reviewer that could be a limitation in this study and we have added the following statement in the discussion under limitations to highlight this (page 17, from line 16):

Because some of the questions asked during the interviews required women to recall events that occurred up to the past two years, our estimates may have been affected by recall bias.

Comment 3:

Moreover, since a steep increase in infrastructure, health workforce and service coverage was observed in Ethiopia over the past few years, more updated references would be important, and a couple of examples are provided as follows:

-on page 4, it is stated that "the density of doctors, nurses and midwives per 10,000 population was 2.8 in 2008, way below the 23 recommended by WHO"; however, the number of health professionals showed a steep increase over the past eight years making the above estimate obsolete (the current one has more than doubled). For example, according to the Statistical Report of the Ministry of Health ("Health and Health related Indicators"), there were 4.93 nurses per 10,000 population in 2014/15.
Response:

We have updated the data on staff density based on the reference suggested by the reviewer. We have calculated the density of doctors, midwives and nurses based on information contained in the reference and the statement now reads as follows (page 5 from line 2):

The density of doctors, nurses and midwives per 10,000 population was 6.3 in 2012/2013

Comment 4

-on page 16, it is stated that "At national level, SBA at delivery increased from 6% in 2000 to 10% in 2011" based on the results of DHS 2011; however, a more recent mini-DHS was carried out in 2014 (not mentioned in the paper), focusing specifically on maternal health, with an increase in coverage for maternal health indicators (i.e. for SBA to 14.5% in 2014 from 10% in 2011). Of note is the fact that SBA estimates from DHS refer to the five-year period before the date of the survey (i.e. the period from 2009 to 2013 for mini-DHS 2014). Furthermore, after a decade of stagnation, a steep increase in coverage of SBA was reported in the most recent annual Health Sector Performance Reports based on Health Management Information System (HMIS) data, therefore reflecting the performance of the same year (i.e. reaching 40.9% for SBA in 2013/14). While HMIS data may be of questionable quality and may overestimate SBA coverage, there is convergent evidence from difference sources documenting an increase in coverage for maternal services. These are only few examples of the importance to use updated figures, especially for rapidly changing indicators, with wide implications in terms of analysis and interpretation.

Response:

We thank the reviewer for pointing out this. We have updated this section based on the results from the mini-DHS 2014. Because the coverage refers to a period, we have avoided mentioning the year and instead we mention the survey. Now the statement reads as follows (page 4, from line 14):

Coverage of the recommended minimum four antenatal care (ANC) visits increased from 19% in the 2011 Demographic and health Survey (DHS) to 32% in the 2014 DHS survey, and that of skilled birth attendant (SBA) at delivery correspondingly increased from 10% to 16%.
Comment 5

In fact, on this basis, the statement on secular trend should be reconsidered (page 16: "the effect of secular trends may be minimal. For instance, it is unlikely that at national level, coverage of SBA at delivery increased to a similar magnitude as observed in this study"), because, there is evidence supporting the fact that a steep increase in coverage for SBA and other maternal health indicators may be occurring in recent years in Ethiopia as a result of the huge investments made to reduce the high maternal and neonatal mortality burden. I would suggest to reformulate the statement "the effect of secular trends may be minimal etc." in the Section "Discussion" on the basis of the above facts.

Response:

We have revised the statement to read as follows (page 16, from line 22):

Although, we adjusted for socio-demographic factors that might affect health service utilisation independent of any intervention, Ethiopia has been experiencing a general nationwide increase in the coverage of maternal health services that we could not account for in our analyses. For instance, at national level, SBA at delivery increased from 10% in 2011 to 16% in 2014 (refs). In our study, coverage of SBA at delivery more than doubled in a shorter time despite starting off at a higher baseline which suggests that the project played a role in this.

In general, this paper provides interesting evidence on challenges in ensuring continuity of care throughout pregnancy, childbirth, and postnatal period, and also between places of care-giving (households and communities, outpatient and outreach services and clinical care settings), as well as in implementing interventions to address the three delays hampering access to safe motherhood services. Documenting challenges as well as successes in the difficult context of rural Ethiopia is important, because it may be replicated in other regions as well as it may be a learning lesson for other countries.
Reviewer #2:

Many organizations implement programs to improve maternal and newborn care but very few attempt to publish their experience. It is good to review this article that shares the finding from such a program. More such implementation research papers are needed. Below are some recommendations to assist in improving the paper and making sure information that might be relevant of interested readers are incorporated:

1. For the background information you might consider using a more recent data source - the Ethiopia mini-DHS 2014 report. The values are not that different from what is reported in the current paper but citing recent data is always preferred. It can be found with this link: http://www.unicef.org/ethiopia/Mini_DHS_2014__Final_Report.pdf

Response:

We thank the reviewer for pointing out this. We have updated data in this section based on the results from the mini-DHS 2014 and it now reads as follows (page 4, from line 13):

Coverage of the recommended minimum four antenatal care (ANC) visits increased from 19% in the 2011 Demographic and health Survey (DHS) to 32% in the 2014 DHS survey, and that of skilled birth attendant (SBA) at delivery correspondingly increased from 10% to 16%.

2. Page 6: The description of maternity services on this page has to be expanded to include expected MNH services offered by the health post. The HEWs at the HP play significant role in the mobilization of women for ANC, delivery and postnatal services. They also offer some ANC and PNC services including pregnancy forum for ANC clients and PNC home visits. It is important for readers to get a comprehensive picture of the MNH services. Also provides the context for discussion of the observed low PNC and how it could be improved.
We thank the reviewer for this comment and we have added the following information about HEWs under setting (page 6, from line 13).

HPs are run by salaried health extension workers (HEWs) who are mainly female community members with high school-level education and have been trained for one year to provide preventive, promotive and selective curative health services. HEWs increase the knowledge and skills of communities to deal with preventable diseases and to utilise health services provided at HCs and hospitals and also provide care to women during pregnancy, childbirth and postnatal periods either in HPs or in households (refs). Thus, they spend about 75% of their time conducting outreach activities and the rest at HPs.

3. Under the "Description of the project," only "maternal health care" is mentioned, was there inputs for newborn care. If the technical and material input provided covered both maternal and newborn care, it is important to make this explicit in the description. It would be important to readers, particularly, program managers to get a bit more information on the project activities. Information on how supervision was improved and HEW refresher training conducted - on-site versus off-site or mixed, etc. There is also mention of free ambulance service - what input was specifically provided by the NGO given that the Ethiopia government has made ambulance available, where were the ambulance(s) stationed -- a bit more information on how the referral and ambulance system was strengthened will be of interest to the readers.

Response:

The mention of only maternal health care was an oversight. The project also focused on neonatal care. Actually all the activities were cross-cutting with respect to maternal and neonatal health care. For instance provision of commodities and infrastructural improvements applied to both maternal and neonatal health.

We have revised the activities 1, 4 and 8 to explicitly capture the neonatal aspects of the project.

We have also added more details about training and supervision of professional health workers and health extension workers.

Regarding the ambulance, there was none provided by the government at the start of the project. Initially, while waiting to procure an ambulance, CUAMM signed a contract with the Ethiopian
Red Cross for provision of free ambulance services in the study area. In the course of the project, CUAMM procured an ambulance, which is still currently being used. A study evaluating the ambulance service has already been published (Int J Gynaecol Obstet 2016, 133(3):316-319).

During the course of the project, the government supplied ambulances to the study districts. However, these ambulances faced operational challenges such as lack of money for fuel, and they were often used for unintended purposes. On the contrary, the projects ambulance was strictly used for transporting labouring mothers from their homes to the health centres and if there was need, from the health centres to the hospital. It was stationed at the hospital and could be accessed by calling either the phone number specifically designated for the ambulance or the hospital.

We have inserted the following statement to explain more about the ambulance service (page 8, line 3).

The ambulance was based at the hospital and was used to transfer pregnant women from villages to HCs and, if required, from the HCs to the hospital. The ambulance could be accessed by calling either the phone number specifically designated for the ambulance, or the hospital. Details about the ambulance service and the referral system are available elsewhere (ref).

4. The authors need to address sustainability of their input particularly removal of user fees in the discussion section of the paper.

Response:

We thank the reviewer for pointing out this. We have inserted the following statement on sustainability in the discussion (page 16, line 1):

Sustainability of donor funded projects is always of concern to the government, donors, implementing agencies and project beneficiaries. The sustainability of removal of user fees at hospital, which is private-not-for-profit, may be of concern. Luckily, even before the present project, user fees at the hospital were highly subsidized because the hospital was getting financial support from the government under a public-private partnership (PPP) framework [ref].
CUAMM and the hospital will continue to negotiate with the Ministry of Health to ensure continuity of the PPP and its expansion to cover all maternal and neonatal health servicers just as it is the case in public hospitals.

5. Need to correct the statement about "setting up" "village health committees." To the best of my knowledge in Ethiopia the government has developed its own community mobilization structure and all projects are mandated to work with these structures so I question the statement that village health committees were setup. I am not doubting the statement the Kebele Command Posts were strengthened but it is important to provide the correct information recognizing the contribution of this platform that the government has created.

Response:

We agree with the reviewer and we have revised the statement. The phrase village health committees erroneously appeared in the project proposal but Kebele command post is the right term.

The statement now reads as follows (page 8, from line 10):

Community sensitization activities were conducted through strengthening village (kebele) command posts which comprise of HEWs and village level leaders. The aim was to increase demand for maternal, neonatal and child health services in the villages..

6. Page line 59-60: Change phrase "..who delivered two years preceding each survey" to "who delivered within two years preceding each survey" This comment applies to line 14-16 under "data collection" too.

Response:

We thank the reviewer for pointing out these errors. We have corrected them accordingly.

7. Sample size -- "additional file 1" referred to but not part of the document reviewed
Response:

Additional file 1 is basically a file showing post-hoc power calculation given the observed coverage of the outcome variables and the respective frequencies. I have tried to paste the table here but it seems like this space does not support tables.

8. Page 9: "Outcome variables:" Not sure why the author selected receipt of PNC within seven days as the indicator to use but would recommend that they use the crucial period of PNC within 2 days. The value might be low but if the goal is to track key indicators that are relevant for saving mother and newborn lives then using 2 days would be better indicator.

Response:

We agree with the reviewer that it would have been good to look at PNC within 2 days. However, our data could not allow us to define this indicator in this way and we have acknowledged this as a limitation. We have also mentioned in the discussion that data on PNC within 2 days were inadvertently not collected in the second survey.

9. Under "Discussion" the authors states that "this evaluation suggest that strengthening HCs to provide delivery services is an effective way of scaling up coverage" This may be true but it is not the whole story, it is important that the authors mention the shift in government policy to have all deliveries occur at the HCs. This shift occurred during the later period of their project and could have contributed to the observed increase in coverage so it is important to include this in the discussion. In 2015 I visited some HCs where based on expected number of deliveries facility delivery coverage has increased to over 70% (per the facility report)

Response:

We agree with the reviewer and have modified the statement to read (page 14, line 11): strengthening HCs to provide delivery services could be one of the effective ways of scaling up coverage of SBA
It could also be true that the shift in government policy to have all deliveries occur at the HCs may have contributed to the observed increase in deliveries at HCs. This is one of the secular effects that we could not account for, and we have acknowledged this in the limitations.

10. The authors attempt to explain the "lack of significant change in four ANC visits" under "Discussion" section line 56 to line 8 (the line numbering reset to 1 later in this section) but their explanation was not clear. I would recommend that it be deleted or rewritten to be clearer noting that all the women surveyed had completed their pregnancies so all their ANC care practices were captured.

Response:

We have deleted this section and replaced it with the following statement (page 14, from line 14)

Although the coverage of four ANC visits increased from 44.8% before the project to 59.2% later in the project, this increase was not significant after accounting for socio-demographic factors. This observation was unexpected given that it is easier to improve the coverage of services such as ANC and PNC that can be offered through outreaches than those, such as childbirth care, that are offered only in fixed health facilities [ref]. Given that a steeper increase in ANC coverage seems to have occurred in the later months of the project, it could be that in the initial stages, more time and effort was spent on increasing childbirth in HCs through improving infrastructure, providing equipment and training health staff than on providing preventive services at HPs and in the community.

11. Lines 29-40 under "Discussion" needed to be rephrased to capture the government of Ethiopia community-based strategy to improve PNC which was developed with associated implementation plan in 2012. Instead of stating that "The current strategy whereby a mother and her baby are required to visit health facility..," the authors should consider rephrasing this statement what the government is currently doing based on its community-based newborn care package which requires mother and baby to be visited at home by HEWs within 48 hrs
Response:

Although the government adopted this strategy, its effect has been minimal based on the results of the 2014 mini-DHS. In Oromia region, only 0.8% of women received PNC within two days from a HEW. We have revised this section to read as follows (page 15, from line 7):

To improve PNC coverage, in 2012, the Ethiopian Government adopted a mixture of facility-based and community-based postnatal care strategy, leveraging the efforts of HEWs. The HEWs are required to visit the mother and the baby within 48 hours after birth (ref). Despite this, a survey conducted in 2014 showed that only 0.8% of women in Oromia received PNC within two days from a HEW (ref). Thus, there is still a huge potential to increase PNC coverage through HEW.