PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (**http://bmjopen.bmj.com/site/about/resources/checklist.pdf**) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Health facility service availability and readiness to provide basic emergency obstetric and newborn care in a low-resource setting: evidence from a Tanzania national survey
AUTHORS	Bintabara, Deogratius; Ernest, Alex; Mpondo, Bonaventura

VERSION 1 – REVIEW

REVIEWER	Andrea Solnes Miltenburg University of Oslo, Norway
REVIEW RETURNED	03-Dec-2017

GENERAL COMMENTS	I would like to congratulate the authors on their attempt to discuss the important issues of access and availability of EmOC. However, I have some concerns about the paper. I think it can be much more improved if it is more clear what the rational is of this study. What insights does it contribute with beyond what other studies have reported? And I believe the authors should lift up their findings discussing it in relation to national policies,their implementations and implications on the ground. Furthermore there are some language concerns and methodological issues which need to be resolved (e.g I think there is a missing table 4?) Introduction Generally the introduction has a lot of repetition (referring to high MMR) and not clear formulation of rationale. Also I would suggest to refer to low-income countries instead of developing country Methods If you only report on the facility inventory questionnaire, you dont need mention the other research approaches of TSPA. However, it seems you also made use of health provider questionnaire? I think we need a bit more explanation about the methods of data collection. who performed the survey, who was asked about the inventory? Where supplies actually checked or was it the health provider saying yes-no on questions? Also, would it be possible to know when the survey was done in the year? The staff domain, in relation to training. I would be interested to know in general availability of staff to perform EmOC, and is the training referred to training in the past year? Or training in any time? You report on the explanatory variables. It is unclear to me where these come from. Is it from the same survey? I would say there is no need to explain how they were coded, but it is helpful to understand the relation between the other domains and variables for availability and readiness. Then, part of the EmONC assessment is that some of the signal functions are related to not availability of supplies etc but related to

if the services have been performed in the past three months. Were these items collected as such? Then this was not part of an inventory assessment but a health provider questionnaire? And how was this data generated. If a health facility had a vaccum extractor.. was it then considered to be available even if it was not used or providers did not have the skills to use it?

Results
Please edit the (,) in the number of facilities and remove the space. Just say 1188.
The characteristics of the facilities paragraph needs to be shortened and too the point. All information can be found in the table, so please just summarise the table in a short an concise way. Now it becomes confusing and difficult to read. If only 5% of the facilities had a manual vacuum extractor how come all facilities have such a high score on assisted vaginal delivery?
Table 2, what is the overall national column referring to?
I am confused about the final paragraph. Is there a table missing? You start with referring to table 3 but this cannot correct. At the end of this paragraph you refer to table 4? Please revise.
Also I am missing an overview of the numbrs of facilities which you deem to be ready to provide EmOC, (based on availability of supplies, services etc). From the 905 facilities, how many do you consider ready? Based on fulfilling all signal functions, or 5 of 7… depending on what you determine.

Discussion
In the discussion you seem to explain your variables such as quality assurance and maternal death review. This should not be done in the discussion but earlier, preferably in the methods section. I would recommend that instead of explaining how you coded it, that you explain the variables and its relevance in relation to your research question.

Page 19 line 15-17. From my experience I believe the delivery beds that are used in tanzanian facilities do not provide women with the opportunity to take on different positions or support a physiological childbirth at all. Especially considering the environment they are put in. This sentence is not appropriate. Isn't it possible that the high number of delivery beds correlates with the higher EmOC because facilities with more delivery beds are naturally the district hospitals.. these are by your findings also more likely to have more availability of EmOC (and from a public health point of view, those are most likely also the facilities that have the highest burden and are funded the most from the government??)

You need to refer to ¨The national road map strategic plan to accelerate reduction of maternal, newborn and child deaths in Tanzania, 2008-2015¨ and ¨The National Road Map Strategic Plan to Improve Reproductive, Maternal, Newborn, Child & Adolescent Health in Tanzania (2016–2020). One Plan II.¨From these government documents you can see that the nation wide availability of basic and comprehensive EmONC facilities reduced between 2012 and 2015.

I believe you need to strengthen your introduction with a clear rational and this will trickle down in a stronger discussion. It would be interesting if you could discuss your findings and the meaning for the state of maternal health in Tanzania. What are reasons for

poor performance? It is quite shocking the lack of availability of anticonvulsants for example, in particular in lower level health facilities. And this despite a national commitment for over a decade to improve maternal health. It would be worth to describe your findings in light of national policy of Tanzania to ensure a health center or dispensary in every village. I am missing some basic information in the paper on the current situation for Tanzania. You only report on the MMR but what about SBA rate, where do most women deliver? A little bit more about the context in the introduction or methods would help also for the discussion.Your final sentence in the discussion, which is perhaps meant as a recommendation or conclusion sounds a bit vague. How should they do this? Isn't it already part of the national policy that this is implemented? I guess you should be more critical. What hinders effective implementation of government policies?

I am also missing a limitation section.

The abstract needs to be revised in line with the paper.

REVIEWER	Irene Akua Agyepong Dodowa Health Research Center, Research and Development Division, Ghana Health Service, Ghana
REVIEW RETURNED	14-Dec-2017

GENERAL COMMENTS	The paper is a purely descriptive presentation of the findings of what seems to be essentially a situational analysis survey using standard WHO indicators of health facility service availability and readiness to provide basic Emergency Obstetric care in Tanzania. The findings are clear, but they come across as descriptive operational information of immediate local relevance rather than analytic information of global relevance. There is also very little probing of the why of the findings. For example is it surprising / unexpected that signal functions were higher among hospitals than health centers? Why or why not? What are the implications for Tanzania? From an operational perspective within Tanzania, I can see that it would be useful for health sector and facility managers to read these findings and use them to guide their program decision making and implementation. But why would the international readership of this journal find it relevant to hear about /read these findings? The discussion is weak, and sometimes merely repeating information we have already been provided in the findings. Some of it I think comes back to the failure to ask and answer more analytical type of questions to start with. The statement of the objective in the abstract is inaccurate in using LIC rather than Tanzania. This study describes the situation specifically in Tanzania The objective in the body of the paper states the assessment of the availability of the 7 signal factors etc. etc. and also states an investigation of associated factors. It is not clear to me where the data and analysis on associated factors is.

In its current form, the paper is of high operational interest and relevance in Tanzania to inform health sector understanding of the situation. Health sector managers and implementers would still need to themselves ask and explain the questions as to the "why" of the findings that would help them to be able to develop and implement interventions to make a difference. To be of international and more academic relevance beyond this, the authors need to revisit the question they want ask and frame a more analytic question that is of global interest and relevance.

They may consider starting with a review of the literature in this area to get some ideas as to the kinds of questions they might want to ask and answer using the data set available to them. For example: They mention the study is the first of its kind in their region. But since they use ? standard WHO indicators; have perhaps other countries and regions conducted this same kind of survey? Could they improve the global relevance of the analysis by a more comparative cross country analysis?

Or for example: Can they get empirical data to provide some insight into the why and how of the findings. Even if they cannot collect primary data, are there health sector reports and documents that can be reviewed alongside to try and provide these deeper insights

Since this paper used an entirely quantitative approach and conducted secondary analysis of a data set, I would recommend that it is seen by a statistical reviewer. My comments have been made from the angle of a health policy and systems researcher /practicioner

REVIEWER	Charles Opondo London School of Hygiene & Tropical Medicine, UK
REVIEW RETURNED	23-Jan-2018

| GENERAL COMMENTS | This study aimed to:
1. Assess the availability of basic emergency obstetric and neonatal care services (BEmONC)
2. Assess the readiness of facilities to provide BEmONC services
3. Identify factors associated with readiness to provide BEmONC using the WHO service availability and readiness assessment.

This study addresses an important public health question and uses a rich and extensive dataset to answer these questions. Overall, the approach to the analysis is sound.

Nevertheless, I have one major concern and two minor concerns with the study as currently presented:
1. The authors have reported many 'significant' findings in the text without considering their relevance in addressing the study's objectives. For example, in the abstract they report that the readiness score was consistently higher among hospitals and dispensaries, without explaining how this meets their objectives. In Table 2, the authors have reported p-values for tests assessing differences in availability of signal functions across facility types, which was not part of objective (1) above. In my understanding, the results linked to objective (1) should simply report service availability, not conduct any statistical tests comparing availability |

	across groups. If they authors wish to do the latter, then they should make this clear in their objectives.
	To a lesser extent, this approach to the reporting may also be problematic in the results in page 16 where the authors report the factors 'significantly' associated with readiness to provide services. Such significant associations, in my view, are not the main findings; they are only useful in identifying the factors to include in the stepwise variable selection procedure, and should only be reported in this context.
	2. The writing style in the manuscript should be improved for clarity.
	3. The manuscript as currently presented seems to be incomplete. Table 4, which should present some key results (referred to at the bottom of page 16) is missing.
	I would recommend a major revision to address these, and other issues that may have flagged by other reviewers.

REVIEWER	M. Sayeed Haque University of Birmingham, UK
REVIEW RETURNED	05-Feb-2018

GENERAL COMMENTS	There were no detailed description of the sampling procedure that was used in the study. Without this it is difficult to ascertain whether the sample is representative as claimed by the authors. Statistical analysis : It is mentioned that certain STATA command was used to adjust for complex sampling design employed by the survey. No explanation is provided why that certain command was used or how that command will impact on the analysis. This needs clarification. For the multiple regression analysis it is mentioned that any variable with the correlation coefficient of more than 0.3 with others was not included in the model. It is not clear if two variables are highly correlated then how the authors have decided which one to keep in the model and which one not to. It is also mentioned that stepwise method was used to test for the association of each explanatory variable with the outcome variable. Stepwise method is a automated variable selection procedure. it is better to use objective criteria to include or exclude variables in the regression model. Results presented mostly as percentages. It might be better to present 95% Confidence Intervals of these percentages as well. Results of the multivariate analysis are said to be presented in Table 4 but as no Table 4 was included it is not possible to verify authors claims.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Andrea Solnes Miltenburg
Institution and Country: University of Oslo, Norway
General comments
I would like to congratulate the authors on their attempt to discuss the important issues of access and availability of EmOC. However, I have some concerns about the paper. I think it can be much more

improved if it is more clear what the rational is of this study. What insights does it contribute with beyond what other studies have reported? And I believe the authors should lift up their findings discussing it in relation to national policies,their implementations and implications on the ground. Furthermore there are some language concerns and methodological issues which need to be resolved (e.g I think there is a missing table 4?)

Response

Thank you for this comment.

Introduction

Comments 1

Generally the introduction has a lot of repetition (referring to high MMR) and not clear formulation of rationale. Also I would suggest to refer to low-income countries instead of developing country

Response

The introduction section has been revised and amended to provide clear formulation of study rationale (see Page 5, Line 17-23 and Page 6, Line 1-11)

The word developing country has been replaced with "low-income countries (LICs)" throughout the introduction and whole manuscript (Page 4, Line 6)

Methods

Comment 1

If you only report on the facility inventory questionnaire, you dont need mention the other research approaches of TSPA. However, it seems you also made use of health provider questionnaire?

Response

The sentences were revised and amendment was made, see Page 8, Line 2-4.

Comment 2

I think we need a bit more explanation about the methods of data collection. who performed the survey, who was asked about the inventory?

Response

The more explanation about the methods were provided by inserting subheading "Data collection methods" (see Page 8, Line 1-17)

Information regarding who performed the survey (see Page 8, Line 7-9) and who was asked about the inventory (see Page 8, Line 13-5)

Comment 3

Where supplies actually checked or was it the health provider saying yes-no on questions? Also, would it be possible to know when the survey was done in the year?

Response

Information about "when the data was conducted" and "how the supplies were documented" were explained see (Page 8, Line 6-7) and (Page 8, Line 15-7) respectively

Comment 4

The staff domain, in relation to training. I would be interested to know in general availability of staff to perform EmOC, and is the training referred to training in the past year? Or training in any time?

Response

Thanks for this comment, more details about staff training have been provided see Page 9, Line 7-8.

Comment 5

You report on the explanatory variables. It is unclear to me where these come from. Is it from the same survey? I would say there is no need to explain how they were coded, but it is helpful to understand the relation between the other domains and variables for availability and readiness.

Response

The sentences were revised and corrected as suggested by reviewers; see Page 10, Line 3-22 and Page 11, Line 1-2.

Comment 6

Then, part of the EmONC assessment is that some of the signal functions are related to not availability of supplies etc but related to if the services have been performed in the past three months.

Were these items collected as such? Then this was not part of an inventory assessment but a health provider questionnaire? And how was this data generated.

Response

All seven signal function were collected based on whether the services have been performed in the past 3 months using a Facility Inventory and not Provider questionnaire and explanation provided, see Page 8, Line 22-3 and Page 9, Line 1.

Comment 7

If a health facility had a vaccum extractor.. was it then considered to be available even if it was not used or providers did not have the skills to use it?

Response

The survey assessed whether the item was present and functioning at the time of assessment, and this was recommended when evaluating the readiness of the facility, Page 8, Line 22-3 and Page 9, Line 1-4.

Results

Comment 1

Please edit the (,) in the number of facilities and remove the space. Just say 1188.

Response

Thanks for this comment, the editing was done see Page 12, Line 14.

Comment 2

The characteristics of the facilities paragraph needs to be shortened and too the point. All information can be found in the table, so please just summarise the table in a short an concise way. Now it becomes confusing and difficult to read.

Response

The paragraph has been revised and amended for clear understanding; see Page 13, Line 13-29.

Comment 3

If only 5% of the facilities had a manual vacuum extractor how come all facilities have such a high score on assisted vaginal delivery?

Response

Thanks for the careful observation, availability of vacuum extractor and assisted vaginal delivery were reportedly independently, therefore, despite low availability of vacuum extractors, other method for assisted vaginal delivery such as use of forceps etc might be considered. However, the variables for the other methods were not included in the current dataset.

Comment 4

Table 2, what is the overall national column referring to?

Response

The words overall national were edited to overall percent, see table 2 last column.

Comment 5

I am confused about the final paragraph. Is there a table missing? You start with referring to table 3 but this cannot correct. At the end of this paragraph you refer to table 4? Please revise.

Response

Thanks for the comment; table 4 has been inserted in current version of manuscript.

Comment 6

Also I am missing an overview of the numbrs of facilities which you deem to be ready to provide EmOC, (based on availability of supplies, services etc). From the 905 facilities, how many do you consider ready? Based on fulfilling all signal functions, or 5 of 7… depending on what you determine.

Response

Thanks for the comment; the sentence explaining the number of facilities considered ready was inserted in the current version, see Page 9, Line 22-3, Page 10, Line 1-2 and Page 18 line 5-7.

Discussion

Comment 1

In the discussion you seem to explain your variables such as quality assurance and maternal death review. This should not be done in the discussion but earlier, preferably in the methods section. I

would recommend that instead of explaining how you coded it, that you explain the variables and its relevance in relation to your research question.

Response

Thanks for the comment; the discussion has been revised and variables have been explained as suggested by reviewer, see Page 10, Line 3-22, Page 11, Line 1-2.

Comment 2

Page 19 line 15-17. From my experience I believe the delivery beds that are used in tanzanian facilities do not provide women with the opportunity to take on different positions or support a physiological childbirth at all. Especially considering the environment they are put in. This sentence is not appropriate.

Response

Thanks for the comment; the sentence has been revised and delated a suggested by reviewer

Comment 3

Isn't it possible that the high number of delivery beds correlates with the higher EmOC because facilities with more delivery beds are naturally the district hospitals.. these are by your findings also more likely to have more availability of EmOC (and from a public health point of view, those are most likely also the facilities that have the highest burden and are funded the most from the government??)

Response

Thanks for the comment; the arguments have been revised and amended as suggested by reviewer, see page 23, Line 18-22.

Comment 4

You need to refer to ¨The national road map strategic plan to accelerate reduction of maternal, newborn and child deaths in Tanzania, 2008-2015¨ and ¨The National Road Map Strategic Plan to Improve Reproductive, Maternal, Newborn, Child & Adolescent Health in Tanzania (2016–2020). One Plan II.¨From these government documents you can see that the nation wide availability of basic and comprehensive EmONC facilities reduced between 2012 and 2015.

Response

Thank you for the comment; the introduction and discussion have been revised by referring the information from documents suggested by reviewer, see Introduction, Page 5, Line 10-6 and Discussion, Page 21, Line 4-8.

Comment 5

I believe you need to strengthen your introduction with a clear rational and this will trickle down in a stronger discussion. It would be interesting if you could discuss your findings and the meaning for the state of maternal health in Tanzania. What are reasons for poor performance? It is quite shocking the lack of availability of anticonvulsants for example, in particular in lower level health facilities. And this despite a national commitment for over a decade to improve maternal health. It would be worth to describe your findings in light of national policy of Tanzania to ensure a health center or dispensary in every village. I am missing some basic information in the paper on the current situation for Tanzania. You only report on the MMR but what about SBA rate, where do most women deliver? A little bit more about the context in the introduction or methods would help also for the discussion.

Response

Thank you for the comment; the introduction and discussion have been revised to include the rates of SBA, facility delivery and ANC coverage, see Introduction, Page 4, Line 6-10 and Discussion, Page 21, Line 4-14.

Comment 6

Your final sentence in the discussion, which is perhaps meant as a recommendation or conclusion sounds a bit vague. How should they do this? Isn't it already part of the national policy that this is implemented? I guess you should be more critical. What hinders effective implementation of government policies?

Response

Thank you for the comment; the recommendations have been improve as suggested by reviewer, see Page 24, Line 16-22.

Comment 7

I am also missing a limitation section.

Response

The limitations have been inserted as suggested by reviewer, see Page 23, Line 20-2, and Page 24, Line 7-12.

Comment 8

The abstract needs to be revised in line with the paper.

Response

The Abstract has been revised to be in line with the paper, see Page 2-3

Reviewer: 2

Reviewer Name: Irene Akua Agyepong

Institution and Country: Dodowa Health Research Center, Research and Development Division, Ghana Health Service, Ghana

General comments

The paper is a purely descriptive presentation of the findings of what seems to be essentially a situational analysis survey using standard WHO indicators of health facility service availability and readiness to provide basic Emergency Obstetric care in Tanzania.

Response

Thank you for this comment.

Comment 1

The findings are clear, but they come across as descriptive operational information of immediate local relevance rather than analytic information of global relevance.

Response

Thank you for the comment; we improved our manuscript as suggested by reviewer.

Comment 2

There is also very little probing of the why of the findings. For example is it surprising / unexpected that signal functions were higher among hospitals than health centers? Why or why not? What are the implications for Tanzania?

Response

Thank you for the comment; we revised the discussion, and explain in details the observed findings and their implications see discussion section, Page 20-4.

Comment 3

From an operational perspective within Tanzania, I can see that it would be useful for health sector and facility managers to read these findings and use them to guide their program decision making and implementation. But why would the international readership of this journal find it relevant to hear about /read these findings?

Response

Thank you for the comment; the research questions and rationale of the study has been revised and restructured, see introduction section, Page 5, Line 17-23 and Page 6, Line 1-1.

Also, our findings can help other LICs to know where to start in the strengthening of BEmONC

Comment 4

The discussion is weak, and sometimes merely repeating information we have already been provided in the findings. Some of it I think comes back to the failure to ask and answer more analytical type of questions to start with.

Response

Thank you for the comment; the discussion section has been revised and restructured for clearer understanding.

Comment 5

The statement of the objective in the abstract is inaccurate in using LIC rather than Tanzania. This study describes the situation specifically in Tanzania

Response

Thank you for the comment; the sentence has been revised and amended as suggested by reviewers, see Page 2, Line 2-3.

Comment 6

The objective in the body of the paper states the assessment of the availability of the 7 signal factors etc. etc. and also states an investigation of associated factors. It is not clear to me where the data and analysis on associated factors is.

Response

Thank you for the comment; the sentences explaining the study objectives have been revised and amended for clearer understanding, see Page 2, Line 2-5 and Page 6, Line 4-8.

Comment 7

In its current form, the paper is of high operational interest and relevance in Tanzania to inform health sector understanding of the situation. Health sector managers and implementers would still need to themselves ask and explain the questions as to the "why" of the findings that would help them to be able to develop and implement interventions to make a difference. To be of international and more academic relevance beyond this, the authors need to revisit the question they want ask and frame a more analytic question that is of global interest and relevance.

Response

Thank you for the comment; the research questions and rationale of the study has been revised and restructured as suggested by reviewers see introduction section, Page 5, Line 17-23 and Page 6, Line 1-11.

Comment 8

They may consider starting with a review of the literature in this area to get some ideas as to the kinds of questions they might want to ask and answer using the data set available to them. For example: They mention the study is the first of its kind in their region. But since they use ? standard WHO indicators; have perhaps other countries and regions conducted this same kind of survey? Could they improve the global relevance of the analysis by a more comparative cross country analysis?

Response

Thank you for the comment; based on the available literature, we found no any study in LICs that assess the factors associated with facility readiness to provide BEmONC, see introduction section, Page 5, Line 21-23 and Page 6, Line 1-2.

Comment 9

Or for example: Can they get empirical data to provide some insight into the why and how of the findings. Even if they cannot collect primary data, are there health sector reports and documents that can be reviewed alongside to try and provide these deeper insights

Response

Thank you for the comment; as the entire analysis relied on the existing data, some of the observed findings cannot be explained why and how, therefore we reported the weakness of using such kind of data in the limitation section.

Since this paper used an entirely quantitative approach and conducted secondary analysis of a data set, I would recommend that it is seen by a statistical reviewer. My comments have been made from the angle of a health policy and systems researcher /practicioner

Response

Thanks for the kindness advice regarding our manuscript

Reviewer: 3

Reviewer Name: Charles Opondo

Institution and Country: London School of Hygiene & Tropical Medicine, UK

This study aimed to:

1. Assess the availability of basic emergency obstetric and neonatal care services (BEmONC)

2. Assess the readiness of facilities to provide BEmONC services

3. Identify factors associated with readiness to provide BEmONC using the WHO service availability and readiness assessment.

This study addresses an important public health question and uses a rich and extensive dataset to answer these questions. Overall, the approach to the analysis is sound.

Nevertheless, I have one major concern and two minor concerns with the study as currently presented:

Comment 1

The authors have reported many 'significant' findings in the text without considering their relevance in addressing the study's objectives. For example, in the abstract they report that the readiness score was consistently higher among hospitals and dispensaries, without explaining how this meets their objectives. In Table 2, the authors have reported p-values for tests assessing differences in availability of signal functions across facility types, which was not part of objective (1) above. In my understanding, the results linked to objective (1) should simply report service availability, not conduct any statistical tests comparing availability across groups. If they authors wish to do the latter, then they should make this clear in their objectives.

Response

Thank you for the comment; the study objectives have been restated to comply with our findings reported in abstract and table 2 see Page 6, Line 4-8.

Comment 2

To a lesser extent, this approach to the reporting may also be problematic in the results in page 16 where the authors report the factors 'significantly' associated with readiness to provide services. Such significant associations, in my view, are not the main findings; they are only useful in identifying the factors to include in the stepwise variable selection procedure, and should only be reported in this context.

Response

Thank you for the comment; the sentences were revised and amended for clear understanding, see Page 18, Line 14-7

Comment 3

The writing style in the manuscript should be improved for clarity.

Response

Thank you for the comment; the whole manuscript has been revised and improved for clarity.

Comment 4

The manuscript as currently presented seems to be incomplete. Table 4, which should present some key results (referred to at the bottom of page 16) is missing.

Response

Table 4 has been inserted in current version of manuscript as suggested by reviewers.

Reviewer: 4
Reviewer Name: M. Sayeed Haque
Institution and Country: University of Birmingham, UK
Comments 1

There were no detailed description of the sampling procedure that was used in the study. Without this it is difficult to ascertain whether the sample is representative as claimed by the authors.

Response

The sampling procedure has been revised and improved with much detail for clearer understanding, see Page 7, Line 14-23.

Comment 2

Statistical analysis: It is mentioned that certain STATA command was used to adjust for complex sampling design employed by the survey. No explanation is provided why that certain command was used or how that command will impact on the analysis. This needs clarification.

Response

Thank you for the comment; the explanation regarding the importance of using SVY command was provided, see Page 11, Line 6-7.

Comment 3

For the multiple regression analysis it is mentioned that any variable with the correlation coefficient of more than 0.3 with others was not included in the model. It is not clear if two variables are highly correlated then how the authors have decided which one to keep in the model and which one not to.

Response

Thank you for the comment; the sentences have been revised and amended as suggested by reviewers, see Page 11, Line 22-3 and Page 12, Line 1-4.

Comment 4

It is also mentioned that stepwise method was used to test for the association of each explanatory variable with the outcome variable. Stepwise method is a automated variable selection procedure. it is better to use objective criteria to include or exclude variables in the regression model.

Response

The sentence has been revised and amended as suggested by reviewers, see Page 11, Line 18-20.

Comment 5

Results presented mostly as percentages. It might be better to present 95% Confidence Intervals of these percentages as well.

Response

The tables were revised and 95% Confidence Intervals for the percentages have been inserted as suggested by reviewers, see Table 1, 2, and 3.

Comment 6

Results of the multivariate analysis are said to be presented in Table 4 but as no Table 4 was included it is not possible to verify authors claims.

Response

Table 4 has been inserted in current version of manuscript as suggested by reviewers.

VERSION 2 – REVIEW

REVIEWER	Andrea Solnes Miltenburg Institute of health and society, University of Oslo, Norway
REVIEW RETURNED	28-Mar-2018

| GENERAL COMMENTS | I thank the authors for their improvements made in the manuscript. I think it has become better but I still have concerns. The manuscript would benefit from some language editing and general review of the writing style. Perhaps have a native english speaker review the paper. First of all I think still there are some things unclear in the methods section. The distinction between readiness and availability are still vague. And because the authors refer to only have reviewed facility inventory it still troubles me how they were able to judge some of the single functions. Secondly I think the discussion could still be more analytical instead of repeating the findings. The authors have improved the paper by changing the rationale, the introduction and some of the results but the discussion still needs some work. I also beliebe they can be more critical towards the indicators and what they represent.

Please see the word file with some specific comments.

Suggested literature |

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OM: New signal functions to measure the ability of health facilities to provide
routine and emergency newborn care. PLoS Med.
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Sorensen BL, Elsass P, Nielsen BB, Massawe S, Nyakina J, Rasch V.
Substandard emergency obstetric care - a confidential enquiry into maternal
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Mkoka DA, Goicolea I, Kiwara 480 A, Mwangu M, Hurtig A. Availability of drugs
and medical supplies for emergency obstetric care: experience of health facility
managers in a rural District of Tanzania. BMC Pregnancy Childbirth.
2014;14(1):108.
Banke-Thomas A, Wright K, Sonoiki O, Banke-Thomas O, Ajayi B, Ilozumba
O, et al. Assessing emergency obstetric care provision in low- and middle502
income countries: a systematic review of the application of global guidelines.
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REVIEWER	Charles Opondo
	London School of Hygiene & Tropical Medicine, UK
REVIEW RETURNED	27-Mar-2018

GENERAL COMMENTS	The manuscript has been improved since the previous iteration. However, there are still some issues that need to be addressed. First, the authors should go through all the changes they have made during the peer review process to ensure that the text remains coherent and that repetitive or contradictory statements have not been introduced. For example, in the discussion, the second sentence of the first paragraph and the second sentence of the third paragraph are a repetition of the same idea. There were several other repetitions in the text that made it harder to follow than the previous version.
	Having now seen the results in Table 4 which was not available in the previous version, and the additional description of the construction of the availability score, I have some concerns about the approach to the statistical analysis. The availability score is a domain-weighted proportion of available services, and the authors decided to model it as a continuous outcome using linear regression. This is fine, so long as the residuals in the regression are normally distributed. The outcome itself need not be normally

	distributed, therefore the 'sktest' is unnecessary. Referring to the score as a 'percentage mean score' and 'mean index of readiness score' in figure 1 is also very confusing, especially given that the authors then report means and standard deviations. I would suggest referring to it simply as the availability score, or reporting percent availability of items in each domain without the standard deviations. Less confusing labels should also be applied to the y-axis of both figures. Given the nature of the outcome, it is unclear how the authors could have used Pearson chi-squared tests of association between this outcome and explanatory variables. This needs to be clarified. The authors also explain that 'all estimates were weighted to correct for non-response and disproportionate sampling'. The nature of this weighting needs to be explained clearly (i.e. what was the weighting variable). I would also suggest that the justification for adjusting the analysis for the complex sampling design in the survey was sufficient, and it was not necessary to state that this was done to obtain 'accurate' point estimates - this term is ambiguous and does not add any value to the explanation. Regarding the authors' approach to exploring multi-collinearity, some justification (e.g. references) should be provided, as what is described seems arbitrary.

REVIEWER	Dr M. Sayeed Haque University of Birmingham, UK
REVIEW RETURNED	28-Mar-2018

GENERAL COMMENTS	1. Language is still weak. The sentence before the 'Statistical Analysis' section is very long (all most a page long). This needs to be broken up in to smaller meaningful sentences. 2. Table 1 includes 95% CI but not sure what formula has been used. The calculations need revising. 3. Table 2 the total number of 'Managing Authority' is more than 905. Public 756, Private 169 add up to 925.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 3

Reviewer Name: Charles Opondo

Institution and Country: London School of Hygiene & Tropical Medicine, UK

Please state any competing interests: None declared

Comment

The manuscript has been improved since the previous iteration. However, there are still some issues that need to be addressed. First, the authors should go through all the changes they have made during the peer review process to ensure that the text remains coherent and that repetitive or contradictory statements have not been introduced. For example, in the discussion, the second sentence of the first paragraph and the second sentence of the third paragraph are a repetition of the

same idea. There were several other repetitions in the text that made it harder to follow than the previous version.

Response

According to reviewer's comment, the manuscript has been revised and amended by removing all repetitive and contradictory statement for text to be coherent and easy to follow.

Comment

Having now seen the results in Table 4 which was not available in the previous version, and the additional description of the construction of the availability score, I have some concerns about the approach to the statistical analysis. The availability score is a domain-weighted proportion of available services, and the authors decided to model it as a continuous outcome using linear regression. This is fine, so long as the residuals in the regression are normally distributed. The outcome itself need not be normally distributed, therefore the 'sktest' is unnecessary.

Response

Thank you for the comments, the assumptions for linear regression models were revised and amended as suggested by reviewers, "sktest" has been removed for clear understanding [see Page 11, Line 14-23 to Page 12, Line 1-2].

Comment

Referring to the score as a 'percentage mean score' and 'mean index of readiness score' in figure 1 is also very confusing, especially given that the authors then report means and standard deviations. I would suggest referring to it simply as the availability score, or reporting percent availability of items in each domain without the standard deviations. Less confusing labels should also be applied to the y-axis of both figures.

Response

The figure 1 and 2 were revised and labels were edited according to the reviewer's comment

Comment

Given the nature of the outcome, it is unclear how the authors could have used Pearson chi-squared tests of association between this outcome and explanatory variables. This needs to be clarified.

Response

The sentence has been revised and amended for clear understanding [see Page 11, Line 11-13].

Comment

The authors also explain that 'all estimates were weighted to correct for non-response and disproportionate sampling'. The nature of this weighting needs to be explained clearly (i.e. what was the weighting variable).

Response

According to the reviewer's comment the explanations of weighting and weighting variable have been added [see Page 11, Line 2-3].

Comment

I would also suggest that the justification for adjusting the analysis for the complex sampling design in the survey was sufficient, and it was not necessary to state that this was done to obtain 'accurate' point estimates - this term is ambiguous and does not add any value to the explanation.

Response

The sentence has been revised and amended as suggested by reviewer for clear understanding [see Page 10, Line 20-3].

Comment

Regarding the authors' approach to exploring multi-collinearity, some justification (e.g. references) should be provided, as what is described seems arbitrary.

Response

According to the reviewer's comment, the reference has been added for justification [see Page 1, Line 21, Reference #36].

Reviewer: 4

Reviewer Name: Dr M. Sayeed Haque

Institution and Country: University of Birmingham, UK

Please state any competing interests: None declared.

Comment

1. Language is still weak. The sentence before the 'Statistical Analysis' section is very long (all most a page long). This needs to be broken up in to smaller meaningful sentences.

Response

The sentences have revised and amended into shorter sentences as suggested by reviewer [see Page 10, Line 5-18]

Comment

2. Table 1 includes 95% CI but not sure what formula has been used. The calculations need revising.

Response

According to reviewers' comment and suggestions, the confidence interval were removed

Comment

3. Table 2 the total number of 'Managing Authority' is more than 905. Public 756, Private 169 add up to 925.

Response

Thank you for the comment, the typos has been corrected and the number "169" has been replace with "149" [see Table 2].

Reviewer: 1

Reviewer Name: Andrea Solnes Miltenburg

Institution and Country: Institute of health and society, University of Oslo, Norway

Please state any competing interests: None declared

Comment

I thank the authors for their improvements made in the manuscript. I think it has become better but I still have concerns. The manuscript would benefit from some language editing and general review of the writing style. Perhaps have a native english speaker review the paper.

Response

The manuscript has been revised and English editing has been done by the native speaker

Comment

First of all I think still there are some things unclear in the methods section. The distinction between readiness and availability are still vague. And because the authors refer to only have reviewed facility inventory it still troubles me how they were able to judge some of the single functions.

Response

Thank you for the comment, the WHO-SARA manual has a comprehensive questionnaire, so if you look to page 138-41 you may appreciate the difference of how to assess the service availability and readiness and that is what we did in our study. Furthermore all these questions have been placed in Facility Inventory questionnaire in 2014-15 Tanzania Service Provision Assessment Survey. Those questions were not directly assessed or asked to providers rather than In-charge of the facility only to say whether the service is available or not, that is why they were placed in Facility Inventory questionnaire [see the TSPA final report page 364-7 at https://dhsprogram.com/pubs/pdf/spa22/spa22.pdf].

Comment

Secondly I think the discussion could still be more analytical instead of repeating the findings. The authors have improved the paper by changing the rationale, the introduction and some of the results but the discussion still needs some work. I also beliebe they can be more critical towards the indicators and what they represent.

Response

The discussion has been revised and amended as suggested by reviewers.

Please see the word file with some specific comments.

Comment

Rephrase this section, 'it' recommends does not read well. The article itself or study itself does not say anything. 'We', or The study findings show.. rephrase.

Response

The sentences have been rephrased as suggested by reviewer [see Page 3, Line 3 & 4].

Comment

I would not say maternal complications. Rephrase to be 'due to complications in pregnancy, childbirth and postpartum period'

Response

The sentence has been revised and amended as suggested by reviewer [see Page 4, Line 4].

Comment

Check spelling here

Response

The sentence has been revised and amended [see Page 4, Line 8-9].

Comment

Rephrase

Response

The sentence has been revised and amended [see Page 4, Line 15-6].

Comment

Which is? Be specific or omit

Response

The sentence has been revised and amended to be more specific [see Page 4, Line 17-8].

Comment

I would remove

Response

The sentence has been revised and amended also the word "highlighted" has been removed [see Page 4, Line 19].

Comment

Such as – I recommend proper English check of the whole paper.

Response

The sentence has been revised and amended also the word "such as" has been replace with "including" [see Page 4, Line 19].

Comment

Who? Specify or omot and rephrase

Response

The sentence has been revised and the words "and other global initiative agencies" were removed as suggested by reviewer [see Page 4, Line 20].

Comment

I think you need to be more clear here, I think I understand what the authors mean but it becomes slightly vague and is complicated by the writing style. What is exactly the difference between availability of servies and facility readiness??

Response

The sentence has been revised and amended for clear understanding as suggested by reviewer [see Page 5, Line 21-3 to Page 6, Line 1-2]. Also we added the definition of Service availability and service readiness [see Page 8, Line 22-3 and Page 9, Line 6-7].

Comment

I would be careful with making these statemenets. Lots of research has been done related to EmOC and factors which hinder performance. Even though you cannot find studies I would still be careful with such phrases.

Response

The sentence has been revised and amended for clear understanding [see Page 6, Line 1-4].

Comment

Check writing

Response

The sentence has been revised and amended [see Page 6, Line 9-10].

Comment

I think my problem lies here. Why do you only refer to facility inventory questionnaire? And only one variable which was asked to the health provider… If I look at the example SARA questionnaire it is a comprehensive questionnaire which includes questions to the facility staff if certain activities have been performed or not in the past months.. again this is more than only inventory.

Response

In Tanzania Service Provision Assessment Survey, all the variables regarding health facility were assessed by using Facility Inventory Questionnaire; furthermore the data for these variables was stored in Facility File. For the variable Staff training, it was assessed using Provider Questionnaire and stored in Provider File. For your confirmation [see the TSPA final report page 364-7 at https://dhsprogram.com/pubs/pdf/spa22/spa22.pdf].

Comment

Which SARA manual was used. This one http://apps.who.int/iris/bitstream/handle/10665/1490

25/WHO_HIS_HSI_2014.5_eng.pdf;jsessionid=82687326A15151914061E2B11BA60CE6?sequence =1

says: Please tell me if any of the following interventions for the management of complications during and after pregnancy and childbirth have been carried out in the last 12 months by providers of delivery services as part of their work in this facility.

Again this is not a facility inventory survey only.

Response

The Tanzania Service Provision Assessment Survey based on the SARA manual, however, some questions have been modified according to study setting. In Tanzania this question was asked as follows; "Please tell me if any of the following interventions have ever been carried out by providers as part of their work in this facility, and if so, whether the intervention has been carried out at least once during the past 3 months." See TSPA final report Page 364, Q1604

Comment

But this is related to activity, services performed, not related to availability of supplies. They might be able to perform manual removal of retained products but the indicator refers to if this has been done in the pst three months, you need to check facility records for this not supplies.

Response

Thank you for the comments, however the aim of the current study was not to assess the availability of supplies but it was to assess the availability of services as indicated in SARA manual Page 138-9.

Comment

I appreciate the elaboration here but would recommend to shorten it and remain with the variables.

Response

Thank you for the comments, the paragraph has been shortened and the elaborations of the variables have been removed [see Page 10, Line 7-18].

Comment

Rephrase in sepeate sentences, the two don't relate I think and by putting them in 1 sentence together it becomes confusing.

Response

The sentence has been revised and separated into two sentences for clear understanding [see Page 12, Line 16-8].

Comment

I don't understand the confidence interval here… a facility was either rural or urban.. I don't think there is any confidence question with regards to such a variable?

Response

According to the reviewer's comment the confidence intervals have been removed instead the number and percentages have been presented [see Table 1, 2and 3].

Comment

I still find this very difficult to understand why this is so high. Forceps deliveries are not done much anymore and if this is largely forceps delivery as the authors suggest in their reply then these should have been assessed in the list of materials. Or it should be explained this was not done. I think the authors can be more critical towards this indicator. Is it possible that it was assess wrongly? The standard is to do a VE as assisted vaginal delivery, also according to the TZ guidelines… so why is it so high while only few facitilies had a Vacuum extractor? Is it possible this was understood by the data collectors to be just assisting with normal vaginal delivery?

Response

Thank you for the comment, however, assisted vaginal delivery and Vacuum extractor were asked separately and the aim was not to assess how many were performed by using Vacuum extractor. Furthermore, in Tanzania episiotomy and sometimes forceps delivery are performed as the methods of assisted vaginal delivery [see Page 152 Table 7.5 of the TSPA final report the same proportion has been reported and Page 366 highlighted that episiotomy scissors and forceps were also assessed]. However, these items were not suggested by WHO to assess the readiness of the facility to provide BEmONC.

Comment

Based on which supplies was this indicator measured then? This is a set of skills, tasks performed in the past three months, not something you can measure based on facility supplies.

Response

Thank you for the comment, however, in the current dataset, it was not explained which items were used to assess the assisted vaginal delivery. The question was based on whether the assisted vaginal delivery performed in the facility or not, and no any question regarding the method used to perform assisted delivery.

Comment

Suggested literature

Response

Thank you, some of the references have been used in the current version of the manuscript.

VERSION 3 – REVIEW

REVIEWER	Andrea Solnes Miltenburg University of Oslo, Norway
REVIEW RETURNED	15-Jun-2018

| GENERAL COMMENTS | I thank the reviewers for their hard work to revise their manuscript. I believe the paper has improved significantly. The only things which I believe still requires attention is to review the level of English. For example page 20 line 9: 'These findings continuous to...' needs revision.

I still think the discussion could use more work. In particular I am not satisfied with the answer given by the reviewers regarding the variable of assisted vaginal delivery. It is one of the highest scores of the signal functions and this is in contrast to many studies reporting that vacuum extraction is rarely or insufficiently used in Tanzania. And therefore this needs to be addressed in the discussion. With Assisted Vaginal Delivery it is meant if a facility offered an operative vaginal delivery which is generally defined by either beign vacuum or forceps delivery. Both of which are to my knowledge rarely performed in Tanzania, but in particular forceps |

are nowadays hardly done. I truly doupt the findings of both the report and your results. If the authors think health providers understood the question 04 on page 364 in the report to include episiotomies, you need to include this in your description or at least explain the contradicting findings. The EmOC signal functions relating to assisted vaginal delivery refers generally only to performance of vacuum extraction. If forceps are considered to have been performed in facilities but have not been assessed in relation to the availability of supplies etc this needs to be explained as such as well.

Furthermore I think the paragraphs where the authors explain about quality assurance, maternal death review and review of clients opinions can be combined, they basically say the same: it is recommended by the government but not everyone does it.. and those who do it have more likelihood of being prepared and EmOC ready.

In my opinion the section where the authors give heavy weight to the importance of presence of delivery beds is of less importance than highlighting the severe lack of trained staff in facilities and perhaps address this more in the discussion. The shortage of health staff in facility is roughly 49% according to the MoH. The government of Tanzania has made several commitments and targets over the years, but insufficient funds remain budgeted for health (less than 15% of the total budget) and of the health budget insufficient goes to MNH (see Afnan-Holms 2015). It is not surprising that there is poor readiness of facilities to provide EmOC and that the MMR remains high if insufficient investments are made to improve services. I think the authors can make much stronger conclusions of their important findings and relate this more to socio-economic and political climate.

REVIEWER	Charles Opondo University of Oxford, UK
REVIEW RETURNED	06-Jul-2018

| GENERAL COMMENTS | This manuscript has been greatly improved compared to the previous two versions.

There are still a number of minor issues, mostly related to the writing style, that could do with improvement (I'll list the issues after my comments below).

There is also one slightly more substantial issue, which is that, the second sentence on line 15 (page 11 of 40), and the second sentence on line 21 on the same page all the way to the first two lines on page 12 of 40 are all results and should be moved to the results section.

I would also suggest that the use of the swilk test for normality is unnecessary. It is sufficient to visually examine a histogram of residuals and make a qualitative judgement of normality. Indeed the authors found that the swilk test showed departure from normality but proceeded with the analysis anyway - this is a practical example of why this test is necessary. The authors should consider removing this from the manuscript.

The minor errors noted in the text are (suggested changes are described or indicated in CAPS): |
|---|---|

	p2 line 10 - "availability of seven signal functions WAS measured..."
	p2 line 14 - inconsistent use of double quote marks
	p2 line 17 - "out of 1188 facilities, 905 WERE reported to provide..."
	p3 line 18 - "being a cross-sectional study, causal relationship..." Remove the phrase "in nature, the"
	p4 line 21 - "... as A key strategy"
	p5 line 18 - "countries with low availability of BEmONC services also experienced a high burden", not "higher"
	p6 line 4 - delete the words "area of study"; the sentence is still meaningful without it.
	p8 line 6 - "ADDITIONALY, visits of..."
	p8 line 22 - there's a missing double quote mark at the end of BEmONC
	p9 line 8 - the list of domains and items needs to be rewritten for clarity. For example (some words omitted for brevity but you don't have to omit them as well): "the first domain was staff training which had two indicators - the presence of guidelines and at least one member of staff who has received training in the last 24 months. The second domain was..."
	p9 line 22 - "The PROPORTION OF each indicator" instead of "the percent for each indicator".
	p10 line 1 - "by adding the PROPORTIONS"
	p10 line 6 - "... as key variables that MAY POTENTIALLY influence the availability..."
	p10 line 18, p12 line 18 and elsewhere in the manuscript - "staff" instead of "staffs"
	p11 line 7 - "multivariable" not "multivariate". Same as p18 line 14
	p11 line 9 - remove the word "well"
	p11 line 13 - replace "difference" with "association"
	p11 line 14 - remove the comma after "residuals" and the word "this" after the comma.
	p11 line 19, 20 - replace "was been" with "has been" and merge into the next sentence. It should read "...was assessed using the generalised variance inflation factor (VIF) to test for multicollinearity. VIF should not exceed 5"
	p12 line 1 - "which TESTS the null hypothesis that the variance of the residuals is homogeneous". As stated above, the line following this is a result and should be moved to the results section.
	p16 line 14 - replace "were highly reported" and merge into the next sentence as follows: "...were often available, while intervenous fluids..."
	p17 table 3: I would suggests a new title: "Indicators of readiness to provide Basic Emergency Obstetric and Newborn Care services, TSPA 2014-2015". Replace "Variable" with "Indicators" and in the column currently titled "n(%)" change the title to "n(%) of facilities in which indicator is available"
	p19 line 2 - "beds per facility" plural
	p20 line 9 - "These findings CONTINUE to highlight..."
	p20 line 16 - remove the first "the" so that the sentence reads "...facilities consistently reported higher availability of ..."
	p20 line 20 - "...significantly GREATER availability of..."
	p20 line 21 - rewrite sentence to read "These findings are in agreement with a study conducted in Haiti"
	p21 line 5 - the sentence at the end of the line should begin with "A" instead of "The"
	p22 line 1 - "Facility readiness is an important aspect that demonstrates a facility's commitment..."

Reviewer: 1
Reviewer Name: Andrea Solnes Miltenburg
Institution and Country: University of Oslo, Norway

Comment 1
I thank the reviewers for their hard work to revise their manuscript. I believe the paper has improved significantly. The only things which I believe still requires attention is to review the level of English. For example page 20 line 9: 'These findings continuous to...'needs revision.
Response: The sentence has been revised and amended for clear understanding [see Page 20, Line 9 – 10]. In addition, the revised manuscript has been corrected for grammatical issues and typos.

Comment 2
I still think the discussion could use more work. In particular I am not satisfied with the answer given by the reviewers regarding the variable of assisted vaginal delivery. It is one of the highest scores of the signal functions and this is in contrast to many studies reporting that vacuum extraction is rarely or insufficiently used in Tanzania. And therefore this needs to be addressed in the discussion. With Assisted Vaginal Delivery it is meant if a facility offered an operative vaginal delivery which is generally defined by either beign vacuum or forceps delivery. Both of which are to my knowledge rarely performed in Tanzania, but in particular forceps are nowadays hardly done. I truly doupt the findings of both the report and your results. If the authors think health providers understood the question 04 on page 364 in the report to include episiotomies, you need to include this in your description or at least explain the contradicting findings. The EmOC signal functions relating to assisted vaginal delivery refers generally only to performance of vacuum extraction. If forceps are considered to have been performed in facilities but have not been assessed in relation to the availability of supplies etc this needs to be explained as such as well.
Response: We agree with the reviewer's concerns that vacuum extraction is insufficiently used in Tanzania. Based on the nature of question 04 on page 364 in the final report, the provider required to report whether assisted vaginal delivery has been carried out at least once during the past 3 months. Therefore, it is more likely the facility to perform that intervention once in that given time, hence, resulting to high percentage observed in the current study and also in the report. To avoid contradiction we opted not to discuss this finding in detail. However, we provided the note below Table 2 which explains the nature of the questions used to assess the availability of seven signal functions.

Comment 3
Furthermore I think the paragraphs where the authors explain about quality assurance, maternal death review and review of clients opinions can be combined, they basically say the same: it is recommended by the government but not everyone does it.. and those who do it have more likelihood of being prepared and EmOC ready.
Response: Thank you for your comment. While the idea to combine the variables quality assurance, maternal death review, and review of clients' opinions sound compelling. We think that these are three different entities which have been assessed separately, therefore, it is better to discuss and address them differently.

Comment 4
In my opinion the section where the authors give heavy weight to the importance of presence of delivery beds is of less importance than highlighting the severe lack of trained staff in facilities and perhaps address this more in the discussion. The shortage of health staff in facility is roughly 49% according to the MoH. The government of Tanzania has made several commitments and targets over

the years, but insufficient funds remain budgeted for health (less than 15% of the total budget) and of the health budget insufficient goes to MNH (see Afnan-Holms 2015). It is not surprising that there is poor readiness of facilities to provide EmOC and that the MMR remains high if insufficient investments are made to improve services. I think the authors can make much stronger conclusions of their important findings and relate this more to socio-economic and political climate.

Response: Thank you for your comments. The paragraph that explain the importance of delivery beds has been replaced with the one discussing about shortage of trained staff in the health facilities as suggested by reviewer [see Page 23, Line 19 – 23 to Page 24, Line 1 – 6].

Reviewer 3:
Reviewer Name: Charles Opondo
Institution and Country: University of Oxford, UK

General comment
There are still a number of minor issues, mostly related to the writing style, that could do with improvement (I'll list the issues after my comments below).
Response: Thank you so much for reviewing our manuscript so that it could be suitable for publication.

Comment 1
There is also one slightly more substantial issue, which is that, the second sentence on line 15 (page 11 of 40), and the second sentence on line 21 on the same page all the way to the first two lines on page 12 of 40 are all results and should be moved to the results section.
Response: We revised the sentences and whole paragraph, then we opted to remove that p[paragraph to avoid ambiguity

Comment 2
I would also suggest that the use of the swilk test for normality is unnecessary. It is sufficient to visually examine a histogram of residuals and make a qualitative judgement of normality. Indeed the authors found that the swilk test showed departure from normality but proceeded with the analysis anyway - this is a practical example of why this test is necessary. The authors should consider removing this from the manuscript.
Response: The sentence has been removed as suggested by the reviewer

Comment 3
p2 line 10 - "availability of seven signal functions WAS measured... "
Response: The word "were" has been replaced with "was" [see Page 2, Line 10].

Comment 4
p2 line 14 - inconsistent use of double quote marks
Response: The sentence has been revised and amended as suggested by reviewer [see Page 2, Line 14].

Comment 5
p2 line 17 - "out of 1188 facilities, 905 WERE reported to provide..."
Response: The sentence has been revised and the word "were" has been inserted [see Page 2, Line 17].

Comment 6
p3 line 18 - "being a cross-sectional study, causal relationship..." Remove the phrase "in nature, the"

Response: The sentence has been revised and amended as suggested by reviewer [see Page 3, Line 18].

Comment 7
p4 line 21 - "... as A key strategy"
Response: The sentence has been revised and the word "a" has been inserted [see Page 4, Line 21].

Comment 8
p5 line 18 - "countries with low availability of BEmONC services also experienced a high burden", not "higher"
Response: The sentence has been revised and amended [see Page 5 Line 18].

Comment 9
p6 line 4 - delete the words "area of study"; the sentence is still meaningful without it.
Response: The sentence has been revised and the words "area of study" has been deleted as suggested by the reviewer.

Comment 10
p8 line 6 - "ADDITIONALY, visits of..."
Response: The word "additional" has been replaced with "additionally" [see Page 8, Line 6].
Comment 11
p8 line 22 - there's a missing double quote mark at the end of BEmONC
Response: The sentence has been revised and amended [see Page 8 Line 22].

Comment 12
p9 line 8 - the list of domains and items needs to be rewritten for clarity. For example (some words omitted for brevity but you don't have to omit them as well): "the first domain was staff training which had two indicators - the presence of guidelines and at least one member of staff who has received training in the last 24 months. The second domain was..."
Response: The sentence has been revised and amended as suggested by reviewer [see Page 9 Line 8].

Comment 13
p9 line 22 - "The PROPORTION OF each indicator" instead of "the percent for each indicator".
Response: The word "percent" has been replaced with "proportion" [see Page 9, Line 22].

Comment 14
p10 line 1 - "by adding the PROPORTIONS"
Response: The word "percentages" has been replaced with "proportions" [see Page 10, Line 1].

Comment 15
p10 line 6 - "... as key variables that MAY POTENTIALLY influence the availability..."
Response: The words "may potentially" have been inserted as suggested by reviewer [see Page 10, Line 6].

Comment 16
p10 line 18, p12 line 18 and elsewhere in the manuscript - "staff" instead of "staffs"
Response: Throughout the manuscript, the word "staffs" has been replaced with "staff."

Comment 17
p11 line 7 - "multivariable" not "multivariate". Same as p18 line 14
Response: The word "multivariate" has been replaced with "multivariable" [see Page 11, Line 8].

Comment 18
p11 line 9 - remove the word "well"
Response: The word "well" has been removed as suggested by reviewer [see Page 11, Line 10].

Comment 19
p11 line 13 - replace "difference" with "association"
Response: The word "difference" has been replaced with "association" [see Page 11, Line 14].

Comment 20
p11 line 14 - remove the comma after "residuals" and the word "this" after the comma.
p11 line 19, 20 - replace "was been" with "has been" and merge into the next sentence. It should read "...was assessed using the generalised variance inflation factor (VIF) to test for multicollinearity. VIF should not exceed 5"
p12 line 1 - "which TESTS the null hypothesis that the variance of the residuals is homogeneous". As stated above, the line following this is a result and should be moved to the results section.
Response: Thank you for the comments. However, all the sentences mentioned above have been revises and removed as suggested by another reviewer.

Comment 21
p16 line 14 - replace "were highly reported" and merge into the next sentence as follows: "...were often available, while intervenous fluids..."
Response: The sentence has been revised and amended as suggested by reviewer [see Page 14 Line 14].

Comment 22
p17 table 3: I would suggests a new title: "Indicators of readiness to provide Basic Emergency Obstetric and Newborn Care services, TSPA 2014-2015". Replace "Variable" with "Indicators" and in the column currently titled "n(%)" change the title to "n(%) of facilities in which indicator is available"
Response: Table 3 main title together with columns' titles has been revised and amended as suggested by reviewer [see Page 17 Line 1 – 2, and Table 3].

Comment 23
p19 line 2 - "beds per facility" plural
Response: The word "bed" has been replaced with "beds" [see Page 19, Line 2].

Comment 24
p20 line 9 - "These findings CONTINUE to highlight..."
Response: The word "continuous" has been replaced with "continue" [see Page 20, Line 9].

Comment 25
p20 line 16 - remove the first "the" so that the sentence reads "...facilities consistently reported higher availability of ..."
Response: The word "the" has been removed as suggested by reviewer [see Page 20, Line 16].

Comment 26
p20 line 20 - "...significantly GREATER availability of..."
Response: The word "more" has been replaced with "greater" [see Page 20, Line 20].

Comment 27
p20 line 21 - rewrite sentence to read "These findings are in agreement with a study conducted in Haiti"

Response: The sentence has been revised and amended as suggested by the reviewer [see Page 20 Line 21].

Comment 28
p21 line 5 - the sentence at the end of the line should begin with "A" instead of "The"
Response: The word "The" has been replaced with "A" [see Page 21, Line 5].

Comment 29
p22 line 1 - "Facility readiness is an important aspect that demonstrates a facility's commitment..."
Response: The word "demonstrate" has been replaced with "demonstrates" [see Page 22, Line 1].