Author’s response to reviews

**Title:** Distribution and quality of emergency obstetric care service delivery in the Democratic Republic of the Congo: It is time to improve regulatory mechanisms

**Authors:**

Dieudonné Mpunga Mukendi (mpungadieudonn@yahoo.fr)

Faustin Chenge (fchenge@hotmail.fr)

Mala Ali Mapatano (mapatanow@yahoo.fr)

Bart Criel (BCriel@itg.be)

Gilbert Wembodinga (wembodi@yahoo.fr)

**Version:** 3 **Date:** 17 Dec 2018

**Author’s response to reviews:**

Responses to reviewer’s and editor comments

REPH-D-18-00337R1

Distribution and quality of emergency obstetric care service delivery in the Democratic Republic of the Congo: It is time to improve regulatory mechanisms

Dieudonné Mpunga Mukendi; Faustin Chenge; Mala Ali Mapatano; Bart Criel; Gilbert Wembodinga

#Reviewer reports:

Editor:

I am very disappointed to see that none of the edits, comments or suggestions provided in the attached manuscript on the last review were addressed. I am tempted to reject this manuscript as the comments have not been considered; I have attached it here again. A lot of work is represented in this manuscript but considerable revisions need to be made before it can be accepted.
Answer 1:

Dear editor,

We acknowledge receipt of your comments and requirements regarding manuscript REPH-D-18-00337R2 and thank you for it. However, this manuscript did in fact address the comments made by Reviewer 3 who was the only one to make some at this stage. The manuscript that you sent back in attachment is actually REPH-D-18-00337R1 before the integration of the comments mentioned above.

To respond to the new comments (from the editor and reviewer 1), we are going to start from the REPH-D-18-00337R1 manuscript which has integrated the comments of reviewer 3.

In the following lines, please find some answers to your comments. All these comments have been incorporated into the main text of the manuscript:

1) Quotations not needed in the abstract: we agreed with this comment;
2) This does not require capitals: Capitals were removed for each word different from a proper noun;
3) Not lay language in plain English summary: in the plain English summary, we corrected all technical words to avoid difficulties of understanding;
4) The section to be moved up (on the signal function of basic and comprehensive EmOC) was moved up in the background section;
5) Who were the staff members? Were they clinical staff? What was their background? Relationship with health centres?

The staff members identified as interviewers in this study were the doctors/nurses recruited from health facilities not selected for the study.

6) Random?

For the quality control, structures were randomly selected by the supervisor.

7) What is the ethics number?

We have updated the manuscript, the ethics number was approbation number 07/CNES/BN/PMMF/2013.

8) Difficult how? Location? Distance? Permission?

Geographical difficulties were signaled by supervisors and interviewers in reaching 13 selected health facilities.
9) These are all very expected results, what new is this paper adding? What would be interesting to know is if all provinces had similar access to CemONC? Do some regions not have cesareans? Why? – population, geography?

We updated the results by adding some information which show that basic/comprehensive EmOC was unequally distributed across the country: “On the other hand, the results of Table 1 show that 4 out of 11 provinces (Kasai Oriental, Kasai Occidental, Province Orientale and Bandundu) had almost non-existent comprehensive EmOC (rates less than 1% of facilities)”

10) Some data not shown. Why?

As we knew that most scientific journals limit the number of tables and figures to be incorporated in the main text, we initially set a number of these figures and tables to incorporate. For the rest, we have limited ourselves to making brief comments in the manuscript. In addition, the items whose results are not included in the text are details that could be misunderstood by the reader because concerning 'materials and equipment'

11) A confusing sentence in the text:

The sentence was corrected to avoid confusion.

12) These contradict each other

The sentence was corrected

13) But you don’t show what types of providers there were, were they Dr? Rn? Other?

To assess the competence of human resources in this study concerning comprehensive EmOC, three types of training were sought: training on anesthesia, surgery and comprehensive EmOC. Each training targeted the staff (doctors & nurses) assigned to perform these tasks in health facilities

Reviewer #1:

Comment1:

The Methodology is some how improved but still needs some more work:

the availability Index is confusing still. Does Criteria No. 3 mean that EmOC signal functions were observed at the time of visit to the health facility as on Pg.10 L40-48? If this is the case then why is criterion 4 needed? Since these two are overlapping, it would be more appropriate to improve criteria 3 by also capturing facilities that did not perform on the day of visit but may have performed within last 6 months. Although criteria 4 is labelled as Service Use, it means the same as service provision (criteria 3).
Answer 1:

You are right. We looked for the organization of the basic EmOC during the period from last six months until the day of the survey. Although criteria 3 and 4 seem to be slightly related, there are little differences between them: criterion 4 was used to identify the visited health facilities who actually implemented basic EmOC signal functions. We have therefore improved the wording of criterion 3 in the manuscript to make it easier to understand.

Comment 2:

DATA ANALYSIS: Delete sentence, Pg.12; L10-13 on Odds ratios because this kind of analysis does not apply to this study design.

Answer 2:

This sentence was deleted

Comment 3

RESULTS: The results in Figure 1 are shocking. How can you observe assisted vaginal delivery in 75% of health facilities at the time of survey? Remember AVD is relatively infrequent. How can you observe Manual Removal of placenta at the time of survey in 68% of facilities? The results in Figure 1 show that more commonly performed signal functions like provision of Oxytocin and antibiotics are less frequently performed compared to the rare functions. How can this be explained? Figure 1 and elsewhere: Where are the frequency of the other three criteria for availability index? If each EmOC function was observed being done by more than 60% of the facilities, then how comes that only 9% of facilities provided Basic EmOC? This percentage is very unlikely to be 9% even if all the 4 criteria were comprehensively considered, since you cannot observe a service being done where there is no delivery room (criteria 1) or where there is no staff assigned to this role (Criteria 2) or where there is no one to utilize the service in last six months (Criteria 4). So basically the index of Availability was all about criteria 3 and probably an overlapping criteria 4.

Answer 3

After analyzing the above comment, we did not update the main text of the manuscript for the following reasons:
Figure 1 was designed to present two kinds of results: first, this figure indicates the availability of each signal function of EmOC in visited health facilities. For a signal function to be qualified as "available", it had to meet the four criteria (infrastructure, personnel clearly identified as being assigned to the task, the execution of the function itself and the existence of performance statistics). Based on these elements, we found that the majority of health facilities organized assisted delivery at the time of the survey or over a period of six months before the study, but this was not necessarily accompanied by other important signal functions such as oxytocin administration, neonatal resuscitation etc. Secondly, since all the EmOC signal functions must be offered within a health facility at the same time, the second part of these results finally show that less than 10% of health facilities offered all basic EmOC signal functions. In the context of the DRC, these results can be explained by the low funding of health facilities by the public authorities, which pushes health care providers to fill this gap by organizing (even badly) some lucrative activities such as assisted vaginal deliveries.

We also checked: the result of 9% of health facilities which provided Basic EmOC is correct. In fact, it is the low availability of parenteral anticonvulsants administration (12%) that has pulled this result down.

Comment 4

The P.values in all tables are haphazardly placed making the interpretation of results difficult. A statistician should be consulted to help in appropriate analyses and interpretation of results.

Answer 4

The results of this study were validated by the statistician from our office. Since we performed simple statistical tests, the P value tells us whether there is an association between the column variable and the row variable (with its different response modes). The data in the first column of all tables (number of facilities) is introduced to allow any calculations if desired.

Comment 5

Figure 2: What are these numbers on the Y-axis? Do they mean total number of facilities? If so why not making up the total of 1555? If the numbers on the y-axis represent total facilities offering Comprehensive EmOC (n=647) then these numbers should appear as labels on top of the bars. If the second option is correct, then another question arises: It is well known that a facility cannot provide Comprehensive EmOC without providing all BEmOC signal functions. Therefore 647 facilities imply that BEmOC functions were provided by at least 41.6% (n=647) and not the 9% in Figure 1. Table 1 therefore gives wrong numbers. Instead of CEmOC being provided by 45 (2.9%) it should be 647 as in Figure 2. Also in Table 1, BEmOC shown as 142 these must add all facilities with CEmOC since these facilities also have BEmOC Signal functions available.
Answer 5

This comment was very important; it has helped to correct the results initially presented in Figure 2 by reporting the results based on 1555 health facilities. For its good understanding, Figure 2 should be compared with Table 1. This table indicates that of the 1555 visited health facilities, 142 (9.1%) offered BCEmOC while 45 (2.9%) offered CEmOC. So Figure 2 has the merit of showing that if there is low availability of CEmOC signal functions, this is not due to the "caesarean" or "transfusion" that are widely spread in hospitals (92% for each of them), in referral health centres (71% vs. 65%) and even in health centres; but this is rather due to the basic signal functions whose low availability was already indicated in Figure 1. Then Figure 2 shows that comprehensive emergency obstetric care was more readily available in hospitals and referral health centers (8% and 3%, respectively); but less available in health centers and health posts.

The caesarean section and blood transfusion should not normally be sought in health centers and health posts (according to national regulations); We have expressly opted to insert these results here in order to attract the of health system regulators.

As a reminder, in Figure 1 we indicated that about 75% of facilities offered at least one basic EmOC signal function; Table 2 therefore details the elements that describe the operational capacity of the health facilities. Similarly Table 3 describes the operational capacity of health facilities offering at least two EmOC signal functions of which one basic and one comprehensive

Comment 6

Others: You should adhere to standards nomenclature by consistently calling EmOC as signal functions and not services or interventions

Answer 6

We have changed wherever it was needed the terms EmOC interventions in EmOC signal functions

Reviewer #3: I thank the authors for their corrections and answers to the comments.