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)	Work based risk factors and quality of life in health care workers providing maternal and newborn care during the Sierra Leone Ebola epidemic: findings using the WHOQOL BREF and HSE Management Standards Tool
AUTHORS	Jones, Susan; White, Sarah; Ormrod, Judith; Sam, Betty; Bull, Florence; Pieh, Steven; Gopalakrishnan, Somasundari; van den Broek, Nynke

VERSION 1 – REVIEW

REVIEWER	Dr. Marco Lehmann University Medical Centre Hamburg-Eppendorf Department of Psychosomatic Medicine and Psychotherapy Hamburg, Germany
REVIEW RETURNED	03-Sep-2019

GENERAL COMMENTS	The authors adress work-related stress of health-care workers in the Sierra Leone Ebola epidemic in 2014 and 2015. The topic is highly relevant and sheds light on the work conditions of those directly affected with EVD in their close environment. The paper needs major revision. There are two main points and several minor points for improvement. Major points 1. Because of the high relevance of the topic, more description in the methods section is needed about the true work conditions in the clinics in Sierra Leone, where the data gathering took place. Perhaps, readers familiar with other health care systems are not aware and cannot truely think of what it means in daily practice to have one doctor for 10000 inhabitants. Please give also more information about how the work conditions differ between your comparison groups. 2. In the results section many numbers are reported, however, without meaningful anchors of what the numbers mean. Where do average values fall on the measurement scale and what kind of stress level do these values imply. In other words: bring the descriptive statistics more to life. Minor points Cite more research about work-related stress in health-care workers. The topic is not new and there is research from the 2003 SARS epidemic in Canada reported in the papers by Maunder. Title: To me it sounds as if the health care workers themselves were newborn! Please revise the title appropriately. p1: Add country with University of Huddersfield. p2, l9: Add year of the epidemic.

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	p2, l20: Introduce abbreviation HSE. p2, methods section: Indicate the concrete instruments that you have used in the survey. p2, l24: "Lower cadres" What is that? p2, results section: reporting p-values and confidence limits provides redundant information. Please choose confindence intervals only because of the exploratory nature of this study. p3, l8: Introduce abbreviations appropriately. p3, l45: Was low resourced settings a constant for the whole study or was it used with different levels. p4, l49: Source is missing. p4, l32: Cite example of a comparable study of work-related stress in EVD patient care in the German health-care system. Lehmann, M., Bruenahl, C. A., Löwe, B., Addo, M. M., Schmiedel, S., Lohse, A. W., & Schramm, C. (2015). Ebola and Psychological Stress of Health Care Professionals. Emerg Infect Dis, 21(5). Lehmann, M., Bruenahl, C. A., Addo, M. M., Becker, S., Schmiedel, S., Lohse, A. W., . . . Löwe, B. (2016). Acute Ebola virus disease patient treatment and health-related quality of life in health care professionals: A controlled study. Journal of Psychosomatic Research, 83, 69-74. p6, l23: It is important that the meaning of the scale values is also apparent from the abstract. In the abstract, there are only the numbers, so one cannot know whether a reduction in an average score means improvement or not. p6, l48: The manuscript only gives information about the themes of the intervention programme. It would be helpful to have examples of the concrete teaching material available here or in an appendix. In other words: How were the themes of the programme taught? p6, l57: How did you check whether the content of the intervention programme was indeed forwarded to hospital staff? p7, l36: Give more characteristics about these communities. p8, results section: When reporting numbers, please indicate what the numbers and differences mean. Tell us whether a lower score means higher stress levels or not. p8, l52: Which coefficient? p9, l8: Is this truely 4.6% with confidence limits as percentages? p9, l30: Which coefficient from ANCOVA. p9, l54: What do the low Qol scores mean? Was quality of life impaired in this population? p15, table: Rework several aspects of the table. What are the coefficients? I guess some are mean values, others are difference values. What is Bo? What is CEmOC and BEmOC? p15, table: Please refer to the risk of inflation of the alpha error in statistical significance testing as a limitation of the study.

REVIEWER	E. Belfroid National Institute for Public Health and the Environment the Netherlands
REVIEW RETURNED	17-Oct-2019

GENERAL COMMENTS	I think this study describes a very important in the EVD epidemic and I would like to compliment the authors with this manuscript. However, I believe some modifications are necessary. - Abstract: From the abstract it is very difficult to grasp the objectives of this study and to interpret the results. I would suggest to spend a few more words on introduction and methods introduction: not all paragraphs seem to be linked to the next paragraph. The introduction could be written more fluently

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	- the training: was this training a 'training-of-trainers' or not? And was the training EVD specific or more general? Who was invited to participate and what was the training methodology. Please elaborate in the methods on this. - Supplementary table 1 should not be supplementary but in the main body of the manuscript - A link to both instruments would be useful. Now it is not clear of what items a domain consists. What questions are included - Results: A general overview of the results is missing. The result section starts with describing the differences between baseline and follow-up but the baseline measurements should be described more extensively. How stressed are the healthcare workers at baseline and how do they evaluate their quality of life - Discussion: The authors describe in the result section differences between baseline and follow-up. However how these differences should be interpreted is unclear (for example a difference of 0.16 what does this mean in practice?). - I would like to read a little bit more on the training program in the discussion. Should it be used more often, do you recommend it for other countries or other settings? - What are the general ideas of the authors on the workplace stress? Is it bearable or should we do anything we can to reduce it? - Limitations are missing - in general: The JDR model is mentioned in both the introduction and the discussion. However it is not clear how the results are linked to this model. Could this be included in the text?

REVIEWER	Emily Webb London School of Hygiene and Tropical Medicine, United Kingdom
REVIEW RETURNED	25-Nov-2019

GENERAL COMMENTS	The authors describe results of a study investigating workplace stress and self-reported quality of life among health care workers in obstetric care facilities during the EVD epidemic in Sierra Leone. They also show results comparing workplace stress and quality of life before and after delivery of a one-day stress management programme, and find that levels of both were worse after the programme compared to before. The statistical analysis is appropriate and results interpreted correctly. There are some parts of the paper that I found unclear, and some limitations that it would be helpful to discuss. Specific comments follow: 1. There is some repetition in the introduction section. For example, paragraphs 3 and 6 both contain a sentence stating that “work-related stress is a results of the inability to meet demands/expectation placed on an individual..” I feel that paragraph 6 could be deleted without losing any information. 2. Due to the before versus after design of the part of the study investigating the impact of the stress management programme, it is difficult to differentiate the impact of the stress management programme from the concurrent Ebola situation. The authors need to acknowledge this as a very important limitation in the discussion. They should also discuss other potential limitations such as the sub-optimal Cronbach alpha scores which suggest that not every domain being assessed is being done so consistently. 3. With the third aim as stated at the end of the Introduction section, it would be helpful to say which outcomes were being assessed (i.e. effectiveness of the programme for doing what?)

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	4. Have the two tools used (the UK HSE Management Standards Tool and the WHOQOL BREF) been validated in Sierra Leone or in health workers in the region? It would be helpful to include some information on this earlier in the manuscript (not just in the discussion). 5. Was the workplace stress management programme based on anything that had been used before in this or a similar setting? Was any piloting of the programme done? 6. What was the response rate for the questionnaire at baseline? i.e. how many potential participants did not consent to take part or did not complete the questionnaire? A flowchart showing this type of information would be a good addition. 7. In the first paragraph under Results – Workplace risk factors (HSE questionnaire), it is stated that the mean value at follow up was 3.0 (0.52) but this doesn't seem to match up with what is shown in Table 1 (2.98 (0.59)). Could the authors please clarify the reason for the difference? 8. Table 1 – there is a footnote b, but cannot see what it refers to? Apologies if I have missed it. 9. Bo seems to do worse for quality of life than Freetown but better for workplace stress. Were the authors surprised by this finding, and how do they interpret it? 10. I found the abstract to be not very clearly written. The introduction and methods section are written more as bullet points rather than full sentences, and the last sentence of the methods section of the abstract does not seem to end properly? I also found the results section to be quite confusing, and a bit unclear as to which data were being presented as baseline results and which as before-after comparisons. Also, the abstract should stand alone and HSE is not defined. Finally the last sentence of the conclusion is not clearly worded. The rest of the paper is clearly written, so I'm sure the authors can improve the abstract to match this.

REVIEWER	Elizabeth G. Marshall, PhD Rutgers School of Public Health, New Jersey, USA
REVIEW RETURNED	03-Dec-2019

GENERAL COMMENTS	Thank you for the opportunity to review this novel and timely manuscript. General Comments: The importance of this manuscript derives from the population of workers that provided the data: Maternal and newborn health care workers from Sierra Leone during the Ebola epidemic. Feedback from that population is unusual and it is very important to assess the interaction of the epidemic and provision of health care and, by implication, how that might affect the management and transmission of Ebola. As a pilot or descriptive study, the data provided are very helpful and informative. The survey tools utilized are standard measurement tools and have been used in a number of settings. There is substantial literature on the HSE Management Standards Tool and on the WHO Quality of Life BREF measure, which could provide more insight if compared to other populations. Also, if the authors or others can provide further detail about the timing, staffing, conditions, and general context under which the employees are answering these questions, then that combination could be a striking and valuable contribution.

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	However, as submitted as a research study, the data and methods are inadequately justified and described, even if the methods are appropriate. This is especially true for the choice of methods, explanation of process, and interpretation of the results of the data analysis. Conducting follow up (and repeat survey) after a management and training intervention is admirable and provides helpful feedback for those in charge, but it is difficult to ascribe changes to the intervention when conditions on the ground are changing and the response rate is limited. I would suggest changing the language to reflect these limitations. Specific Comments: p. 2 Abstract Methods Line 12-17. Need to include the tools used and goals of study, dependent and independent variables Line 16: Editing error, last sentence garbled Line 20-33 Results: Need to include N for first and second wave of surveys Results are not clear-separate the HSE results (define HSE) and QOL results separately, define cadre and meaning of low vs high score in both surveys. Even after reading the entire paper, hard to understand the abstract-rewrite so it can stand alone, especially for concept of baseline v. change. Conclusion: The statements here seem obvious (without this paper)-what are the additional insights yielded by this manuscript? p. 3 Article Summary Verify that the summary statements match the results and discussion; some of these summary statements are NOT included in the main text. Key questions Quality of life includes many influences other than workplace demands-need to describe it as a component. Interpretation of “more identified work-related stress risk factors” is not clear without reading the article at minimum. Attributing stress to “poor working conditions” might be appropriate, but this aspect is not evidenced by reading the entire study. Last statement ok, but not tied to results or discussion. p. 4 Introduction, continued Line 13-17 Source of this information (even if non-academic)? Line 29 to paragraph 1, p. 5 (Research background). In general, this section is too long and not well-focused on the questions posed by this situation and data. The models and prior research could be summarized more efficiently, with citations that address specific survey domains or issues in Sierra Leone. Also, citations are somewhat out of date (latest is 2015?). p. 5 Citation for paragraph 2 about the EVD outbreak in Sierra Leone seems incorrect- #15 is from 2003 Lines 25-26 Third study aim is overly ambitious given the data and the situation: suggest rewording to something like “assess changes in survey results over time and after management intervention”. No hypotheses specified, thus implying that this is a

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	descriptive study, but many statistical tests provided and these results are the primary focus. Line 30-50 Timeline is not clear-background and discussion emphasizes the stress of Ebola and care when mothers are infected, but stress program was implemented as the epidemic was declining. What was the difference between baseline and follow-up surveys in terms of environment (and if not known, acknowledge in limitations)? Line 33 Choice of Job-Demand Resources model is not clear-is this what the HSE represents? How are they related? If based primarily on availability or ease of completion under difficult conditions (rather than strict intervention principles and hypotheses), then that should be included. Most of this should be addressed in the background, rather than methods. Page 6 Line 11-22 In general, background on the HSE is not clear. The citation is very general, and is not aimed at researchers. Also there is no information on how it fits into a model of stress described in the background. (Either here or under data analysis) The authors should include the number of questions, how they are scored and combined, and standard ways of analyzing both sub-groups and changes over time (or at least instructive citations). Very difficult to assess whether the authors have chosen the correct analysis method without this information. Line 26-37 Methods for the WHOQOL BREF are better described and describes the conversion of summary scores into percentage. Line 50-60 Role of 52 lead health care workers is not clear-were they also included in the 222 staff members that responded? Did all 222 staff members respond? The training appears to be well-designed and potentially quite effective. It might be worth a separate publication. Need citation or information about underlying principles and agencies involved. Page 7 Line 11- 26 Number of domains was previously identified as n=6, now there are 7. In general-need to define independent and dependent variables clearly and in the sequence of the methods and results. This section is hard to apply to the results. Justification of three-way analysis of variance is not adequate. How are these results interpreted? Does the data meet the assumptions of distribution for ANOVA and ANCOVA? What about interactions among the variables included? Missing values? Definition and interpretation of Cronbach's alpha in this context? Lines 28-40 Inadequate discussion of what constitutes low and high quality of life, and what the range of results means. This should be in the methods, not in the results. Lines 45-60 Results in general require more knowledge (at least for this reviewer) than generally available. Definition and distribution of cadres should be described in principle in the methods. Data in Supplementary Table 1 is needed to interpret Table 1, including number of districts, cadres, and facility types. Page 8 Results should be provided in the order of the methods and go from most general to most specific. The data all seems

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	reasonable, but very difficult to interpret, and the presentation in the text needs clearer organization. In Table 2 “Baseline Score” does not match Table 1 in format, and footnote does not match the Table. Text provides some explanation, but table should stand alone also. Need to address response rate, which varies substantially by domain. Page 9

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Dr. Marco Lehmann
Institution and Country: University Medical Centre Hamburg-Eppendorf
Department of Psychosomatic Medicine and Psychotherapy: Hamburg, Germany
Please state any competing interests or state ‘None declared’: None declared

Please leave your comments for the authors below
The authors adress work-related stress of health-care workers in the Sierra Leone Ebola epidemic in 2014 and 2015. The topic is highly relevant and sheds light on the work conditions of those directly affected with EVD in their close environment. The paper needs major revision. There are two main points and several minor points for improvement.

Major points
1. Because of the high relevance of the topic, more description in the methods section is needed about the true work conditions in the clinics in Sierra Leone, where the data gathering took place. Perhaps, readers familiar with other health care systems are not aware and cannot truely think of what it means in daily practice to have one doctor for 10000 inhabitants. Please give also more information about how the work conditions differ between your comparison groups.

Further information on the above has been added on page 6 lines 24 to 34.

2. In the results section many numbers are reported, however, without meaningful anchors of what the numbers mean. Where do average values fall on the measurement scale and what kind of stress level do these values imply. In other words: bring the descriptive statistics more to life.

Information on the average values was provided on page 9, line 44-50 for the HSE questionnaire and on page 11, line 21-24 for the WHOQOLBREF questionnaire

Minor points
Cite more research about work-related stress in health-care workers. The topic is not new and there is research from the 2003 SARS epidemic in Canada reported in the papers by Maunder

This has been added from page 6, line 52 to page 7, line 19. Page 7, line 54-59. This includes evidence form the studies mentioned by the reviewer.

Title: To me it sounds as if the health care workers themselves were newborn! Please revise the title appropriately. This has been revised
p1: Add country with University of Huddersfield. This has been added

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p2, l9: Add year of the epidemic. This has been added on page on page 3 line 9 and page 6 line 36
p2, l20: Introduce abbreviation HSE. This has been added on Page 3, line 4
p2, methods section: Indicate the concrete instruments that you have used in the survey. These have been added on Page 3, line 14 and 15
p2, l24: "Lower cadres" What is that? Lower Cadres refers to groups of staff depending on the hierarchical place of their role. We have amended this to say lower qualified where appropriate in the submission
p2, results section: reporting p-values and confidence limits provides redundant information. Please choose confidence intervals only because of the exploratory nature of this study. P values have been removed in the results section and in the relevant tables.
p3, l8: Introduce abbreviations appropriately. This has been amended on page 5, line 8
p3, l45: Was low resourced settings a constant for the whole study or was it used with different levels. Low resources was used to describe the work place settings that staff were in and is consistent for all of the work paces of the participants.
p4, l49: Source is missing. This has been added
p4, l32: Cite example of a comparable study of work-related stress in EVD patient care in the German health-care system. Lehmann, M., Bruenahl, C. A., Löwe, B., Addo, M. M., Schmiedel, S., Lohse, A. W., & Schramm, C. (2015). Ebola and Psychological Stress of Health Care Professionals. Emerg Infect Dis, 21(5). Lehmann, M., Bruenahl, C. A., Addo, M. M., Becker, S., Schmiedel, S., Lohse, A. W., . . . Löwe, B. (2016). Acute Ebola virus disease patient treatment and health-related quality of life in health care professionals: A controlled study. Journal of Psychosomatic Research, 83, 69-74. Examples form the above have been given on Page 6 line 52-56
p6, l23: It is important that the meaning of the scale values is also apparent from the abstract. In the abstract, there are only the numbers, so one cannot know whether a reduction in an average score means improvement or not. The abstract has been amended to describe the results rather than just provide numbers.
p6, l48: The manuscript only gives information about the themes of the intervention programme. It would be helpful to have examples of the concrete teaching material available here or in an appendix. In other words: How were the themes of the programme taught? Additional information has been given on this on page 10, lines 13-18 and lines 24-29. We believe this is satisfactory to explain the methods used rather than adding many more documents to the appendix

p6, l57: How did you check whether the content of the intervention programme was indeed forwarded to hospital staff? Additional information on this has been added on page 10, lines 38-43
p7, l36: Give more characteristics about these communities. We have added all the information that is available from the original paper on page 11, line 20.
p8, results section: When reporting numbers, please indicate what the numbers and differences mean. Tell us whether a lower score means higher stress levels or not. This has been added where relevant.
p8, l52: Which coefficient? This has been added on page 12, line 54.
p9, l8: Is this truely 4.6% with confidence limits as percentages? This has been amended on page 13, line 12.
p9, l30: Which coefficient from ANCOVA. This has been added on page 13, line 35 and 36
p9, l54: What do the low Qol scores mean? Was quality of life impaired in this population? We have added further explanation from page 14 line 58 to page 15 line 7.
p15, table: Rework several aspects of the table. What are the coefficients? I guess some are mean values, others are difference values. What is Bo? Bo is a district of Sierra Leone and this is explained in the participants recruitment section at page 8 line 58. What is CEmOC and BEmOC? The abbreviations are explained on page 8, line 59 and page 9, line 3.
p15, table: Please refer to the risk of inflation of the alpha error in statistical significance testing as a limitation of the study. We have added additional text to acknowledge and explain this on page 13, lines 54-56

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Reviewer: 2
Reviewer Name: E. Belfroid
Institution and Country: National Institute for Public Health and the Environment
the Netherlands
Please state any competing interests or state 'None declared': None

Please leave your comments for the authors below
I think this study describes a very important in the EVD epidemic and I would like to compliment the authors with this manuscript.

However, I believe some modifications are necessary.
- Abstract: From the abstract it is very difficult to grasp the objectives of this study and to interpret the results. I would suggest to spend a few more words on introduction and methods
introduction: not all paragraphs seem to be linked to the next paragraph. The introduction could be written more fluently. We have significantly amended the abstract to make the objectives more explicit and improve the fluency within the available word count.
- the training: was this training a 'training-of-trainers' or not? And was the training EVD specific or more general? Who was invited to participate and what was the training methodology. Please elaborate in the methods on this. We have added in information to explain that this was a stress management programme on page 10, line 12-18. It was not specific to Ebola.
- Supplementary table 1 should not be supplementary but in the main body of the manuscript. This has been amended
- A link to both instruments would be useful. Now it is not clear of what items a domain consists. What questions are included. Links are provided within the reference lists to both questionnaires. On page 9, lines 35-43 there is information about the 6 main areas of the HSE questionnaire. The questionnaires are lengthy, and we did not think it appropriate to include all questions in the description. These are available via the link. For the WHOQOLBREF lines 55-60 on page 9 explain the main areas of the questionnaire. Again details of each question are available via the link ion the reference list.
- Results: A general overview of the results is missing. The result section starts with describing the differences between baseline and follow-up but the baseline measurements should be described more extensively. How stressed are the healthcare workers at baseline and how do they evaluate their quality of life. We have added a summary for this at page 11. Lines 37-43
- Discussion: The authors describe in the result section differences between baseline and follow-up. However how these differences should be interpreted is unclear (for example a difference of 0.16 what does this mean in practice?) We have added in explanations where relevant, for example on page 12, lines 20 and 23.
- I would like to read a little bit more on the training program in the discussion. Should it be used more often, do you recommend it for other countries or other settings? We have added additional information on this on page 15, lines 35-40
- What are the general ideas of the authors on the workplace stress? Is it bearable or should we do anything we can to reduce it? We have added further discussion on that on page 15, line 47-53
- Limitations are missing These have been added on page 5 from line 20-28
- in general: The JDR model is mentioned in both the introduction and the discussion. However it is not clear how the results are linked to this model. Could this be included in the text? Additional reference to this has been added from page13, line 59 to page 14, line 6

Reviewer: 3
Reviewer Name: Emily Webb
Institution and Country: London School of Hygiene and Tropical Medicine, United Kingdom

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Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below
The authors describe results of a study investigating workplace stress and self-reported quality of life among health care workers in obstetric care facilities during the EVD epidemic in Sierra Leone. They also show results comparing workplace stress and quality of life before and after delivery of a one-day stress management programme, and find that levels of both were worse after the programme compared to before. The statistical analysis is appropriate and results interpreted correctly. There are some parts of the paper that I found unclear, and some limitations that it would be helpful to discuss.
Specific comments follow:
1. There is some repetition in the introduction section. For example, paragraphs 3 and 6 both contain a sentence stating that "work-related stress is a results of the inability to meet demands/expectation placed on an individual.." I feel that paragraph 6 could be deleted without losing any information. The introduction has been significantly amended
2. Due to the before versus after design of the part of the study investigating the impact of the stress management programme, it is difficult to differentiate the impact of the stress management programme from the concurrent Ebola situation. The authors need to acknowledge this as a very important limitation in the discussion. We have acknowledged this in the limitations section. They should also discuss other potential limitations such as the sub-optimal Cronbach alpha scores which suggest that not every domain being assessed is being done so consistently.
3. With the third aim as stated at the end of the Introduction section, it would be helpful to say which outcomes were being assessed (i.e. effectiveness of the programme for doing what?) We have added additional information in for the 3rd aim on page 3, line 19 and page 8, line 42
4. Have the two tools used (the UK HSE Management Standards Tool and the WHOQOL BREF) been validated in Sierra Leone or in health workers in the region? It would be helpful to include some information on this earlier in the manuscript (not just in the discussion). We have added additional information on page 9, line 35 regarding the HSE tool and on page 10. Lines 6-7 for the WHOQOLBREF
5. Was the workplace stress management programme based on anything that had been used before in this or a similar setting? Was any piloting of the programme done? We have added information re the lack of a pilot study on page 9, line 5. Further information about the programme is added on page 10 from lines 10-44
6. What was the response rate for the questionnaire at baseline? i.e. how many potential participants did not consent to take part or did not complete the questionnaire? A flowchart showing this type of information would be a good addition. The response rate is stated on page 11 line 28-34. Table 5 provides data for the response by type of district, staff etc at baseline and follow up.
7. In the first paragraph under Results – Workplace risk factors (HSE questionnaire), it is stated that the mean value at follow up was 3.0 (0.52) but this doesn't seem to match up with what is shown in Table 1 (2.98 (0.59)). Could the authors please clarify the reason for the difference? This has been amended on page 12, line 10-12.
8. Table 1 – there is a footnote b, but cannot see what it refers to? Apologies if I have missed it. This has been amended on page 21.
9. Bo seems to do worse for quality of life than Freetown but better for workplace stress. Were the authors surprised by this finding, and how do they interpret it? Further discussion on this has been added on page 14, line 58 to page 15, line 7.
10. I found the abstract to be not very clearly written. The introduction and methods section are written more as bullet points rather than full sentences, and the last sentence of the methods section of the abstract does not seem to end properly? The abstract has been amended to aid fluency.

I also found the results section to be quite confusing, and a bit unclear as to which data were being presented as baseline results and which as before-after comparisons. We have amended the results section to aid fluency. Also, the abstract should stand alone and HSE is not defined. These have now been defined. Finally the last sentence of the conclusion is not clearly worded. This has bene

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amended. The rest of the paper is clearly written, so I'm sure the authors can improve the abstract to match this.

Reviewer: 4
Reviewer Name: Elizabeth G. Marshall, PhD
Institution and Country: Rutgers School of Public Health, New Jersey, USA
Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below
Thank you for the opportunity to review this novel and timely manuscript.

General Comments:
The importance of this manuscript derives from the population of workers that provided the data: Maternal and newborn health care workers from Sierra Leone during the Ebola epidemic. Feedback from that population is unusual and it is very important to assess the interaction of the epidemic and provision of health care and, by implication, how that might affect the management and transmission of Ebola.

As a pilot or descriptive study, the data provided are very helpful and informative. The survey tools utilized are standard measurement tools and have been used in a number of settings. There is substantial literature on the HSE Management Standards Tool and on the WHO Quality of Life BREF measure, which could provide more insight if compared to other populations. Also, if the authors or others can provide further detail about the timing, staffing, conditions, and general context under which the employees are answering these questions, then that combination could be a striking and valuable contribution. This has been added on page 6 lines 24 to 34

However, as submitted as a research study, the data and methods are inadequately justified and described, even if the methods are appropriate. This is especially true for the choice of methods, explanation of process, and interpretation of the results of the data analysis. Conducting follow up (and repeat survey) after a management and training intervention is admirable and provides helpful feedback for those in charge, but it is difficult to ascribe changes to the intervention when conditions on the ground are changing and the response rate is limited. I would suggest changing the language to reflect these limitations.

Specific Comments:
p. 2 Abstract
Methods
Line 12-17. Need to include the tools used and goals of study, dependent and independent variables These have been added
Line 16: Editing error, last sentence garbled This has been amended
Line 20-33 Results:
Need to include N for first and second wave of surveys These have now been added
Results are not clear-separate the HSE results (define HSE) and QOL results separately, define cadre and meaning of low vs high score in both surveys. The results have now been separated. Information on the average values was provided on page 9, line 44-50 for the HSE questionnaire and on page 11, line 21-24 for the WHOQOLBREF questionnaire

Even after reading the entire paper, hard to understand the abstract-rewrite so it can stand alone, especially for concept of baseline v. change. The abstract has been amended to aid fluency.
Conclusion:

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The statements here seem obvious (without this paper)-what are the additional insights yielded by this manuscript? Further discussion has been added on page 15, line 47 to 57

p. 3

Article Summary

Verify that the summary statements match the results and discussion; some of these summary statements are NOT included in the main text. This has been amended

Key questions

Quality of life includes many influences other than workplace demands-need to describe it as a component. We acknowledge that there are many components to quality of life that can be described in many ways. However, we chose to limit the descriptions of quality of life to what was included in the WHOQOL BREF questionnaire to keep the discussion focused and to best reflect the questionnaire.

Interpretation of “more identified work-related stress risk factors” is not clear without reading the article at minimum. The section on data collection tools related to the HSE on page 9 provides information of the included work related risk factors.

Attributing stress to “poor working conditions” might be appropriate, but this aspect is not evidenced by reading the entire study. We have in a number of areas form the introduction to the discussion included reference and description of the low resourced working conditions of health care workers in Sierra Leone

Last statement ok, but not tied to results or discussion. We are not clear which statement this refers to.

p. 4

Introduction, continued

Line 13-17 Source of this information (even if non-academic)? This has now been referenced.

Line 29 to paragraph 1, p. 5 (Research background). In general, this section is too long and not well-focused on the questions posed by this situation and data. The models and prior research could be summarized more efficiently, with citations that address specific survey domains or issues in Sierra Leone. Also, citations are somewhat out of date (latest is 2015?). This whole section has now been amended with some updated references.

p. 5

Citation for paragraph 2 about the EVD outbreak in Sierra Leone seems incorrect- #15 is from 2003 This has been amended.

Lines 25-26 Third study aim is overly ambitious given the data and the situation: suggest rewording to something like “assess changes in survey results over time and after management intervention”. No hypotheses specified, thus implying that this is a descriptive study, but many statistical tests provided and these results are the primary focus. This has been amended

Line 30-50 Timeline is not clear-background and discussion emphasizes the stress of Ebola and care when mothers are infected, but stress program was implemented as the epidemic was declining. What was the difference between baseline and follow-up surveys in terms of environment (and if not known, acknowledge in limitations)? This has been added to the limitations

Line 33 Choice of Job-Demand Resources model is not clear-is this what the HSE represents? How are they related? If based primarily on availability or ease of completion under difficult conditions (rather than strict intervention principles and hypotheses), then that should be included. Most of this should be addressed in the background, rather than methods. This has been amended

Page 6

Line 11-22

In general, background on the HSE is not clear. The citation is very general, and is not aimed at researchers. This citation relates to the HSE site which contains information on the dat collection tools, how to analyse the data etc. Hence it is the most relevant citation to use here. Also there is no information on how it fits into a model of stress described in the background. (Either here or under data analysis) The authors should include the number of questions, how they are scored and

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combined, and standard ways of analyzing both sub-groups and changes over time (or at least instructive citations). Very difficult to assess whether the authors have chosen the correct analysis method without this information. . Links are provided within the reference lists to both questionnaires. On page 9, lines 35-43 there is information about the 6 main areas of the HSE questionnaire. The questionnaires are lengthy, and we did not think it appropriate to include all questions in the description. These are available via the link. For the WHOQOLBREF lines 55-60 on page 9 explain the main areas of the questionnaire. Again details of each question are available via the link ion the reference list.

- Line 26-37
  Methods for the WHOQOL BREF are better described and describes the conversion of summary scores into percentage.
  Line 50-60
  Role of 52 lead health care workers is not clear-were they also included in the 222 staff members that responded? Did all 222 staff members respond? Page 10 line 11 gives further description of the 22 and explains that they were from the included health facilities. Page 9 line 3 describes that all health care workers in the facilities are included in the 222 participants. On page 11, line 28-33 the number of respondents at baseline and follow up are given.
  The training appears to be well-designed and potentially quite effective. It might be worth a separate publication. Need citation or information about underlying principles and agencies involved. Thank you for the comment. We are not clear what the citations and agencies requested refers to.
  Page 7
  Line 11- 26
  Number of domains was previously identified as n=6, now there are 7. This has been amended.
  In general-need to define independent and dependent variables clearly and in the sequence of the methods and results. This section is hard to apply to the results.
  Justification of three-way analysis of variance is not adequate. . How are these results interpreted? Does the data meet the assumptions of distribution for ANOVA and ANCOVA? we consider that What about interactions among the variables included? Missing values? Definition and interpretation of Cronbach's alpha in this context?

-
  Lines 28-40
  Inadequate discussion of what constitutes low and high quality of life, and what the range of results means. This should be in the methods, not in the results. This is in the methods section on page 9 where we give the WHOQOLBREF domains which are considered to relate and therefore include, the elements related to quality of life. The range of results for the QOLBREF and what the average values are given on page 11, line 20-24. The results can be interpreted against these averages to determine if quality of life is lower or higher than average.
  Lines 45-60
  Results in general require more knowledge (at least for this reviewer) than generally available. Definition and distribution of cadres should be described in principle in the methods. The distribution of cadres within the participants is given in table 5. Further information on the background to the study is given in the introduction, along with further information on work based stress. Data in Supplementary Table 1 is needed to interpret Table 1, including number of districts, cadres, and facility types. We have added additional information into table 1 on these.
  Page 8
  Results should be provided in the order of the methods and go from most general to most specific. The data all seems reasonable, but very difficult to interpret, and the presentation in the text needs clearer organization. We have amended this to give a general discussion of the results on page 11, line 37-43

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In Table 2 “Baseline Score” does not match Table 1 in format, and footnote does not match the Table. The table has been amended to reflect these comments and those of other reviewers.
Though mean scores are not presented we consider that the asterisked footnote is relevant to interpretation of difference coefficients. Text provides some explanation, but table should stand alone also. Need to address response rate, which varies substantially by domain. With respect, we do not agree that there is substantial variation between domains. Each individual item was recorded for at least 149 / 155 assessed for HSE at follow up. This resulted in the number completing each domain varying between 136 and 146, of whom 103 participants completed all 7 domains.

VERSION 2 – REVIEW

REVIEWER	Evelien Belfroid National Institute for Public Health and the Environment, the Netherlands
REVIEW RETURNED	07-Feb-2020

GENERAL COMMENTS	I still consider the topic of this paper very important. However, most sections of the paper are unclear due to paragraphs not being placed in a logical order, missing information or not clearly describing steps taken. Titel: the word ‘Health’ before ‘care workers’ seems to be missing Abstract: - The abstract of a paper should be clear about the aim of the study, the methodology and the results. I still think the abstract urgently needs to be improved. - The introduction section of the abstract is still not very clear. It does not provide a background for the study. - Can you specify ‘survey results’? What is the main outcome of the survey you are assessing before and after the implementation of the stress management programme? - The location, Sierra Leone, needs to be mentioned in the method section of the abstract. The final sentence of the conclusion need to be rephrased. I read the sentence several times but still don’t understand what the authors are trying to say. Introduction - Can you reference tis sentence: In the context of Sierra Leone however adequate levels of training and resources may not be available. - The introduction needs restructuring. The information is all there but there is no natural flow between the paragraphs. It seems to go back and forth between sections related to the specific setting and sections related to work stress. I want to suggest to remove the paragraph on the JDR model and to put it in the method section. Furthermore, quality of life is not introduced in the introduction while it is included in one of the aims of this study. Since quality of life is not introduced in the introduction the second aim comes out of nowhere. Also, the second aim needs to be rephrased since this is not a logical sentence and is very difficult to read. Results

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	Both the result section and the discussion section need rewriting. In the result section there is a lot of information but it is unclear what this means. Suggestion: differentiate in the result section between baseline, evaluation and diff baseline-evaluation. I find it still very unclear from the text what the main results are why these are so important and how they are linked. The result section is difficult to assess and interpret since the text could be much more clear and in a more logical order. What do the numbers mean? What does a difference between baseline and evaluation of .21 means? Discussion Also here the paragraphs do not seem to be in a logical order as well as the information within a paragraph. For example, the first paragraph includes information on study aim, limitations, how the results match the JD-R model. I red the discussion several times but still are struggling to find out what the authors want to say. Furthermore, the information is very abstract and sometimes vague (by using words as largely, begin to develop skills, suggesting that healthcare workers might have used) without providing any details. What is the most important message you have for readers? And what do your results mean in practice. This information is lacking. Furthermore, when conducting a training program during a health crisis it is very difficult to say something about its effectiveness due to the continuously changing situation in the country. I still think this not properly addressed in this study.

REVIEWER	Emily Webb London School of Hygiene and Tropical Medicine, UK
REVIEW RETURNED	19-Feb-2020

GENERAL COMMENTS	The authors have done a good job of responding to the reviewers' comments and the manuscript is much improved. There are a few areas that remain unclear. Specific comments follow. Major comments: 1. Although the introduction section is much clearer, there was still some repetition. For example the sentence "Work-related stress is a result of the inability to meet expectations placed on an individual within the context of their work role" in both paragraphs 4 and 5. Perhaps this information should just be included once in the context of describing the JD-R model. For example, paragraphs 4 and 5 might benefit from re-ordering, with all the text on work-related stress and the models for it first, and then the information on resilience second. 2. The first paragraph of the methods section describes the timeframe for the study, but it suggests that all data collection and the stress management programme took place between the months of July and August 2015. I think this could be written more clearly, because presumably the baseline data collection took place earlier than this? 3. A total of 222 health care workers took part in the study, and a total of 52 lead health care workers participated in the stress management course. What is still not quite clear to me is whether the 52 who did the course were a subset of the 222 who took part in the study. I assume this is the case but it would be good to be explicit on this. Related to this, I was confused by the sentence stating "A total of 52, facility based, lead health care workers (four

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	from each of the 13 healthcare facilities) participated in a one-day stress management programme and in the completion of the questionnaires. Surely all 222 took part in completion of questionnaires? 4. In the 7th paragraph of the results section, I believe these are baseline results that are being described. The authors then reference Table 2 but these results (comparing the baseline scores between different health care worker characteristics) are not shown in any of the tables as far as I can see. 5. In the first paragraph of the WHOQOL BREF questionnaire results section, the second sentence is unclear. Is this talking about differences in baseline results by health care worker characteristic? I think there may be a word missing – should it say "…and differed by facility type" at the end of this sentence? 6. In the third paragraph of the discussion, the authors could reflect on the fact that the scores for workplace stress may have decreased further due to external factors unrelated to the study. This is a weakness of the before vs after study design… 7. In the 7th paragraph of the discussion, this would be a good place to mention that the Cronbach's alpha was suboptimal for some of the domains, suggesting that internal consistency was not always good. Minor comments 1. The authors could include a sentence on the results for the third objective to the results section of the abstract. 2. The verb tenses in the first paragraph of the introduction are not consistent – suggest they are made so. 3. For some of the numbers presented in the results section, the authors could be clear that it is a mean they are reporting, for example, second paragraph of the results section, these are mean scores that are being talked about.

REVIEWER	Elizabeth Marshall Rutgers School of Public Health
REVIEW RETURNED	25-Apr-2020

GENERAL COMMENTS	The revised abstract is clearer and much simpler than the original, which is great. However, in my opinion the abstract should include some numerical results, at least for the number of responses and at least some actual results from the an surveys. Also, the potential change over time from baseline to follow up is not clearly presented in the abstract or methods.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 2
Reviewer Name: Evelien Belfroid
Institution and Country: National Institute for Public Health and the Environment, the Netherlands
Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below
I still consider the topic of this paper very important. However, most sections of the paper are unclear due to paragraphs not being placed in a logical order, missing information or not clearly describing steps taken.

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Titel: the word ‘Health’ before ‘care workers’ seems to be missing

This has been added

Abstract:
- The abstract of a paper should be clear about the aim of the study, the methodology and the results. I still think the abstract urgently needs to be improved.
- The introduction section of the abstract is still not very clear. It does not provide a background for the study.

This has been amended to provide further background

- Can you specify ‘survey results’? What is the main outcome of the survey you are assessing before and after the implementation of the stress management programme?

This has been amended to mention the quality of life and risk factors in the abstract and also in the methods section on page 5
- The location, Sierra Leone, needs to be mentioned in the method section of the abstract.

This has been added

The final sentence of the conclusion need to be rephrased. I read the sentence several times but still don’t understand what the authors are trying to say.

This has been re phrased

Introduction
- Can you reference tis sentence: In the context of Sierra Leone however adequate levels of training and resources may not be available.

This has been changed in page 4 to read “However, in a low resourced setting adequate levels of training and resources may not be available”.

- The introduction needs restructuring. The information is all there but there is no natural flow between the paragraphs. It seems to go back and forth between sections related to the specific setting and sections related to work stress. I want to suggest to remove the paragraph on the JDR model and to put it in the method section. Furthermore, quality of life is not introduced in the introduction while it is included in one of the aims of this study. Since quality of life is not introduced in the introduction the second aim comes out of nowhere. Also, the second aim needs to be rephrased since this is not a logical sentence and is very difficult to read.

The introduction was been amended in response to other reviewers but this was not mentioned as needing amending by review 2 in the initial review. The logical flow is as follows: background to Sierra Leone health care and the EVD epidemic; work based stress and then how this relates to the situation in a low resourced setting such as Sierra Leone. We would like to leave the JDR model in this section as it serves to illustrate the philosophical approach behind the study and the discussion on alternative views of work based stress.

Results
Both the result section and the discussion section need rewriting. In the result section there is a lot of information but it is unclear what this means. Suggestion: differentiate in the result section between baseline, evaluation and diff baseline-evaluation.

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The results section has been separated into baseline for QOLBREF and HSE and then into the follow up results

I find it still very unclear from the text what the main results are why these are so important and how they are linked. The result section is difficult to assess and interpret since the text could be much more clear and in a more logical order. What do the numbers mean? What does a difference between baseline and evaluation of .21 means?

The results section has been amended to add in some explanation of the numbers on pages 8 and 9

Discussion
Also here the paragraphs do not seem to be in a logical order as well as the information within a paragraph. For example, the first paragraph includes information on study aim (this has been removed), limitations (this has been removed and out in the limitations section on page 3), how the results match the JD-R model. We would like to leave the mention of the JDR model here as it resonates with the findings of the high workload found amongst health care workers, that is our results are reinforcing what is already known about high workload and risk factors for stress in the work place but within a low resourced setting, something that has not been acknowledge in current research.

I red the discussion several times but still are struggling to find out what the authors want to say. Furthermore, the information is very abstract and sometimes vague (by using words as largely, begin to develop skills, suggesting that healthcare workers might have used) without providing any details. What is the most important message you have for readers? And what do your results mean in practice. This information is lacking.

We have amended the above on page 11 -12 line 11-52

Furthermore, when conducting a training program during a health crisis it is very difficult to say something about its effectiveness due to the continuously changing situation in the country. I still think this not properly addressed in this study.

We have amended the above on page 12 line 52 onwards and this is also acknowledge in the limitations section of the paper.

Response to reviewer 3: Emily Webb

Comments:

The authors have done a good job of responding to the reviewers' comments and the manuscript is much improved. There are a few areas that remain unclear. Specific comments follow.

Major comments:

1. Although the introduction section is much clearer, there was still some repetition. For example the sentence "Work-related stress is a result of the inability to meet expectations placed on an individual within the context of their work role" in both paragraphs 4 and 5. Perhaps this information should just be included once in the context of describing the JD-R model. For example, paragraphs 4 and 5 might

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benefit from re-ordering, with all the text on work-related stress and the models for it first, and then the information on resilience second. We have amended paragraphs 4 and 5 as suggested

2. The first paragraph of the methods section describes the timeframe for the study, but it suggests that all data collection and the stress management programme took place between the months of July and August 2015. I think this could be written more clearly, because presumably the baseline data collection took place earlier than this? These dates are correct with baseline and follow taking place in these months. We acknowledge the impact of the limited timescale of this in the limitations section.

3. A total of 222 health care workers took part in the study, and a total of 52 lead health care workers participated in the stress management course. What is still not quite clear to me is whether the 52 who did the course were a subset of the 222 who took part in the study. I assume this is the case but it would be good to be explicit on this. Related to this, I was confused by the sentence stating “A total of 52, facility based, lead health care workers (four from each of the 13 healthcare facilities) participated in a one-day stress management programme and in the completion of the questionnaires. Surely all 222 took part in completion of questionnaires? We have added in the phrase “a subset of the 222 participants” to clarify this so the sentence now reads “*A total of 52, facility based, lead health care workers (a subset of the 222 participants) (four from each of the 13 healthcare facilities) participated in a one-day stress management programme and in the completion of the questionnaires with the remaining facility staff (total 222)”.*

4. In the 7th paragraph of the results section, I believe these are baseline results that are being described. The authors then reference Table 2 but these results (comparing the baseline scores between different health care worker characteristics) are not shown in any of the tables as far as I can see. We have removed this paragraph

5. In the first paragraph of the WHOQOL BREF questionnaire results section, the second sentence is unclear. Is this talking about differences in baseline results by health care worker characteristic? I think there may be a word missing – should it say “…and differed by facility type” at the end of this sentence? Thank you, we have added in the word ‘differed’

6. In the third paragraph of the discussion, the authors could reflect on the fact that the scores for workplace stress may have decreased further due to external factors unrelated to the study. This is a weakness of the before vs after study design…We have acknowledged this in the limitations of the study already stating “We did not assess any changes within the working environment from baseline to follow up as the Ebola epidemic progressed and this may have impacted on the final results”. We have added to this sentence to acknowledge external factors as well to say “We did not assess any changes within the working environment from baseline to follow up as the Ebola epidemic progressed, or take account of external factors, and this may have impacted on the final results”

7. In the 7th paragraph of the discussion, this would be a good place to mention that the Cronbach’s alpha was suboptimal for some of the domains, suggesting that internal consistency was not always good. We have added this in.

Minor comments

1. The authors could include a sentence on the results for the third objective to the results section of the abstract. This has been added

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2. The verb tenses in the first paragraph of the introduction are not consistent – suggest they are made so. This has been amended

3. For some of the numbers presented in the results section, the authors could be clear that it is a mean they are reporting, for example, second paragraph of the results section, these are mean scores that are being talked about. We have amended this

Reviewer 4 was the only one to give further comments and so we have just included our response to these below, preced by the dtae 26/04/2020.

Reviewer: 4
Reviewer Name: Elizabeth G. Marshall, PhD
Institution and Country: Rutgers School of Public Health, New Jersey, USA
Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below
Thank you for the opportunity to review this novel and timely manuscript.

General Comments:
The importance of this manuscript derives from the population of workers that provided the data: Maternal and newborn health care workers from Sierra Leone during the Ebola epidemic. Feedback from that population is unusual and it is very important to assess the interaction of the epidemic and provision of health care and, by implication, how that might affect the management and transmission of Ebola.

As a pilot or descriptive study, the data provided are very helpful and informative. The survey tools utilized are standard measurement tools and have been used in a number of settings. There is substantial literature on the HSE Management Standards Tool and on the WHO Quality of Life BREF measure, which could provide more insight if compared to other populations. Also, if the authors or others can provide further detail about the timing, staffing, conditions, and general context under which the employees are answering these questions, then that combination could be a striking and valuable contribution. This has been added on page 6 lines 24 to 34

However, as submitted as a research study, the data and methods are inadequately justified and described, even if the methods are appropriate. This is especially true for the choice of methods, explanation of process, and interpretation of the results of the data analysis. Conducting follow up (and repeat survey) after a management and training intervention is admirable and provides helpful feedback for those in charge, but it is difficult to ascribe changes to the intervention when conditions on the ground are changing and the response rate is limited. I would suggest changing the language to reflect these limitations.

Specific Comments:
p. 2 Abstract
Methods
Line 12-17. Need to include the tools used and goals of study, dependent and independent variables
These have been added
Line 16: Editing error, last sentence garbled This has been amended
Line 20-33 Results:

Need to include N for first and second wave of surveys These have now been added.

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26/04/2020: these have now been added.

Results are not clear-separate the HSE results (define HSE) and QOL results separately, define cadre and meaning of low vs high score in both surveys. The results have now been separated. Information on the average values was provided on page 9, line 44-50 for the HSE questionnaire and on page 11, line 21-24 for the WHOQOLBREF questionnaire

26/04/2020: an additional line has been added to the abstract about outcome 3. The abstract was amended because of the comments of reviewer 2 and amended to remove the umerical values and instead describe the results. We believe this does now describe the paper clearly within the limited word count

Even after reading the entire paper, hard to understand the abstract-rewrite so it can stand alone, especially for concept of baseline v. change. The abstract has been amended to aid fluency.
26/04/2020: greater numerical values were included in the original but these were removed due to other reviewers comments.
Conclusion:
The statements here seem obvious (without this paper)-what are the additional insights yielded by this manuscript? Further discussion has been added on page 15, line 47 to 57.
26/04/2020: apologies, this should say page 12

p. 3
Article Summary
Verify that the summary statements match the results and discussion; some of these summary statements are NOT included in the main text. This has been amended
26/04/2020: this has been slightly amended, The summary asks for strengths and weaknesses of the paper, rather than a summary per se of the paper hence referring in part to the paper.

Key questions
Quality of life includes many influences other than workplace demands-need to describe it as a component. We acknowledge that there are many components to quality of life that can be described in many ways. However, we chose to limit the descriptions of quality of life to what was included in the WHOQOL BREF questionnaire to keep the discussion focused and to best reflect the questionnaire.
Interpretation of “more identified work-related stress risk factors” is not clear without reading the article at minimum. The section on data collection tools related to the HSE on page 9 provides information of the included work related risk factors.
Attributing stress to “poor working conditions” might be appropriate, but this aspect is not evidenced by reading the entire study. We have in a number of areas form the introduction to the discussion included reference and description of the low resourced working conditions of health care workers in Sierra Leone
Last statement ok, but not tied to results or discussion. We are not clear which statement this refers to.

p. 4
Introduction, continued
Line 13-17 Source of this information (even if non-academic)? This has now been referenced.
Line 29 to paragraph 1, p. 5 (Research background). In general, this section is too long and not well-focused on the questions posed by this situation and data. The models and prior research could be summarized more efficiently, with citations that address specific survey domains or issues in Sierra Leone. Also, citations are somewhat out of date (latest is 2015?). This whole section has now been amended with some updated references.

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p. 5
Citation for paragraph 2 about the EVD outbreak in Sierra Leone seems incorrect- #15 is from 2003
This has been amended.
Lines 25-26 Third study aim is overly ambitious given the data and the situation: suggest rewording to something like “assess changes in survey results over time and after management intervention”. No hypotheses specified, thus implying that this is a descriptive study, but many statistical tests provided and these results are the primary focus. This has been amended
Line 30-50 Timeline is not clear-background and discussion emphasizes the stress of Ebola and care when mothers are infected, but stress program was implemented as the epidemic was declining. What was the difference between baseline and follow-up surveys in terms of environment (and if not known, acknowledge in limitations)? This has been added to the limitations
Line 33 Choice of Job-Demand Resources model is not clear-is this what the HSE represents? How are they related? If based primarily on availability or ease of completion under difficult conditions (rather than strict intervention principles and hypotheses), then that should be included. Most of this should be addressed in the background, rather than methods. This has been amended
Page 6
Line 11-22
In general, background on the HSE is not clear. The citation is very general, and is not aimed at researchers. This citation relates to the HSE site which contains information on the dat collection tools, how to analyse the data etc. Hence it is the most relevant citation to use here. Also there is no information on how it fits into a model of stress described in the background. (Either here or under data analysis) The authors should include the number of questions, how they are scored and combined, and standard ways of analyzing both sub-groups and changes over time (or at least instructive citations). Very difficult to assess whether the authors have chosen the correct analysis method without this information. . Links are provided within the reference lists to both questionnaires. On page 9, lines 35-43 there is information about the 6 main areas of the HSE questionnaire. The questionnaires are lengthy, and we did not think it appropriate to include all questions in the description. These are available via the link. For the WHOQOLBREF lines 55-60 on page 9 explain the main areas of the questionnaire. Again details of each question are available via the link ion the reference list.

• Line 26-37
Methods for the WHOQOL BREF are better described and describes the conversion of summary scores into percentage.
Line 50-60
Role of 52 lead health care workers is not clear-were they also included in the 222 staff members that responded? Did all 222 staff members respond? Page 10 line 11 gives further description of the 222 and explains that they were from the included health facilities.
• Page 9 line 3 describes that all health care workers in the facilities are included in the 222 participants. On page 11, line 28-33 the number of respondents at baseline and follow up are given.
• 26/04/2020: Apologies this should say page 9 line 14 for the above stats
•
The training appears to be well-designed and potentially quite effective. It might be worth a separate publication. Need citation or information about underlying principles and agencies involved. Thank you for the comment. We are not clear what the citations and agencies requested refers to.
Page 7
Line 11- 26
Number of domains was previously identified as n=6, now there are 7. This has been amended.
In general-need to define independent and dependent variables clearly and in the sequence of the methods and results. This section is hard to apply to the results.
Justification of three-way analysis of variance is not adequate. The 3-way ANOVA assumes that the effects for each factor are independent and provides estimates of the contrasts between the various

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levels. This is much better than using simple one-way analyses which do not attempt to account for the effects of other variables; one-way analyses would be subject to bias due to imbalance in the sample across the factors (eg there are not consistent proportions in the cadres for each district). How are these results interpreted? Does the data meet the assumptions of distribution for ANOVA and ANCOVA? Distributions were not examined, however we consider that these methods are fairly robust for the purposes of estimating main effects What about interactions among the variables included? Interactions were not considered as these are not of interest Missing values? Definition and interpretation of Cronbach's alpha in this context? Defined as usual for the items which make up each domain. Interpretation is for the aggregated set of responses for the given domain without accounting for cadre etc.

•
Lines 28-40
Inadequate discussion of what constitutes low and high quality of life, and what the range of results means. This should be in the methods, not in the results. This is in the methods section on page 9 where we give the WHOQOLBREF domains which are considered to relate and therefore include, the elements related to quality of life. The range of results for the QOLBREF and what the average values are given on page 11, line 20-24. The results can be interpreted against these averages to determine if quality of life is lower or higher than average.

• 26/04/2020: apologies. These average scores are on page 9 line 3 to 4
Lines 45-60
Results in general require more knowledge (at least for this reviewer) than generally available. Definition and distribution of cadres should be described in principle in the methods. The distribution of cadres within the participants is given in table 5. Further information on the background to the study is given in the introduction, along with further information on work based stress. Data in Supplementary Table 1 is needed to interpret Table 1, including number of districts, cadres, and facility types. We have added additional information into table 1 on these.
Page 8
Results should be provided in the order of the methods and go from most general to most specific. The data all seems reasonable, but very difficult to interpret, and the presentation in the text needs clearer organization. We have amended this to give a general discussion of the results on page 11, line 37-43

• 26/04/2020: the results were amended to take account of all of the reviewers feedback (apologies this was not clarified) The general discussion refers to the requirement of another reviewer. The results section was amemend in response to your comments from page 9 to 10
In Table 2 "Baseline Score" does not match Table 1 in format, and footnote does not match the Table. The table has been amended to reflect these comments and those of other reviewers.
Though mean scores are not presented we consider that the asterisked footnote is relevant to interpretation of difference coefficients. Text provides some explanation, but table should stand alone also. Need to address response rate, which varies substantially by domain. With respect, we do not agree that there is substantial variation between domains. Each individual item was recorded for at least 149 / 155 assessed for HSE at follow up. This resulted in the number completing each domain varying between 136 and 146, of whom 103 participants completed all 7 domains.

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VERSION 3 – REVIEW

REVIEWER	Emily Webb LSHTM, UK
REVIEW RETURNED	19-May-2020

GENERAL COMMENTS	The authors have addressed all of my comments satisfactorily.

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