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)	Improving pediatric epilepsy management at the first level of care: A pilot education intervention for clinical officers in Zambia
AUTHORS	Patel, Archana; Wibecan, Leah; Tembo, Owen; Kalyelye, Prisca; Mathews, Manoj; Ciccone, Ornella

VERSION 1 – REVIEW

REVIEWER	Mark Keezer
	Centre de Recherche du Centre Hospitalier de l'Université de Montréal (CRCHUM)
REVIEW RETURNED	01-Apr-2019

GENERAL COMMENTS	• Patel et al present the results of an intervention study, studying the impact of a training course on epilepsy for health care providers in Zambia.
	• The Introduction, although very well written, is too long, could be reduced in length by at least a third.
	• The test-retest analyses are with matched data, therefore a paired-t-test should be used. This is not addressed in the Methods and should be corrected.
	• The findings are elegant and direct. I think the overall message, the efficacy of the health intervention, is communicated by the authors in a -straight-forward manner.
	• The exact questions used in the assessments of knowledge and comfort should be included as an online supplement.

REVIEWER	Musa Watila
	Department of Clinical and Experimental Epilepsy, UCL Institute of Neurology.
	London
	UK
REVIEW RETURNED	01-Apr-2019

GENERAL COMMENTS	I have read with interest the article titled "Improving pediatric epilepsy care at the first level of care: A pilot education intervention for clinical officers (CO) in Zambia".
	This intervention programme was aimed at improving community health workers skill to identify and treat children with epilepsy at four primary health centres.
	The authors reported significant improvement in the COs knowledge in Identifying focal seizures, dosing of AED to reach adequate therapeutic effect and some improvement in given first aid. There was also a marked improvement in measures of comfort and confidence post-test. However, the participants worsened in their understanding whether or not to obtain imaging for a complex febrile

seizure.

This is a commendable and useful intervention study for CWE in resource-limited setting with high treatment gap.

However, I have the following comments and corrections:
1. I observed that some of the sections were pretty long especially the introduction and methods. I suggest that the authors summarise the sections. The word count for the introduction can be cut down by almost half.
2. Some issues with statistical analyses:
a. The sample size (number of COs) was too small to make any reasonable statistical inferences (this should be highlighted in the limitation).
b. The small sample size is likely to give a skewed data, if it is then a t-test is not appropriate, but rather a non-parametric equivalent test. If skewed the use median test scores will be better.
c. This is repeat measure on the same individual, and therefore the paired t-test rather than an independent t-test may be more appropriate.
d. Discuss with a statistician for his opinion.
3. One of the problems with exam based assessment is that it may not necessarily reflect the practical knowledge of those managing PWE. There should have been more practical clinical assessments. The authors summarily discussed this, but I suggest this form of assessment should be discussed clearly in the limitation.
4. It was unclear how the COs acquired knowledge on seizure semiology, were videos used for demonstrations? Please be explicit.
5. A problem highlighted by the authors was that the training module was too advanced for the COs. Why was not an appropriate module for that level of knowledge developed? A simple algorithm may have been more helpful.
6. The authors did not clearly discuss why the deterioration in the question on obtaining imaging for a complex febrile seizure.
7. There are several editorial changes in the PDF document.
8. It is commendable the authors attached the 'Revised Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0) September 15, 2015' guideline and highlighted the page numbers where what was done for each section.
9. Finally, I am of the opinion that this work can be summarised into a short report.

REVIEWER	Ettore Beghi
	Istituto di Ricerche Farmacologiche Mario Negri IRCCS, Italy
REVIEW RETURNED	07-Apr-2019

GENERAL COMMENTS	The study by Dr Patel and coworkers is the report of a study on the reflections of an educational intervention on the knowledge and attitudes a small sample of clinical officers (COs) in the management of pediatric epilepsy in Zambia. The results of the educational course show improvement in the overall knowledge of epilepsy and in the management of the disease.
	My only concerns with this study are the small sample (10 COs included, 9 of them completing the course), the presence of a possible selection bias (pre-test knowledge was fairly high and perhaps not entirely representative of the knowledge of COs in other areas of the country), and the lack of follow-up data to verify the persistence of the positive effects of education. All these limitations have been acknowledged by the authors and at present cannot be

	amended. Only few additional points: 1. The manuscript is too long and might benefit of a substantial shortening without loosing the significance of the contents; 2. Introduction: The following recent article on the worldwide burden of epilepsy should be mentioned; 3. Introduction, page 4, para 2: The high risk of abuse is not clearly expressed; does it mean that the diagnosis of epilepsy implies a higher risk of child abuse?; this concept should be clarified because child abuse is a risk factor for psychogenic nonepileptic seizures; 4. Introduction, page 5, last para, line 5: "COs" should be spelled out; 5. Methods: Is reference 24 appropriate?; 6. Results, page 8, para 1, line 3: Please change "their" into "his/her"; 7. Discussion, page 9, para 2: The sentence "… we demonstrated that similar methods … to pediatric epilepsy" is confusing and should be rephrased; 8. Discussion, page 10, para 2, line 6: "interestingly" should be changed into "interesting"; line 11: "cased-based discussion" should be changed into "case-based discussion"; 9. References 20 and 27 are incomplete; please revise; 10. Table 1, question "Obtain imaging for a complex febrile seizure" shows a significant worsening when comparing pre-test to post-test answers; please revise and, if needed, comment.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Mark Keezer
Institution and Country: Centre de Recherche du Centre Hospitalier de l'Université de Montréal (CRCHUM)
Please state any competing interests or state 'None declared': None declared.

Please leave your comments for the authors below
• Patel et al present the results of an intervention study, studying the impact of a training course on epilepsy for health care providers in Zambia.

• The Introduction, although very well written, is too long, could be reduced in length by at least a third. Thank you for this feedback. The introduction has been revised and shortened significantly (by approximately 50% the original length) to be more concise and focused.

• The test-retest analyses are with matched data, therefore a paired-t-test should be used. This is not addressed in the Methods and should be corrected. Thank you- paired t-tests were used and this was clarified in the manuscript.

• The findings are elegant and direct. I think the overall message, the efficacy of the health intervention, is communicated by the authors in a -straight-forward manner. Thank you for this feedback

• The exact questions used in the assessments of knowledge and comfort should be included as an online supplement. Thank you for this feedback. We have not included these due to the fact

that we are currently in an expansion phase of this pilot project and while the assessments are revised, they are in similar format and may impact our future findings if accessible to participants in our ongoing study.

Reviewer: 2
Reviewer Name: Musa Watila
Institution and Country: Department of Clinical and Experimental Epilepsy, UCL Institute of Neurology. London UK
Please state any competing interests or state 'None declared': None Declared

Please leave your comments for the authors below
I have read with interest the article titled "Improving pediatric epilepsy care at the first level of care: A pilot education intervention for clinical officers (CO) in Zambia".
This intervention programme was aimed at improving community health workers skill to identify and treat children with epilepsy at four primary health centres.
The authors reported significant improvement in the COs knowledge in Identifying focal seizures, dosing of AED to reach adequate therapeutic effect and some improvement in given first aid. There was also a marked improvement in measures of comfort and confidence post-test. However, the participants worsened in their understanding whether or not to obtain imaging for a complex febrile seizure.

This is a commendable and useful intervention study for CWE in resource-limited setting with high treatment gap.

However, I have the following comments and corrections:
1.   I observed that some of the sections were pretty long especially the introduction and methods. I suggest that the authors summarise the sections. The word count for the introduction can be cut down by almost half.
Thank you for your feedback. We agree and the entire manuscript has been significantly edited and made more concise, in particular the introduction, which was reduced by nearly 50%.

2.   Some issues with statistical analyses:
a.   The sample size (number of COs) was too small to make any reasonable statistical inferences (this should be highlighted in the limitation). Thank you. We agree that this is a large limitation. Our goal is to present this data as proof of concept for this method of intervention, with understanding that the results are limited due to the sample size. This is highlighted further throughout the document and emphasized in the discussion now to be clear.
b.   The small sample size is likely to give a skewed data, if it is then a t-test is not appropriate, but rather a non-parametric equivalent test. If skewed the use median test scores will be better. This has been reviewed and discussed with our research group and statistician. Paired t-tests were felt to remain appropriate but with acknowledgement that interpretation remains limited due to the small sample size. As a pilot project, we try to highlight this better in our paper as we agree the results cannot be used for broad inferences as a result.
c.   This is repeat measure on the same individual, and therefore the paired t-test rather than an independent t-test may be more appropriate. This was a paired t-test analysis (of group comparison) and has been clarified in the manuscript now. Thank you.
d.   Discuss with a statistician for his opinion. This has been reviewed, thank you.

3.   One of the problems with exam based assessment is that it may not necessarily reflect the practical knowledge of those managing PWE. There should have been more practical clinical assessments. The authors summarily discussed this, but I suggest this form of assessment should be

discussed clearly in the limitation. We fully agree. This is a difficult method of monitoring and evaluation to incorporate, but is something we want to include. It has been highlighted further in the discussion.

4.   It was unclear how the COs acquired knowledge on seizure semiology, were videos used for demonstrations? Please be explicit. Yes, videos were used. This is now clarified in the module list.

5.   A problem highlighted by the authors was that the training module was too advanced for the COs. Why was not an appropriate module for that level of knowledge developed? A simple algorithm may have been more helpful. Thank you, agreed. An algorithm alone without training is not shown sufficient or utilized in these settings. However, the level of complexity was something we worked on extensively and realize that this was not clear in our original discussion and has been clarified. We had included mixed information further gathered (outside this direct project) when refining the materials for more rural regions. Essentially, the discrepancy between rural and urban COs in regards to base knowledge has been highlighted as a challenge in this project and explained in a clearer manner in the discussion, with consideration for future implementations.

6.   The authors did not clearly discuss why the deterioration in the question on obtaining imaging for a complex febrile seizure. A theory for this has now been highlighted in the discussion.

7.   There are several editorial changes in the PDF document. Thank you; these have incorporated into our revision as we have received them and are documented through the marked revision copy uploaded, with responses and corrections to specific comments made.

8.   It is commendable the authors attached the 'Revised Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0) September 15, 2015' guideline and highlighted the page numbers where what was done for each section.

9.   Finally, I am of the opinion that this work can be summarised into a short report.

Reviewer: 3
Reviewer Name: Ettore Beghi
Institution and Country: Istituto di Ricerche Farmacologiche Mario Negri IRCCS, Italy
Please state any competing interests or state 'None declared': None

Please leave your comments for the authors below
The study by Dr Patel and coworkers is the report of a study on the reflections of an educational intervention on the knowledge and attitudes a small sample of clinical officers (COs) in the management of pediatric epilepsy in Zambia. The results of the educational course show improvement in the overall knowledge of epilepsy and in the management of the disease.
My only concerns with this study are the small sample (10 COs included, 9 of them completing the course), the presence of a possible selection bias (pre-test knowledge was fairly high and perhaps not entirely representative of the knowledge of COs in other areas of the country), and the lack of follow-up data to verify the persistence of the positive effects of education. All these limitations have been acknowledged by the authors and at present cannot be amended.
Only few additional points:
1.   The manuscript is too long and might benefit of a substantial shortening without loosing the significance of the contents; Thank you for this feedback. We agree and have significantly revised the manuscript to be more concise.
2.   Introduction: The following recent article on the worldwide burden of epilepsy should be mentioned; Thank you for this comment. This article has been cited in our introduction to update the current statistics mentioned regarding epilepsy burden globally.

3.   Introduction, page 4, para 2: The high risk of abuse is not clearly expressed; does it mean that the diagnosis of epilepsy implies a higher risk of child abuse?; this concept should be clarified because child abuse is a risk factor for psychogenic nonepileptic seizures;

This was an independent finding from the cited article, looking at risk of abuse amongst people with epilepsy. The phrasing in the introduction was poor as it should have been separated from the other cited article focused only on CWE versus this study looking at PWE (including adults). In restructuring and shortening the introduction, this has been removed. The reason for abuse was only hypothesized for in the article and ultimately it was felt out of scope to this current study.

4.   Introduction, page 5, last para, line 5: "COs" should be spelled out; Thank you, the section is now significantly edited.

5.   Methods: Is reference 24 appropriate?; This section is now revised and referenced appropriately.

6.   Results, page 8, para 1, line 3: Please change "their" into "his/her"; Thank you, the section is now significantly edited.

7.   Discussion, page 9, para 2: The sentence "… we demonstrated that similar methods … to pediatric epilepsy" is confusing and should be rephrased; Thank you, the section is now significantly edited.

8.   Discussion, page 10, para 2, line 6: "interestingly" should be changed into "interesting"; line 11: "cased-based discussion" should be changed into "case-based discussion"; Thank you, the section is now significantly edited.

9.   References 20 and 27 are incomplete; please revise; Thank you, the section is now significantly edited and referenced appropriately

10.   Table 1, question "Obtain imaging for a complex febrile seizure" shows a significant worsening when comparing pre-test to post-test answers; please revise and, if needed, comment. Thank you, this has now been discussed with more clarity in the discussion given this interesting finding.

VERSION 2 – REVIEW

REVIEWER	Mark Keezer Centre de Recherche du Centre Hospitalier de l'Université de Montréal (CRCHUM)
REVIEW RETURNED	24-May-2019

GENERAL COMMENTS	I am satisfied with the changes that the authors have made. The one final comment I would make is that althought I understand why the authors feel that they cannot present the exact questions used in the assessments of knowledge and comfort, this limits the reader's ability to critically evaluate the text. If the authors continue to feel that the questions cannot be presented here, this should be listed as another study limitation and the reason for this should be elaborated upon in the Discussion.

REVIEWER	Musa Watila UCL Institute of Neurology. London United Kingdom
REVIEW RETURNED	09-May-2019

GENERAL COMMENTS	Thank you for improving on the work. There are just a few correction in the attached manuscript. The reviewer provided a marked copy with additional comments.

	Please contact the publisher for full details.

REVIEWER	Ettore Beghi
	Istituto di Ricerche Farmacologiche Mario Negri IRCCS, Italy
REVIEW RETURNED	03-Jun-2019

GENERAL COMMENTS	No further comments. The answers of the authors to my queries are satisfactory

VERSION 2 – AUTHOR RESPONSE

Reviewer: 2

Reviewer Name: Musa Watila

Institution and Country:

UCL Institute of Neurology.

London

United Kingdom

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

Please leave your comments for the authors below

Thank you for improving on the work.

There are just a few correction in the attached manuscript.

Thank you. I have made the appropriate changes as suggested in the manuscript. Please note that I left the cited reference for the global population of epilepsy to be ~50million people per the most current citations (as corrected on initial review). Varying references have suggested higher numbers up to 70million, but this remains the most up to date statistic per WHO and the cited study, thus the reasoning behind our reference, although I acknowledge and agree with your comment.

Reviewer: 1

Reviewer Name: Mark Keezer

Institution and Country: Centre de Recherche du Centre Hospitalier de l'Université de

Montréal (CRCHUM)

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

Please leave your comments for the authors below

I am satisfied with the changes that the authors have made. The one final comment I would make is that although I understand why the authors feel that they cannot present the exact questions used in the assessments of knowledge and comfort, this limits the reader's ability to critically evaluate the text.

If the authors continue to feel that the questions cannot be presented here, this should be listed as another study limitation and the reason for this should be elaborated upon in the Discussion.

Thank you. We agree that the inability to include the actual case questions is limiting and hope that the table in which the topics covered are helpful to some degree in assessment of the aims of this project. However, clear acknowledgement of this lack has now been made in the discussion, with the reasoning explained, so that it can be considered by readers.

Reviewer: 3

Reviewer Name: Ettore Beghi

Institution and Country: Istituto di Ricerche Farmacologiche Mario Negri IRCCS, Italy

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

Please leave your comments for the authors below

No further comments. The answers of the authors to my queries are satisfactory

Thank you for your feedback.