PEER REVIEW HISTORY

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

ARTICLE DETAILS

TITLE (PROVISIONAL)	Health research capacity development in Low and Middle Income Countries: reality or rhetoric? A systematic meta-narrative review of the qualitative literature
AUTHORS	Franzen, Samuel; Chandler, Clare; Lang, Trudie

VERSION 1 - REVIEW

REVIEWER	Gail Davey Brighton & Sussex Medical School UK
REVIEW RETURNED	12-May-2016

GENERAL COMMENTS	Overall. It is very good to see a group taking on the challenge of synthesising research into capacity development in low- and middle-income countries. Although the authors note that the need for health research capacity development has been recognised for at least two decades, the area has been subject to very little research itself. Recommendations and frameworks for research capacity building have broadly been based on the experience of authors rather than literature review. This review is therefore timely and potentially important for researchers involved in research capacity building, funders and policy makers. Definitions of key terminologies are provided and then critiqued (S2). The authors draw out three meta-narratives to contextualise four main modalities of health research capacity development, and then argue the benefits and limitations of each of these modalities. The Discussion identifies the drivers of explicit and implicit research capacity development and proposes a 'third way' between these. Minor Greenhalgh's meta-narrative approach to systematic review is an entirely appropriate model to take for this complex area. However, having set this standard (line 111), the authors need to explain the reasons for and possible consequences of not always following it. For example, Phase 1 includes assembling 'a multi-disciplinary team whose background encompasses the relevant research traditions'. The team of authors is small and based at only 2 institutions, and from section 2.5 does not appear to cover a wide range of backgrounds, so this must be flagged up more strongly as a limitation. Similarly, 'regular face-to-face review meetings including planned input from external peers' are recommended by Greenhalgh et al in Phases 1 & 6, but are only described in passing in section 2.5. There may be very good reasons for this, but if there are departures from the methods taken as gold standard, they must be explained, and the possible consequences outlined.

	One finding that might be discussed further is that most of the literature refers to research capacity building in sub-Saharan Africa. It would enhance the manuscript if possible explanations for this (the English-language search restriction?; genuine lack of similar articles relating to LMICs in Asia and South America?) were discussed. Typographical A few grammatical errors have been indicated using sticky notes in the attached pdf. The reviewer also provided a marked copy with additional comments. Please contact the publisher for full details.

REVIEWER	Olumide AT Ogundahunsi Research Capacity Strengthening, Special Programme for Research and Training in Tropical Diseases, World Health Organization, Geneva Switzerland
REVIEW RETURNED	11-Jul-2016

GENERAL COMMENTS	This is an excellent well researched review. The language is clear and when published the review will be a valuable reference on health research capacity development. The review addresses a very important subject after a thorough synthesis of health research capacity development. Although the analysis draws heavily on sub Saharan Africa, it does not diminish the relevance of the conclusion and the value of the pragmatic "third way" proposed. This reviewer recommends a few very minor revision (for accuracy) prior to publication. Specifically: LINE 523: Replace the word OPERATIONAL with IMPLEMENTATION [The TDR programme referenced is designed to (1) Increase the numbers of scientists in low- and middle-income countries (LMICs) trained in implementation research on infectious diseases of poverty (2) Support the development of implementation research as a field of study. (3) Increase the capacity of universities in LMICs to provide this curriculum, manage training grant schemes and mentor students and (4) Expand the reach of this type of education and training in a systematic process. Please see http://www.who.int/tdr/capacity/strengthening/postgraduate/en/] . LINES 525 and 1055: The reference provided for Strategic Initiative for Developing Capacity in Ethical Review (SIDCER) http://www.who.int/sidcer/en/ is quite dated. This reviewer suggests either removing this reference as it does not depict an active initiative or cite it as an example which is not necessarily extant. The URL might not remain active much longer.

REVIEWER	Marguerite Schneider University of Cape Town South Africa
REVIEW RETURNED	15-Jul-2016

GENERAL COMMENTS	Health research capacity development (HRCD) has become a key area of focus in LMICs and this systematic meta-narrative review is

	particularly opportune as a synthesis of trends and progress in development of this HRCD since the late 1990s. The meta-narrative synthesis approach developed by Greenhalgh and colleagues is chosen as an appropriate methods for the review and it has allowed the researchers to provide an interesting and detailed review of the trends in approaches, strategies and underlying thinking used in HRCD. As someone starting to think about HRCD in a more systematic manner and thinking about research building evidence on the effectiveness of different approaches, this review has provided a very useful chronicle of progress (or sometimes lack of it) since the 1990s. It was a pleasure to read. The paper is very well written and easy to follow. There are very few typographical errors (see short list below), and the referencing style is consistent, although the use of author names in capitals for the list of reviewed articles in S1 is different to that used for the references referred to in the main text. A few points are noted below on aspects that could be clarified further or considered in revising the paper. These are not deemed absolutely necessary but may be useful to think about. Title, secondary subject heading and key words: The title is good but a term related to HRCD should be added at least to the key words, and - if they exist - to the secondary subject headings. If none exist it is interesting in itself as a gap. Abstract: The Abstract is good and does not need any revisions. Introduction: Consider introducing the idea of reality or rhetoric in the introduction to set the scene for the later discussion on this. Methods: The methods described for the search for documents and papers are well described and motivated. However, a brief statement would be useful at the end of the line 115 (at the start of the Methods section) to summarise why this approach is particularly suited to the review of HRCD literature. Search terms: I am a little confused as to the use of the search terms from 'NOT' at the end of the 5th line through to the end. But it may just be a lack of understanding on my part. The layout of Table 1 could be changed to make it clear from the outset to the reader that the columns are all separate topics. I tried to make sense of it initially by following a row through from first column on left to last on right. Results: • Section 3.5: specific development strategies: While the barriers to research identified in Table 3 make good sense, a sentence explaining how they were derived from the reviewed texts would be useful. • Table 3: the two instances of 21% (2nd and 4th barriers) are rated differently – the first as 'very popular' and the 4th as 'growing popularity'. Should these be the same? • A time line showing the changes in strategies and approaches could be interesting specifically showing the 'growing popularity' trends. This may be too complex a time line to be useful, but the idea seems attractive. Lines 471 – 475 under Discussions seems to be making a start at doing this. • The barrier 'insufficient human capacity with research knowledge & skills': maybe the discussion could take up why the building of core capabilities is less popular. It could be that protocol development, writing grant applications and publications take too much time and is not sufficiently built into the time line of research projects. It would be an interesting aspects to monitor as the HRCD becomes more prominent.

	Discussion: The discussions raises pertinent and interesting points. The point made in lines 470-471 could be expanded with a couple of examples, e.g. who are the main development actors, etc. P28 section 4.4: lines 558-560: it would be interesting to reflect on why Sub-Saharan Africa dominates in the papers reviewed. Is it because of the dominance of this region in relation to the 3 major diseases – HIV, TB and Malaria, or lack of development relative to other regions? Typographical corrections: Line 81 (p5): revise to '…world's population, 92% of the global disease burden, but only 10% of global funding…' Number tables correctly – there is no Table 2. P27, line 537: add 'of' in 'the current experience OF sharing data…' – that seems to work better than without the OF.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name

Gail Davey

Institution and Country

Brighton & Sussex Medical School
UK

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

Please leave your comments for the authors below Overall.
It is very good to see a group taking on the challenge of synthesising research into capacity development in low- and middle-income countries. Although the authors note that the need for health research capacity development has been recognised for at least two decades, the area has been subject to very little research itself. Recommendations and frameworks for research capacity building have broadly been based on the experience of authors rather than literature review. This review is therefore timely and potentially important for researchers involved in research capacity building, funders and policy makers.
Definitions of key terminologies are provided and then critiqued (S2). The authors draw out three meta-narratives to contextualise four main modalities of health research capacity development, and then argue the benefits and limitations of each of these modalities. The Discussion identifies the drivers of explicit and implicit research capacity development and proposes a 'third way' between these.

Minor
Greenhalgh's meta-narrative approach to systematic review is an entirely appropriate model to take for this complex area. However, having set this standard (line 111), the authors need to explain the reasons for and possible consequences of not always following it.

For example, Phase 1 includes assembling 'a multi-disciplinary team whose background encompasses the relevant research traditions'. The team of authors is small and based at only 2

institutions, and from section 2.5 does not appear to cover a wide range of backgrounds, so this must be flagged up more strongly as a limitation.

Similarly, 'regular face-to-face review meetings including planned input from external peers' are recommended by Greenhalgh et al in Phases 1 & 6, but are only described in passing in section 2.5. There may be very good reasons for this, but if there are departures from the methods taken as gold standard, they must be explained, and the possible consequences outlined.

Re-structured section 2.5 to become Role and Position of Authors (line 187) – added following text

"This systematic review was undertaken, in part, to inform the design of a larger body of empirical research on health research capacity development in LMICs. All authors have backgrounds in social science and global health. Initial coding was conducted by Samuel Franzen, and then refined based on face-to-face discussions with other authors around the coding framework and preliminary findings. The authors of this paper do not include individuals from LMICs, but this paper was reviewed and commented on by individuals from LMICs who collaborated on and participated in the parallel empirical research, and discussed with other relevant experts at meetings and conferences. These team processes represent a deviation from the meta-narrative method presented by Greenhalgh et al. [13] because the authors did not constitute a multi-disciplinary team and input from external peers was largely ad hoc, rather than through regular planned inputs. These methodological deviations were required to enable the systematic review to feed into the evolving parallel empirical research."

Expanded section in strengths and limitations (line 582):

"The limited number of authors working on this review reduced the breadth of perspectives involved during analysis which could have biased interpretation towards the authors' particular knowledge paradigms and world views. However, this was mitigated to some extent by drawing on perspectives and experiences from concurrent research collaborators and participants, and seeking feedback from relevant experts at meetings and conferences. While some context-specific differences in experiences were inevitably raised, all individuals who were consulted considered the findings of this study to be relevant and consistent with their broad view of health research capacity development in LMICs. Although it may have been desirable to have a second coder, this would not have necessarily improved the validity of findings through inter-coder reliability comparisons because regardless of the number of coders, the emerging coding scheme and findings would always be subjective. Ensuring quality of interpretation relies, rather, on being transparent in offering explanations of meanings rather than presenting definitive causations, and explicitly acknowledging the subjective nature of the analysis and the bias this creates. These principles were adhered to in the research process and the publication."

One finding that might be discussed further is that most of the literature refers to research capacity building in sub-Saharan Africa. It would enhance the manuscript if possible explanations for this (the English-language search restriction?; genuine lack of similar articles relating to LMICs in Asia and South America?) were discussed.

Expanded discussion on this line 574:

"Furthermore, most articles had a general focus or related only to sub-Saharan Africa, meaning that context and research specific differences could not be examined in detail. The focus of the literature on sub-Saharan Africa is likely due to the high publishing rates of African authors and many papers' disease specific-focus on high burden diseases of sub-Saharan Africa (HIV and Malaria). However, it may also be possible that the English-language search restriction excluded papers from authors

publishing about their region in non-English languages. Regardless, the HRCD evidence gap in other developing regions is notable."

Typographical
A few grammatical errors have been indicated using sticky notes in the attached pdf.

All typographical errors corrected as requested. Shown in Track changes.

Reviewer: 2

Reviewer Name

Olumide AT Ogundahunsi

Institution and Country

Research Capacity Strengthening, Special Programme for Research and Training in Tropical Diseases, World Health Organization, Geneva Switzerland

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

Please leave your comments for the authors below This is an excellent well researched review. The language is clear and when published the review will be a valuable reference on health research capacity development. The review addresses a very important subject after a thorough synthesis of health research capacity development. Although the analysis draws heavily on sub Saharan Africa, it does not diminish the relevance of the conclusion and the value of the pragmatic "third way" proposed.
This reviewer recommends a few very minor revision (for accuracy) prior to publication. Specifically:

LINE 523: Replace the word OPERATIONAL with IMPLEMENTATION [The TDR programme referenced is designed to (1) Increase the numbers of scientists in low- and middle-income countries (LMICs) trained in implementation research on infectious diseases of poverty (2) Support the development of implementation research as a field of study. (3) Increase the capacity of universities in LMICs to provide this curriculum, manage training grant schemes and mentor students and (4) Expand the reach of this type of education and training in a systematic process. Please see http://www.who.int/tdr/capacity/strengthening/postgraduate/en/] .

Operational replaced with Implementation

LINES 525 and 1055: The reference provided for Strategic Initiative for Developing Capacity in Ethical Review (SIDCER) http://www.who.int/sidcer/en/ is quite dated. This reviewer suggests either removing this reference as it does not depict an active initiative or cite it as an example which is not necessarily extant. The URL might not remain active much longer.

Reference to SIDCER removed

Reviewer: 3

Reviewer Name

Marguerite Schneider

Institution and Country

University of Cape Town
South Africa

Please state any competing interests or state ‘None declared’:
None declared

Please leave your comments for the authors below

Health research capacity development (HRCD) has become a key area of focus in LMICs and this systematic meta-narrative review is particularly opportune as a synthesis of trends and progress in development of this HRCD since the late 1990s.

The meta-narrative synthesis approach developed by Greenhalgh and colleagues is chosen as an appropriate methods for the review and it has allowed the researchers to provide an interesting and detailed review of the trends in approaches, strategies and underlying thinking used in HRCD. As someone starting to think about HRCD in a more systematic manner and thinking about research building evidence on the effectiveness of different approaches, this review has provided a very useful chronicle of progress (or sometimes lack of it) since the 1990s. It was a pleasure to read.
The paper is very well written and easy to follow.
There are very few typographical errors (see short list below), and the referencing style is consistent, although the use of author names in capitals for the list of reviewed articles in S1 is different to that used for the references referred to in the main text.

The list of articles reviewed is different to the article reference list because not all articles that were reviewed were cited in the text. Within the text, citations and references are numerical according to BMJ requirements. Within the reviewed article list the references are alphabetical because there is no specific order with which to numerically present them.

A few points are noted below on aspects that could be clarified further or considered in revising the paper. These are not deemed absolutely necessary but may be useful to think about.

Title, secondary subject heading and key words: The title is good but a term related to HRCD should be added at least to the key words, and - if they exist - to the secondary subject headings. If none exist it is interesting in itself as a gap.

“Capacity Development” or anything similar is not available as a primary or secondary subject heading or a key word. Key words cannot be entered as free text.

We request BMJ Open’s advice about how best to categorize this article, and agree with the reviewer that some category relating to Health Research Capacity Development should be created.

Abstract: The Abstract is good and does not need any revisions.

Introduction: Consider introducing the idea of reality or rhetoric in the introduction to set the scene for the later discussion on this.

Line 109 updated:

“This review should prove useful to all stakeholders interested in learning how to undertake the complex business of capacity development, and will be of particular interest to actors working to make locally-led and sustainable health research capacity in LMICs a reality.”

Methods:
The methods described for the search for documents and papers are well described and motivated.

However, a brief statement would be useful at the end of the line 115 (at the start of the Methods section) to summarise why this approach is particularly suited to the review of HRCD literature.

Rephrased paragraph from line 115:

“The meta-narrative method is a “systematic, theory-driven interpretative technique, which [was] developed to help make sense of heterogeneous evidence about complex interventions applied in diverse contexts in a way that informs policy” [14]. Since the Health Research Capacity Development (HRCD) literature shares these characteristics, the meta-narrative method was highly suited to the purposes of this study.”

Search terms: I am a little confused as to the use of the search terms from ‘NOT’ at the end of the 5th line through to the end. But it may just be a lack of understanding on my part.

The NOT search terms were used to reduce hits for categories of search terms that were retrieving a lot of results but were irrelevant. For instance, before the NOT terms were used, the search was retrieving a lot of papers on agriculture. By adding the NOT Agriculture search term, this reduced the number of irrelevant hits.

The layout of Table 1 could be changed to make it clear from the outset to the reader that the columns are all separate topics. I tried to make sense of it initially by following a row through from first column on left to last on right.

Double line spacing has been added to the table to help separate columns into their separate topics.

Results:
• Section 3.5: specific development strategies: While the barriers to research identified in Table 3 make good sense, a sentence explaining how they were derived from the reviewed texts would be useful.

Added to line 439:

“The research barrier groupings were identified by the authors through thematic coding of the literature content.”

• Table 3: the two instances of 21% (2nd and 4th barriers) are rated differently – the first as ‘very popular’ and the 4th as ‘growing popularity’. Should these be the same?

Thank you for spotting this. This is an error – insufficient research funding strategies should be “growing popularity” not “very popular”.

• A time line showing the changes in strategies and approaches could be interesting specifically

showing the ‘growing popularity’ trends. This may be too complex a time line to be useful, but the idea seems attractive. Lines 471 – 475 under Discussions seems to be making a start at doing this.

This is a nice idea but would be difficult to present in practice because development strategies wax and wane in popularity and there is a time lag as this popularity diffuses between different groups of respondents. Therefore the data would also need to show who the idea is popular with. This may be possible by undertaking a content analysis and plotting how frequently a strategy is mentioned and by whom, but this would be beyond the scope of this paper, and may not prove useful due to a lot of “noise” within the data making it difficult to draw out patterns.

• The barrier ‘insufficient human capacity with research knowledge & skills’: maybe the discussion could take up why the building of core capabilities is less popular. It could be that protocol development, writing grant applications and publications take too much time and is not sufficiently built into the time line of research projects. It would be an interesting aspects to monitor as the HRCD becomes more prominent.

This is an interesting point, but we were unable to find any discussion on why core research skill training was less popular. It was simply mentioned less, although increasingly in recent years. Therefore any discussion on the matter would really just be conjecture, and not based on the findings, which is why we did not discuss it. We agree with the reviewer that it would be interesting to follow this issue, and indeed understanding these training gaps was an investigative area of the parallel empirical research that was the conducted (to be published shortly).

Discussion:
The discussions raises pertinent and interesting points.

The point made in lines 470-471 could be expanded with a couple of examples, e.g. who are the main development actors, etc.

Expanded sentence to include an example – line 487:

“This literature synthesis has objectively presented the main HRCD modalities and strategies, and shows that some development actors continue to operate research models that are contrary to widely accepted views of best practice e.g. ex-patriate led parallel research units.”

P28 section 4.4: lines 558-560: it would be interesting to reflect on why Sub-Saharan Africa dominates in the papers reviewed. Is it because of the dominance of this region in relation to the 3 major diseases – HIV, TB and Malaria, or lack of development relative to other regions?

Expanded discussion on this – line 574:

“Furthermore, most articles had a general focus or related only to sub-Saharan Africa, meaning that context and research specific differences could not be examined in detail. The focus of the literature on sub-Saharan Africa is likely due to the high publishing rates of African authors and many papers’ disease specific-focus on high burden diseases of sub-Saharan Africa (HIV and Malaria). However, it may also be possible that the English-language search restriction excluded papers from authors publishing about their region in non-English languages. Regardless, the HRCD evidence gap in other developing regions is notable.”

Typographical corrections:

Line 81 (p5): revise to '…world's population, 92% of the global disease burden, but only 10% of global funding…'

Revised

Number tables correctly – there is no Table 2.

Corrected. Table 3 reordered to become table 2.

P27, line 537: add 'of' in 'the current experience OF sharing data…' – that seems to work better than without the OF.

Corrected

VERSION 2 – REVIEW

REVIEWER	Gail Davey Brighton & Sussex Medical School, UK
REVIEW RETURNED	31-Aug-2016

GENERAL COMMENTS	Many thanks for this revised version; I am satisfied that all my comments have been addressed.

REVIEWER	Olumide AT Ogundahunsi Special Programme for Research & Training in Tropical Diseases World Health Organization, Geneva, Switzerland.
REVIEW RETURNED	23-Sep-2016

GENERAL COMMENTS	This manuscript is an improvement of the previous version.

REVIEWER	Marguerite SCHNEIDER (PhD) University of Cape Town, South Africa
REVIEW RETURNED	10-Sep-2016

GENERAL COMMENTS	The authors addressed the reviewer comments satisfactorily and the paper is suitable to be accepted as is.