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)	The experiences of stroke patients and rehabilitation professionals with upper limb rehabilitation robots: a qualitative systematic review protocol
AUTHORS	Chockalingam, Manigandan; Vasanthan, Lenny; Balasubramanian, Sivakumar; Sriram, Vimal

VERSION 1 – REVIEW

REVIEWER	Klaic, Marlena The University of Melbourne, Melbourne School of Health Sciences
REVIEW RETURNED	27-Jun-2022

GENERAL COMMENTS	This is an important topic and has the potential to influence further work in the field. I have made some suggestions throughout the manuscript, primarily in relation to being cautious with global statements such as "despite their proven effectiveness" - although there is some evidence that robotic devices are effective in improving UL outcomes post stroke, equally, there are studies that suggest they are not. It remains a debatable topic and should be acknowledged as such. I have also suggested that it might be helpful to explore the IEEE database as they publish a lot on robotics and may have studies that explore end-user experience.

REVIEWER	Laparidou , Despina University of Lincoln
REVIEW RETURNED	07-Jul-2022

GENERAL COMMENTS	This protocol of a systematic review deals with a very important topic that may have significant implications for people undergoing rehabilitation after a stroke and their well-being (as well as for the healthcare professionals working with them). I think the protocol is well-written and I only have minor changes to recommend. Abstract • Good abstract and concise Introduction • The overview of relevant literature and arguments for the need for such a review were well presented. • Pg. 9 lines 161-166: It would be better to combine these two sentences into one Method

	• Inclusion criteria: I particularly liked how the authors have given definitions for all relevant terms (e.g., upper limb rehabilitation, exosuits, etc.). • Search strategy: will you be using any MeSH terms? I think this is really important and should be noted in the text. • Given that this is a review of qualitative studies, it would be appropriate to include a reflexivity statement that discusses the authors' assumptions and preconceptions they bring into the research and how these may influence the review process. Discussion • Nothing to comment on or recommend. Figure legends • Great to see these pictures added here. S1 Table- PRISMA-P • Under support items- I would suggest here selecting the "Yes" answer. Even though you may not have a funder, etc., this information is included in the manuscript/protocol (lines 378-380, as you have noted). General Comment • Overall, well written and informative. All relevant information is provided, and the design and methodology seem appropriate.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Dr. Marlena Klaic, The University of Melbourne, The Royal Melbourne Hospital City Campus
Comments to the Author:
*** Please find additional comments from this reviewer in the attached file ***
This is an important topic and has the potential to influence further work in the field. I have made some suggestions throughout the manuscript, primarily in relation to being cautious with global statements such as "despite their proven effectiveness" - although there is some evidence that robotic devices are effective in improving UL outcomes post stroke, equally, there are studies that suggest they are not. It remains a debatable topic and should be acknowledged as such.
I have also suggested that it might be helpful to explore the IEEE database as they publish a lot on robotics and may have studies that explore end-user experience.

Reviewer: 2
Ms. Despina Laparidou , University of Lincoln
Comments to the Author:
This protocol of a systematic review deals with a very important topic that may have significant implications for people undergoing rehabilitation after a stroke and their well-being (as well as for the healthcare professionals working with them). I think the protocol is well-written and I only have minor changes to recommend.

Abstract
• Good abstract and concise

Introduction
• The overview of relevant literature and arguments for the need for such a review were well

presented.
• Pg. 9 lines 161-166: It would be better to combine these two sentences into one

Method
• Inclusion criteria: I particularly liked how the authors have given definitions for all relevant terms (e.g., upper limb rehabilitation, exosuits, etc.).
• Search strategy: will you be using any MeSH terms? I think this is really important and should be noted in the text.
• Given that this is a review of qualitative studies, it would be appropriate to include a reflexivity statement that discusses the authors' assumptions and preconceptions they bring into the research and how these may influence the review process.

Discussion
• Nothing to comment on or recommend.

Figure legends
• Great to see these pictures added here.

S1 Table- PRISMA-P
• Under support items- I would suggest here selecting the "Yes" answer. Even though you may not have a funder, etc., this information is included in the manuscript/protocol (lines 378-380, as you have noted).

General Comment
• Overall, well written and informative. All relevant information is provided, and the design and methodology seem appropriate.

Reviewer: 1
Competing interests of Reviewer: None

Reviewer: 2
Competing interests of Reviewer: No competing interests to declare

AUTHORS' POINT-BY-POINT RESPONSES TO THE EDITOR'S AND THE REVIEWERS' COMMENTS

Editor's Comments to Author:

- Please revise the 'Strengths and limitations of this study' section of your manuscript (after the abstract). This section should contain up to five short bullet points, no longer than one sentence each, that relate specifically to the methods. The novelty, aims, anticipated results or expected impact of the study should not be summarised here.

Thank you, editor. We have now revised our manuscript in accordance with your suggestions. ***Please see lines 83-92.***

- Please include the planned start and end dates for the study in the methods section.

Thank you. We have now included the planned start and end dates for our review. ***Please see lines 268-269.***

Referee 1:

Dr. Marlena Klaic, The University of Melbourne, The Royal Melbourne Hospital City Campus
Comments to the Author:
*** Please find additional comments from this reviewer in the attached file ***

Comment:

This is an important topic and has the potential to influence further work in the field.

We would like to thank Dr Klaic for acknowledging the potential of our work.

Comment:

I have made some suggestions throughout the manuscript, primarily in relation to being cautious with global statements such as "despite their proven effectiveness" - although there is some evidence that robotic devices are effective in improving UL outcomes post stroke, equally, there are studies that suggest they are not. It remains a debatable topic and should be acknowledged as such.

Thank you for your comment. We acknowledge that the jury is still out on the effectiveness of stroke upper limb rehabilitation robots. Based on your suggestions, we have reworded a number of sentences in our revised manuscript. Further information can be found in our individual responses to comments below.

Comment:

I have also suggested that it might be helpful to explore the IEEE database as they publish a lot on robotics and may have studies that explore end-user experience.

We would like to thank Dr Klaic for pointing out our oversight. IEEE has been included in our revised manuscript, and we acknowledge its importance.

*** Please find additional comments from this reviewer in the attached file ***

Comment:

I would not say that these devices have proven effectiveness yet - the literature is still somewhat mixed (I'm particularly referencing the RATULS study here). I feel it would be more appropriate to say "Emerging evidence suggests that robotic devices for upper limb rehabilitation after a stroke may improve....

Suggested change has been made. ***Please see lines 52-53.***

Comment:

Will you also search IEEE? They have publications on this topic

In the revised manuscript, IEEE has been included. It was an oversight on our part to omit IEEE from the original manuscript, which we have now rectified. We thank the reviewer for bringing this to our attention. ***Please see lines 59-60.***

Comment:

Qualitative studies?

Suggested change has been made. ***Please see lines 62-65.***

Comment:

Will you be including ANY studies that include adult patients etc... or studies that focus on patient and/or health professional experience with these devices?

Thanks to the reviewer for seeking this clarification. We will keep the inclusion parameters broad in order to synthesise all available evidence that focuses on stroke patients and/or health professionals' experience with these devices.

Suggested change has been made to clarify this. ***Please see lines 62-65.***

Comment:

Only or first? Only suggests it will never occur again

This suggestion is no longer relevant since this point has been removed from the manuscript following the editor's suggestion. ***Please see lines 83-92.***

Comment:

I would stipulate here that the robots are available to 'support' or 'augment'. It currently reads as though the robots do this on their own, rather than under the direction /control of a therapist

Suggested change has been made. ***Please see lines 96-99.***

Comment:

This is largely dependent on type of therapy, type of robot, stage of stroke recovery etc... And other systematic reviews have found it isn't superior. I would suggest you reword as "They produce comparable outcomes and in some cases, for example chronic stroke rehabilitation with end-effector devices, may produce superior outcomes...."

Suggested change has been made. ***Please see lines 99-102.***

Comment:

Is there evidence here to say they are increasingly being incorporated? If yes, would be good to cite. If no, I would say "Rehabilitation robots are therefore receiving increasing attention etc..."

Suggested change has been made. ***Please see lines 106-110.***

Comment:

Refer my earlier comment - be careful of making such a bold statement given the ongoing debate about their effectiveness and mixed findings in both primary studies and systematic reviews

Suggested change has been made. ***Please see lines 111-112.***

Comment:

Why is this vital? It would be great to include an additional statement here about the association between acceptance and/or acceptability of interventions (particularly technology) and subsequent adoption.

Suggested change has been made. Additional statements to describe the association between acceptability and adoption of technology have been provided. ***Please see lines 136-142.***

Comment:

As per comment in abstract, will you look at IEEE? If not, it would be good to say why as it has a lot of publications on robotic devices, some of which might include end-user experience.

Suggested change has been made. ***Please see lines 283-284.***

Referee 2:

Ms. Despina Laparidou , University of Lincoln
Comments to the Author:

Comment:

This protocol of a systematic review deals with a very important topic that may have significant implications for people undergoing rehabilitation after a stroke and their well-being (as well as for the healthcare professionals working with them). I think the protocol is well-written and I only have minor changes to recommend.

We would like to thank Ms Laparidou for acknowledging the importance of our work and its implication in stroke rehabilitation.

Comment:

Abstract
• Good abstract and concise

Thank you

Comment:

Introduction
• The overview of relevant literature and arguments for the need for such a review were well presented.

Thank you

Comment:

• Pg. 9 lines 161-166: It would be better to combine these two sentences into one

Thank you for your suggestion. The suggested change has been made in our revised manuscript. ***Please see lines 169-172.***

Comment:

Method
• Inclusion criteria: I particularly liked how the authors have given definitions for all relevant terms (e.g., upper limb rehabilitation, exosuits, etc.).

Thank you

Comment:

• Search strategy: will you be using any MeSH terms? I think this is really important and should be noted in the text.

We agree with the reviewer's views regarding the use of MeSH terms in the search strategy. We would like to confirm that we are using all the relevant MeSH terms in addition to using relevant keywords. We have reported this in lines 267-270 of the original manuscript as follows. "The text words contained in the titles and abstracts of relevant articles and the index terms used to describe the articles were used to develop a full search strategy for MEDLINE (Ovid) (see Appendix 1)." However, for better clarity, we have now edited this sentence as follows "The text words contained in the titles and abstracts of relevant articles and the index terms (such as MeSH terms) used to describe the articles were used to develop a full search strategy for MEDLINE (Ovid) (see Appendix 1)." ***Please see lines 274-277.***

Please note that the terms prefixed with "exp" in appendix 1 are MeSH terms. Here the "exp" refers to exploding the MeSH vocabulary to capture narrower terms associated with the broader MeSH term reported. Since our original search included MeSH terms, we have not made any changes to the search strategy.

Comment:

• Given that this is a review of qualitative studies, it would be appropriate to include a reflexivity statement that discusses the authors' assumptions and preconceptions they bring into the research and how these may influence the review process.

Thank you for your comment. A new sub-section of 'Reflexivity and integrity' is added following the reviewer's suggestions. ***Please see lines 342-367.*** This reflexivity statement is based on the Fleming and Noyes description of "Author reflexivity" in qualitative evidence synthesis. Flemming K, Noyes J. Qualitative Evidence Synthesis: Where Are We at? International Journal of Qualitative Methods. January 2021. doi:10.1177/1609406921993276

Comment:

Discussion
• Nothing to comment on or recommend.

Thank you

Comment:

Figure legends

• Great to see these pictures added here.

Thank you

Comment:

S1 Table- PRISMA-P
• Under support items- I would suggest here selecting the “Yes” answer. Even though you may not have a funder, etc., this information is included in the manuscript/protocol (lines 378-380, as you have noted).

Thank you for your suggestion. Appropriate changes have been made to the PRISMA-P.

Comment:

General Comment
• Overall, well written and informative. All relevant information is provided, and the design and methodology seem appropriate.

Thank you