PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Experiences of living with long COVID and of accessing healthcare services: a qualitative systematic review
AUTHORS	Macpherson, Karen; Cooper, K; Harbour, Jenny; Mahal, Dawn; Miller, Charis; Nairn, Moray

VERSION 1 – REVIEW

REVIEWER	MacDermott, Nathalie King's College London, Women and Child Health
REVIEW RETURNED	04-May-2021

GENERAL COMMENTS	The manuscript is unnecessarily repetitive at times which could be easily addressed. While clearly acknowledged by the authors, this is a very small systematic review with the inclusion of just 5 studies, two of which of questionable quality. This is understandable given the limited literature and conventional research on Post COVID problems/Long Covid. That said it does provide useful insights particularly into the criteria that should be included in the provision of clinics for the management of Long Covid. Given the majority of Long Covid clinics currently provided by the NHS do not meet these criteria, with many of the services being telephone assessment/screening services or therapy led services with no ability for onward referral for further investigation/management by senior clinicians, it would be worth clarifying/further emphasising the reasons given for the importance of these criteria. A repeat systematic review would be warranted in 6-12 months as more research is published on Long Covid and Post COVID problems, particularly with the WHO working to define 'Post COVID-19 Condition' in the next few months.

REVIEWER	Taylor, Anna University of Leeds
REVIEW RETURNED	10-May-2021

GENERAL COMMENTS	This is a timely and well-done review. There have been a couple of other papers (Ladds et al, Clinical Medicine Journal; Taylor et al, Health Expectations) published since the literature search was done but it seems that all relevant papers were included in this review up until Jan 2021 and a good range of databases and repositories were searched. The authors have followed the PRISMA checklist clearly and detailed their

	methods well. I like the mindmap of themes and the themes/subthemes are appropriate. Could the authors have commented on how much data was gathered from each individual study? E.g. Assaf and Davis are surveys, and because of this may have gathered less or different data than Ladds or Kingstone as semi-structured interview studies, or Maxwell as a focus group. It would be good to include a brief commentary on the benefits of the individual methodologies. The strength of this qualitative systematic review lies in its primacy, but I think it should be highlighted more strongly by the authors that it does not really add anything further to the literature and perhaps it was too early to do a systematic review in this fast-moving field. As the authors have commented, further research should be done focusing on a more culturally diverse population and I would be interested to see how the findings of future systematic reviews differ (or not) from this one with a more diverse sample. I do think that the authors have discussed this well. There are a few typos scattered throughout so I would suggest the authors double check before resubmitting this paper.

REVIEWER	Nurek, Martine Imperial College London, Surgery and Cancer
REVIEW RETURNED	11-May-2021

GENERAL COMMENTS	Thank you for the opportunity to review this interesting and important article. It reports the results of a systematic review of qualitative studies exploring patients' experiences of long covid and their perceptions of the healthcare services available to them. Five studies met the authors' inclusion criteria (methodological quality was variable). A thematic analysis and synthesis of findings returned three broad themes: 1) Patients' experiences of long covid are variable, and often inconsistent with public perceptions and official guidance on COVID-19; 2) There are profound emotional consequences to living with long covid, which need to be acknowledged and addressed; 3) Patients report a range of positive and negative experiences of healthcare services, which could be used to improve the design and quality of care moving forward. The article is well-written, clear, and inclusive (i.e., comprehensible to patients, healthcare professionals, and the general public). The research question is precise; the search strategy is comprehensive; the methodological quality of included articles is assessed; coding procedures (data extraction and thematic analysis) are appropriate, and the results are enlightening with clear implications for research and practice. I consider this vital research and I have no major concerns regarding its conduct or reporting. I do have some minor comments and suggestions, which are outlined below. (Note: there is a discrepancy between the page numbers in the manuscript vs. those generated by the proof. I have used the page numbers generated by the proof; i.e. "Page X of 43").

ABSTRACT

1. P3, line 33: change “form” to “from”?

STRENGTHS AND LIMITATIONS OF THIS STUDY

2. P3, lines 54-55 (“This review highlights a range…”): I would argue that these findings could inform not only service delivery/design but also future research (which is sorely needed).

3. P3, line 57 (“Only 5 qualitative studies…”): finish the point. Explain why this is a limitation of the study.

4. P3, lines 58-59 (“Participants in the included studies…”): as above, finish the point.

INTRODUCTION

5. P4, lines 22-24: I support and appreciate the authors’ use of the term “long COVID” and the rationale behind it. The term is very new and therefore there is no consensus on how to write it (long covid, long COVID, Long Covid, etc.) but I suggest that the authors be consistent within the paper (i.e., pick one and stick to it).

METHODS

6. P5, line 36 (“All searches were limited to English language”): do the authors know whether any non-English articles have been published on the topic? If so, how many and in what languages?

7. P6, lines 31-35 (“The original review that this review updates…”): Are further details of this patient involvement (conducted for the original/parent review) available elsewhere? If so, it would be good to provide a reference here, so that readers who would like more information know where to find it.

RESULTS

8. Did the authors make any attempt to measure agreement amongst pairs of reviewers (e.g., using the kappa statistic)? If so, please report the results. If not, please explain why not.

9. P7, lines 9-11 (“In the focus groups…”): slightly confusing. Why do the authors differentiate between focus groups and social media groups? One is a data collection method and one is a recruitment strategy – I don’t see how this is a meaningful distinction? I suggest that the authors report a single median and range for age (overall), as well as the % of white participants (overall) and the % of female participants (overall).

10. P7, lines 30-33 (“People who are active on social media…”): it would be good to substantiate this with some evidence (i.e., insert a reference), if the authors are aware of one.

11. P7-11: themes and subthemes are well-organised, clearly-described and very helpful. Many of the results are substantiated by enlightening and powerful quotes. What is needed, in my view, is reference/s for every single result reported.
E.g. P10, lines 27-31: “Similarly, there was a widespread perception that healthcare professionals doubted patients’

	descriptions of long COVID,[REFS] ignored patient concerns,[REFS] misdiagnosed symptoms,[REFS] or were dismissive of patient experiences.[REFS] This lack of knowledge affected people's feelings around their healthcare experiences.[REFS]" This would give an indication of how many (and which) studies identified each result, which is very helpful for readers (who may wish to follow up specific results). More importantly, it reinforces the validity of the findings, which is necessary given their importance. DISCUSSION 12. P13, lines 45-46 ("there was an over-representation of younger and female, white participants"): I think this deserves some discussion and context. Is there any evidence to suggest that long covid may be more prevalent in these groups? A sentence or two conveying the current state of knowledge (or lack thereof) would help the reader to contextualise this point, I think. The NIHR "Living with COVID19 – Second Review" offers a neat summary, which may be a good place to start (https://evidence.nihr.ac.uk/themedreview/living-with-covid19-second-review/). 13. P14, lines 3-18: I wholly agree with the stated implications for practice and research. TABLES 14. P19-20, Table 1: Four studies give details of the recruitment method/source (e.g., support groups, social media) and one does not (Ladds et al). Similarly, four studies give percentages for demographics (e.g., 76.6% female) and one does not (Ladds et al.) Please bring Ladds et al. in line with the others, for consistency. 15. P21, Table 2: Some of the "unclear" classifications (particularly those relating to recruitment, data collection, and data analysis) could perhaps be clarified by contacting the study authors and asking for clarification. Have the authors attempted this? If not, why not?

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Dr. Nathalie MacDermott, King's College London
Comments to the Author:
The manuscript is unnecessarily repetitive at times which could be easily addressed.
We have reviewed the manuscript and endeavoured to remove repetition. For example within paragraph 2 of the introduction section, p10 line 25, p13 line 4.

While clearly acknowledged by the authors, this is a very small systematic review with the inclusion of just 5 studies, two of which of questionable quality. This is understandable given the limited literature and conventional research on Post COVID problems/Long Covid. That said it does provide useful insights particularly into the criteria that should be included in the provision of clinics for the management of Long Covid. Given the majority of Long Covid clinics currently provided by the NHS do not meet these criteria, with many of the services being telephone assessment/screening services or therapy led services with no ability for onward referral for further investigation/management by senior clinicians, it would be worth clarifying/further emphasising the reasons given for the importance of these criteria.

We feel that this point is covered within our Results and Discussion, but to ensure that it is clear, we have added the following text to the Implications for Practice section. “The varied and fluctuating symptoms and emotional consequences experienced by people with long COVID indicate a need for multi-disciplinary services which provide holistic patient-centred assessment, appropriate management and specialist referral where indicated”.

A repeat systematic review would be warranted in 6-12 months as more research is published on Long Covid and Post COVID problems, particularly with the WHO working to define 'Post COVID-19 Condition' in the next few months.

We agree and have stated this in the fourth line of the Strengths and limitations section. “…will benefit from being updated as further research becomes available”.
The authors are currently involved in an update review as part of the update of the original NICE and SIGN guideline which this work informed.

Reviewer: 2
Dr. Anna Taylor, University of Leeds
Comments to the Author:
This is a timely and well-done review.
Thanks. No changes required

There have been a couple of other papers (Ladds et al, Clinical Medicine Journal; Taylor et al, Health Expectations) published since the literature search was done but it seems that all relevant papers were included in this review up until Jan 2021 and a good range of databases and repositories were searched. The authors have followed the PRISMA checklist clearly and detailed their methods well. I like the mindmap of themes and the themes/subthemes are appropriate.
Thanks. No changes required

Could the authors have commented on how much data was gathered from each individual study? E.g. Assaf and Davis are surveys, and because of this may have gathered less or different data than Ladds or Kingstone as semi-structured interview studies, or Maxwell as a focus group. It would be good to include a brief commentary on the benefits of the individual methodologies.

Table 1 lists the characteristics of the studies including the method used and the sample size. We have added to the Characteristics of included studies section – “The number of patients included in the studies in which information was gathered through surveys were much larger than those using interviews and focus groups as a data collection methods. However, while representing fewer patients, the latter approaches offer the opportunity of collecting more in depth data and for interaction among participants or with the interviewer”.

The strength of this qualitative systematic review lies in its primacy, but I think it should be highlighted more strongly by the authors that it does not really add anything further to the literature and perhaps it was too early to do a systematic review in this fast-moving field. As the authors have commented, further research should be done focusing on a more culturally diverse population and I would be interested to see how the findings of future systematic reviews differ (or not) from this one with a more diverse sample. I do think that the authors have discussed this well.

Thank you for your comment. We agree regarding the primacy and fast-moving pace of covid research. However, we do feel that an early synthesis of the lived experience was a worthwhile endeavour, both in its current form and to inform regular updates. We have added to "strengths and limitations" so that it now reads "The review is limited by the small number of qualitative studies (n=5) that have been published to date, and will benefit from being updated as further research becomes available in this fast-moving field. Nonetheless, it contributes to an early understanding of the lived experience of long COVID and of accessing healthcare services.

There are a few typos scattered throughout so I would suggest the authors double check before resubmitting this paper.
Thank you for noting this oversight - PerfectIT software has been run on the manuscript and all typos should now be corrected.

Reviewer: 3
Dr. Martine Nurek, Imperial College London Comments to the Author:

ABSTRACT

1. P3, line 33: change "form" to "from"?
Amended

STRENGTHS AND LIMITATIONS OF THIS STUDY

2. P3, lines 54-55 ("This review highlights a range…"): I would argue that these findings could inform not only service delivery/design but also future research (which is sorely needed). We have removed this bullet point (see Editor's comments to Author)

3. P3, line 57 ("Only 5 qualitative studies…"): finish the point. Explain why this is a limitation of the study. Thank you for this suggestion. We have revised this bullet point to read "Only five qualitative studies of variable quality were eligible for inclusion in this review, limiting the extent to which conclusions and practice recommendations can be made"

4. P3, lines 58-59 ("Participants in the included studies…"): as above, finish the point. Thank you for this suggestion also, the bullet point now reads: "Participants in the included studies were predominantly younger, female, and users of social media or online support groups, which may also limit generalisability of the review findings"

INTRODUCTION

5. P4, lines 22-24: I support and appreciate the authors' use of the term "long COVID" and the rationale behind it. The term is very new and therefore there is no consensus on how to write it (long covid, long COVID, Long Covid, etc.) but I suggest that the authors be consistent within the paper (i.e., pick one and stick to it).
Thank you for picking up on this inconsistency. We have reviewed the entire manuscript and used long COVID throughout

METHODS

6. P5, line 36 ("All searches were limited to English language"): do the authors know whether any non-English articles have been published on the topic? If so, how many and in what languages?
We do not know as we have not conducted a detailed search in languages other than English, therefore we cannot comment on the number of articles or languages, but it is likely as work is being conducted on long COVID internationally. We have added to the 'Information sources and search strategy' section so it now reads: "All searches were limited to the English language due to a lack of translation services and the need for evidence to be synthesised in a timely manner due to the rapidly evolving nature of long COVID research"

7. P6, lines 31-35 ("The original review that this review updates…"): Are further details of this patient involvement (conducted for the original/parent review) available elsewhere? If so, it would be good to provide a reference here, so that readers who would like more information know where to find it. We have added a line to the Patient and Public Involvement section noting "Further details are provided within the NICE long covid guideline.5"

RESULTS

8. Did the authors make any attempt to measure agreement amongst pairs of reviewers (e.g., using the kappa statistic)? If so, please report the results. If not, please explain why not.
We did not make a formal calculation of agreement but there were very few records which required discussion and only one needed referral to a third reviewer. We have added the following text to the Study Selection section to note this "The two reviewers were in agreement for the majority of the papers and only one study required recourse to the third reviewer."

9. P7, lines 9-11 ("In the focus groups…"): slightly confusing. Why do the authors differentiate between focus groups and social media groups? One is a data collection method and one is a recruitment strategy – I don't see how this is a meaningful distinction? I suggest that the authors report a single median and range for age (overall), as well as the % of white participants (overall) and the % of female participants (overall)
Thank you, we agree this is confusing and have revised this section to provide clearer information on ethnicity, gender and age.

10. P7, lines 30-33 ("People who are active on social media…"): it would be good to substantiate this with some evidence (i.e., insert a reference), if the authors are aware of one.
Agree, this would be helpful, so we have added a reference to this section. Paper cited is: "Blank G, Lutz C. Representativeness of Social Media in Great Britain: Investigating Facebook, LinkedIn, Twitter, Pinterest, Google+, and Instagram. American Behavioural Scientist 2017;61(7) doi: https://doi.org/10.1177/0002764217717559"

11. P7-11: themes and subthemes are well-organised, clearly-described and very helpful. Many of the results are substantiated by enlightening and powerful quotes. What is needed, in my view, is reference/s for every single result reported.

E.g. P10, lines 27-31: “Similarly, there was a widespread perception that healthcare professionals doubted patients’ descriptions of long COVID,[REFS] ignored patient concerns,[REFS] misdiagnosed symptoms,[REFS] or were dismissive of patient experiences.[REFS] This lack of knowledge affected people’s feelings around their healthcare experiences.[REFS]”
This would give an indication of how many (and which) studies identified each result, which is very helpful for readers (who may wish to follow up specific results). More importantly, it reinforces the validity of the findings, which is necessary given their importance.
Thank you for this suggestion to enhance transparency and validity of the findings. We have added citations throughout the findings section.

DISCUSSION

12. P13, lines 45-46 (“there was an over-representation of younger and female, white participants”): I think this deserves some discussion and context. Is there any evidence to suggest that long covid may be more prevalent in these groups? A sentence or two conveying the current state of knowledge (or lack thereof) would help the reader to contextualise this point, I think. The NIHR “Living with COVID19 – Second Review” offers a neat summary, which may be a good place to start (https://evidence.nihr.ac.uk/themedreview/living-with-covid19-second-review/).
We have added reference to the NIHR review in this section, and also drawn attention to a meta-analysis of longitudinal studies, available as a pre-print, which considers risk factors for long covid. “Thompson, Ellen, Williams, Dylan, Walker, Alex et al. (2021) Risk factors for long COVID: analyses of 10 longitudinal studies and electronic health records in the UK.”

13. P14, lines 3-18: I wholly agree with the stated implications for practice and research.
Thank you

TABLES

14. P19-20, Table 1: Four studies give details of the recruitment method/source (e.g., support groups, social media) and one does not (Ladds et al). Similarly, four studies give percentages for demographics (e.g., 76.6% female) and one does not (Ladds et al.) Please bring Ladds et al. in line with the others, for consistency.

Thank you for highlighting this oversight. We have amended Table 1 to include information on recruitment methods for Ladds et al and reported the number of female particiapnts as a %

15. P21, Table 2: Some of the “unclear” classifications (particularly those relating to recruitment, data collection, and data analysis) could perhaps be clarified by contacting the study authors and asking for clarification. Have the authors attempted this? If not, why not?
We agree and ideally would have contacted the authors. However, the original review was undertaken in a short period if time to inform the National Guideline. This update was also undertaken rapidly in order to get evidence into practice in a timely manner in this rapidly moving field. We have added text to the Data Extraction section of the manuscript clarify that we did not contact authors for missing data or information on study methodology.

VERSION 2 – REVIEW

REVIEWER	Nurek, Martine

	Imperial College London, Surgery and Cancer
REVIEW RETURNED	28-Sep-2021

GENERAL COMMENTS

Thanks for the opportunity to review this manuscript. By and large, the authors have given careful consideration to my comments and revised the manuscript accordingly. However, I do have some outstanding questions and concerns (below).

1) [Original comment] Did the authors make any attempt to measure agreement amongst pairs of reviewers (e.g., using the kappa statistic)? If so, please report the results. If not, please explain why not.

[Author response] We did not make a formal calculation of agreement but there were very few records which required discussion and only one needed referral to a third reviewer. We have added the following text to the Study Selection section to note this “The two reviewers were in agreement for the majority of the papers and only one study required recourse to the third reviewer.”

[Reviewer response] Thanks for clarifying this in regards to Study Selection. Was agreement likewise monitored (however informally) in regards to data extraction, quality appraisal and/or data synthesis? If so, please report the results (as you’ve done for Study Selection). If not, please explain why, and consider mentioning this as a limitation of the study.

2) [Original comment] P7-11: themes and subthemes are well-organised, clearly-described and very helpful. Many of the results are substantiated by enlightening and powerful quotes. What is needed, in my view, is reference/s for every single result reported. E.g. P10, lines 27-31: “Similarly, there was a widespread perception that healthcare professionals doubted patients’ descriptions of long COVID,[REFS] ignored patient concerns,[REFS] misdiagnosed symptoms,[REFS] or were dismissive of patient experiences.[REFS] This lack of knowledge affected people’s feelings around their healthcare experiences.[REFS]”
This would give an indication of how many (and which) studies identified each result, which is very helpful for readers (who may wish to follow up specific results). More importantly, it reinforces the validity of the findings, which is necessary given their importance.

[Author response] Thank you for this suggestion to enhance transparency and validity of the findings. We have added citations throughout the findings section.

[Reviewer response] I’m disappointed with the handling of this comment. You’ve added references where I suggested them (“Similarly, there was…their healthcare experiences”), but this paragraph was only intended as an example. You don’t seem to have applied the same principle to the rest of the Results section. Many findings still remain unreferenced, for example:

-“This discordance between expectations and experience seemed to have a direct effect on the mental and emotional state of those experiencing prolonged illness [REFS?], often leading to uncertainty about what to do about their symptoms [REFS?].

	People described needing to adjust their lifestyle, including pacing themselves and setting realistic goals, in order to self- manage their symptoms [REFS?]. A number of patients described attempts at self-care such as taking supplements or trying therapeutic massage [REFS?].” (P8) -“There was a sense of stigma associated with long COVID, with people experiencing a sense of shame and blame (internally generated stigma) [REFS?] and expressing fears that employers and others in the community may stigmatise them for having long COVID (externally generated stigma) [REFS?]. Family members were considered to be affected by long COVID and were seen as also requiring support [REFS?]. One interview participant described the impact her symptoms had on her family and how she felt they did not believe her:” (P9) I maintain that this should be done consistently throughout the Results section. A good rule of thumb is: if a finding is not already backed up with a quote, then add a reference to the relevant article/s. This will improve your manuscript in two ways. First, it will show the reader that every single finding is supported by the data. Second, it will help the reader to follow up on findings of interest.

VERSION 2 – AUTHOR RESPONSE

Reviewer point 1
We have added to the Data Extraction paragraph the text ' The reviewers then compared templates and resolved any discrepancies by discussion.'
We feel that this point is covered within the Quality Appraisal paragraph by the text 'Discrepancies, were discussed and referred to a third reviewer if required'. However, for clarity, we have noted within this sentence that these 'were minimal'.
We have added to the end of the Data synthesis paragraph, the text 'and any disagreements resolved by discussion within the team.'

We have text to the limitations section noting that we didn't calculate formally agreement between reviewers but that we felt the impact of this was small.

Reviewer point 2
We have added references now for every point made and made several very small wording changes to accommodate the placing of the references.

VERSION 3 – REVIEW

REVIEWER	Nurek, Martine Imperial College London, Surgery and Cancer
REVIEW RETURNED	22-Nov-2021

GENERAL COMMENTS	Thanks to the authors for addressing my concerns. I have no further comments and support the publication of this important work.