

## 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

<b>TITLE (PROVISIONAL)</b>	Lung Cancer Survivors' Views on Telerehabilitation Following Curative Intent Therapy: A Formative Qualitative Study
<b>AUTHORS</b>	Ha, Duc; Nunnery, Mary; Klocko, Robert; Haverhals, Leah; Bekelman, David; New, Melissa; Randhawa, Simran; Stevens-Lapsley, Jennifer; Studts, Jamie; Prochazka, Allan; Keith, Robert

## VERSION 1 – REVIEW

<b>REVIEWER</b>	Golden, Sara Portland VA Medical Center
<b>REVIEW RETURNED</b>	30-Mar-2023

<b>GENERAL COMMENTS</b>	<p>Thank you for the opportunity to review this important manuscript. Exercise medicine and rehabilitation has been shown to be an important driver in improved QOL for many types of cancer survivors. Lung cancer survivors, in particular, may experience increased dyspnea for many months that would benefit for rehabilitation services. The authors should be commended for looking at attitudes, knowledge, and preferences towards telerehabilitation and their health goals. The use of SCT is appropriate and I appreciate the use and inclusion of the debrief guide.</p> <p>Abstract: In the Strengths and Limitations section it mentions that almost all participants had experience with telemedicine, but I'm unclear from the abstract if their experience was as part of their rehabilitation after the lung cancer treatments or from something else. I think it is important to know if they all experienced telerehabilitation, including specific exercise training regimens, or were offered these.</p> <p>Abstract and text: I appreciate the use of SCT and see the thread through the results in self-efficacy, and observational learning. I would, however, expect something about the participants' environment or background, for instance, to inform some of the findings since reciprocity is such a large part of the theory. If that was not examined, please mention.</p> <p>Introduction: The second sentence beginning, "The number of lung cancer survivors eligible..." is rather long. I think the last part beginning, "... to improve lung cancer survival rates..." is unnecessary since the first part of the sentence already makes that clear.</p> <p>Minor point throughout: VA recommends that "Veteran" be capitalized. (<a href="https://design.va.gov/content-style-guide/capitalization">https://design.va.gov/content-style-guide/capitalization</a>)</p> <p>Methods: Why did you estimate 20 participants would be needed? Were all three researchers conducting the interviews (lung cancer) physicians? It would be helpful to know their backgrounds.</p>
-------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>Results: Other studies have shown that even rural-residing patients are often willing to drive further to see someone in-person for important health care needs vs using telemedicine. Did the participants discuss trade-offs at all (e.g., driving further for someone they trust or convenience is better given distrust of large medical centers). Like in the abstract, I want to know more about their experience with telemedicine and with rehab- it sounds like none actually participated in a rehab program ever or for their lung cancer, but I think it would be helpful to state that explicitly.</p> <p>2) Why did the interviews ask directly about the term “rehab” and the context of the term? I’m curious is this is from the literature.</p> <p>4a) I think this is common where patients are only generally aware of what a health goal entails. I think it has to do with lack of knowledge and discussion about what is in the future; anticipatory guidance.</p> <p>Discussion: The results point to some seeming distress or worry over not having a definitive status while waiting for surveillance scans. These fears and psychological disorders things which could potentially be alleviated by things like rehab, as mentioned, but can the authors comment on how they are addressed now and how a multi-targeted rehabilitation strategy might be better?</p> <p>Table 1. How did you define current vs former smoking?</p>
--	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>REVIEWER</b>	Betancourt-Peña, Johnnatan Escuela Nacional del Deporte
<b>REVIEW RETURNED</b>	01-Apr-2023

<b>GENERAL COMMENTS</b>	<p>It is a very relevant study using a successful theoretical model to address the research objectives. In the introduction I recommend adding that telerehabilitation strategies are used very frequently to improve adherence to exercise-based programs and maintain intervention goals, which for this population it is necessary to describe previously since the context has its own particularities.</p> <p>(<a href="https://www.sciencedirect.com/science/article/pii/B978032382486600006X">https://www.sciencedirect.com/science/article/pii/B978032382486600006X</a>)</p> <p>It could be interesting to identify how the telerehabilitation program is structured from the evaluation component and patient intervention. I recommend adjusting Table 1 mentioning frequencies and percentages for each variable. It is interesting how the patients linked to the study had limited knowledge about the training to address specific symptoms, despite participating in the program; This situation has been previously described in a population that is mostly men, who are more involved in exercise programs than women. This participation is due to the fact that they have a better support network as a family member or spouse, which makes it easier to stay in telerehabilitation. Finally, it is necessary to add in the limitations that women could provide more information related to behavioral aspects to increase the benefits of telerehabilitation, such as receiving more educational sessions and adherence to pharmacological treatment.</p>
-------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### VERSION 1 – AUTHOR RESPONSE

#### Reviewer 1 Comments

Dr. Sara Golden, Portland VA Medical Center

General Comment: Thank you for the opportunity to review this important manuscript. Exercise medicine and rehabilitation has been shown to be an important driver in improved QOL for many types of cancer survivors. Lung cancer survivors, in particular, may experience increased dyspnea for

many months that would benefit for rehabilitation services. The authors should be commended for looking at attitudes, knowledge, and preferences towards telerehabilitation and their health goals. The use of SCT is appropriate and I appreciate the use and inclusion of the debrief guide.

General Response: Thank you for taking the time to review our manuscript and providing these constructive and encouraging comments on our manuscript and work.

Comment 1: Abstract: In the Strengths and Limitations section it mentions that almost all participants had experience with telemedicine, but I'm unclear from the abstract if their experience was as part of their rehabilitation after the lung cancer treatments or from something else. I think it is important to know if they all experienced telerehabilitation, including specific exercise training regimens, or were offered these.

Response 1: Thank you for raising this important point. None of the patients in our study participated in telerehabilitation or rehabilitation for lung cancer, as such a program is not available locally. We revised our abstract to mention that no patient participated in a telerehabilitation or rehabilitation program for lung cancer.

Comment 2: Abstract and text: I appreciate the use of SCT and see the thread through the results in self-efficacy, and observational learning. I would, however, expect something about the participants' environment or background, for instance, to inform some of the findings since reciprocity is such a large part of the theory. If that was not examined, please mention.

Response 2: Thank you for pointing out these important limitations. While we inquired about barriers and facilitators, we did not ask participants about specific socio-environmental factors which may also influence engagement in telerehabilitation and exercise. We revised our abstract and text (limitations) to mention these points.

Comment 3: Introduction: The second sentence beginning, "The number of lung cancer survivors eligible..." is rather long. I think the last part beginning, "... to improve lung cancer survival rates..." is unnecessary since the first part of the sentence already makes that clear.

Response 3: Thank you for this editorial suggestion. We removed the last part of the sentence to shorten it.

Comment 4: Minor point throughout: VA recommends that "Veteran" be capitalized.

(<https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdesign.va.gov%2Fcontent-style-guide%2Fcapitalization&data=05%7C01%7Cduc.ha%40cuanschultz.edu%7C7deeed34310547377d3108db4a8574e6%7C563337caa517421aaae01aa5b414fd7f%7C0%7C0%7C638185709276247375%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6IjEhaWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=rwny7vTQLSSTZahbq06ww5i%2BQKvPrsXtl83flzk7VQ%3D&reserved=0>)

Response 4: Thank you for this editorial comment and shared link. We revised to capitalize "Veteran" throughout the manuscript.

Comment 5: Methods: Why did you estimate 20 participants would be needed?

Response 5: We followed general guidance in qualitative research, with a sample size range 20-30 interviews as suggested by Creswell (1998), also supported by a recent systematic analysis of 214 published qualitative studies, in which the authors identified a median range of interviews of 15-31 (Vasileiou et al, BMC Med Res Method 2018). We revised our Sample Size description to better justify our sample size.

Comment 6: Were all three researchers conducting the interviews (lung cancer) physicians? It would be helpful to know their backgrounds.

Response 6: DMH is a pulmonologist; RPK and MAN are health science specialists. We revised the description to mention these characteristics. Thank you.

Comment 7: Results: Other studies have shown that even rural-residing patients are often willing to drive further to see someone in-person for important health care needs vs using telemedicine. Did the

participants discuss trade-offs at all (e.g., driving further for someone they trust or convenience is better given distrust of large medical centers).

Response 7: We did not specifically inquire participants about trade-offs. Our findings on participants' viewing telemedicine as "convenient" but "impersonal" may reveal additional insights if probed/explored further. We revised our Discussion to mention this limitation. Thank you.

Comment 8: Like in the abstract, I want to know more about their experience with telemedicine and with rehab- it sounds like none actually participated in a rehab program ever or for their lung cancer, but I think it would be helpful to state that explicitly.

Response 8: We have revised the Results to explicitly mention that no patients participated in a telerehabilitation or rehabilitation program for lung cancer. Thank you for this clarifying comment.

Comment 9: Why did the interviews ask directly about the term "rehab" and the context of the term? I'm curious is this is from the literature.

Response 9: Thank you for this important question. Concerns about the terms "rehab" or "rehabilitation" have been raised as potentially stigmatizing and thereby prevent patients from being willing to engage in rehabilitation services. These concerns have been raised at ATS/Pulm Rehab Assembly meetings. The source for these concerns (to the best of our knowledge) seems to be from a description of pulmonary rehab experience in the UK in the early 2000's, in which patients with COPD voiced concerns about the term "rehab" due to TV personalities in the 1990s frequently reported to be in rehab for drug/substance use disorders (Smith, ERJ 2009). We explored Veteran lung cancer survivors' views on these terms, as we anticipate that a discussion about potential benefits of rehab/rehabilitation would need to use acceptable terms to introduce rehabilitation and related concepts.

Comment 10: 4a) I think this is common where patients are only generally aware of what a health goal entails. I think it has to do with lack of knowledge and discussion about what is in the future; anticipatory guidance.

Response 10: Thank you for mentioning this point. We considered mentioning anticipatory guidance as a potential solution to facilitate health goals formulation. However, to the best of our knowledge, anticipatory guidance interventions have not been demonstrated to have benefits on formulating health goals in lung cancer survivors. However, it is plausible that feelings of uncertainty about the future may prevent patients from having goals or plans – we revised our discussion accordingly.

Comment 11: Discussion: The results point to some seeming distress or worry over not having a definitive status while waiting for surveillance scans. These fears and psychological disorders things which could potentially be alleviated by things like rehab, as mentioned, but can the authors comment on how they are addressed now and how a multi-targeted rehabilitation strategy might be better?

Response 11: Thank you for these questions. Locally, there are no concerted efforts to address fear of lung cancer recurrence following curative intent therapy. Cognitive behavioral therapies and more modern psychological interventions such as Acceptance and Commitment Therapy (ACT) have been used to address fear of cancer recurrence. For instance, ACT can help by increasing awareness of emotions/thoughts about cancer, reduce the negative impact of distressing thoughts, facilitate identification of life values or goals, and establish a commitment engage in meaningful life activities. These approaches can be incorporated in a rehabilitation program to meet physical and psychological needs following lung cancer treatment. We expanded our Discussion to mention these points.

Comment 12: Table 1. How did you define current vs former smoking?

Response 12: We abstracted information on smoking status from the electronic medical records – they are defined clinically by the treating clinician. We added a footnote to Table 1 to clarify. Thank you.

Reviewer 2:

Dr. Johnnatan Betancourt-Peña, Escuela Nacional del Deporte, Universidad de Vigo

Comment 1: It is a very relevant study using a successful theoretical model to address the research objectives.

Response 1: Thank you for taking the time to review our manuscript and providing these encouraging and constructive comments.

Comment 2: In the introduction I recommend adding that telerehabilitation strategies are used very frequently to improve adherence to exercise-based programs and maintain intervention goals, which for this population it is necessary to describe previously since the context has its own particularities. (<https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.sciencedirect.com%2Fscience%2Farticle%2Fpii%2FB978032382486600006X&data=05%7C01%7Cduc.ha%40cuanschut.e du%7C7deeed34310547377d3108db4a8574e6%7C563337caa517421aaae01aa5b414fd7f%7C0%7C0%7C638185709276247375%7CUnknown%7CTWFpbGZsb3d8eyJWljojMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ikl1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=79%2F8MXpfherpKJyXxjMCtm0xb3rnFXbOqfHzhXKqbKI%3D&reserved=0>)

Response 2: Thank you for this clarifying point and reference. We revised our Introduction to mention that telerehabilitation has been used to improve adherence and maintain intervention goals in cancer care and included this reference.

Comment 3: It could be interesting to identify how the telerehabilitation program is structured from the evaluation component and patient intervention. I recommend adjusting Table 1 mentioning frequencies and percentages for each variable. It is interesting how the patients linked to the study had limited knowledge about the training to address specific symptoms, despite participating in the program; This situation has been previously described in a population that is mostly men, who are more involved in exercise programs than women. This participation is due to the fact that they have a better support network as a family member or spouse, which makes it easier to stay in telerehabilitation.

Response 3: These are important comments on the factors associated with patient participation and adherence to rehabilitation interventions. As our study was done to guide the design of a telerehabilitation program for lung cancer survivors following curative intent therapy, patients in our study have not yet completed a telerehabilitation or rehabilitation program for lung cancer. We apologize for the confusion. As also raised by Reviewer 1, we revised our Abstract and Results, to more explicitly mention these points. Thank you.

Comment 4: Finally, it is necessary to add in the limitations that women could provide more information related to behavioral aspects to increase the benefits of telerehabilitation, such as receiving more educational sessions and adherence to pharmacological treatment.

Response 4: Thank you for this important point. We revised our limitation discussion to mention that understanding women's perspectives may provide additional perspectives on rehabilitation/telerehabilitation that may also be important in program design.

End of Response to Editor and Reviewer Comments. Thank you.

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Betancourt-Peña, Johnnatan 17-May-2023
<b>REVIEW RETURNED</b>	All the corrections requested by the authors to the manuscript have been made. Some pages have active change control. It is approved for publication.

#### VERSION 2 – AUTHOR RESPONSE