Author’s response to reviews

Title: Therapist Perceptions of a Rehabilitation Research Study in the Intensive Care Unit: A Trinational Survey Assessing Barriers and Facilitators to Implementing the CYCLE Pilot Randomized Clinical Trial.

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Author’s response to reviews:

Dear Drs. Lancaster and Thabane,

Thank you for sharing the reviewers’ feedback, we are delighted about your interest in our paper. We refined our report based on reviewers’ feedback. Please find reviewers’ comments and our corresponding responses below. Each reviewer’s comment is preceded by a number (e.g., R1C1) and response (R1A1).

Reviewer 1:

General comments:

R1C1: thank you very much for the opportunity to review the submitted manuscript. The authors conducted a survey within therapists to research their perceptions of participating in implementing new rehab devices.

The reviewer appreciates this work and has got some minor and serious concerns.

R1A1: Thank you for your supportive comments, thoughtful review, and opportunity to further clarify and improve our work.
SERIOUS CONCERNS

R1C2: P5, L8 etc.: the question is "participating in clinical research", but what means "participation" for front line staff? Does it mean developing the basic idea, or designing a statistical analysis plan, or recruiting patients or delivering the intervention? Does it include participation in data documentation, extraction, analysis, does it mean to be co-author later on? Or is it just usual work, but this time in the context of a study and they know it? Where is the difference? The introduction is well written, but I do not understand, what "participation" can mean for participants. Please add a more specific description in one or two sentences (such as "role in CYCLE", table 1). Please revise.

R2A2: Thank you for this feedback. The reviewer requests clarification of our research question. We revised our research question to reflect the role of the therapists within the trial as follows (track changes page 6): “What are CYCLE ICU therapists’ perceptions regarding conduct of clinical research, including barriers and facilitators to conducting early in-bed cycling with MV patients in the ICU and outcome measures?”. We also added the following statement to outline therapist roles in implementing CYCLE (track changes page 6): Therapist roles in implementing CYCLE included conduct of in-bed cycling with critically ill MV patients in the ICU, administration of physical function outcome measures, and data collection during cycling sessions and outcomes assessments.

MINOR CONCERNS

R1C3: Abstract: according to the title, this was an trinational survey, but only Canada is mentioned in the abstract. Canada may be the best country in the world, but please add the other countries, too.

R1A3: Thank you for your comment; we revised the abstract to include the numbers for all 3 countries. Please see track changes as follows (page 3): Respondents were from Canada (67%), United States (21%), and Australia (11%).

R1C4: P5, L11: please check, if reference 7 is appropriate. Bronwen published a lot, and a different reference may be more appropriate.
R1A4: Thank you for this detailed review. The reviewer notes that the original reference (Connolly BA, Jones GD, Curtis AA, et al. Clinical predictive value of manual muscle strength testing during critical illness: an observational cohort study. Crit Care 2013;17(5):R229 doi: 10.1186/cc13052) described the conduct of an outcome measure, rather than a rehabilitation intervention. We modified the reference to the following: Koo KK, Choong K, Cook DJ, et al. Early mobilization of critically ill adults: a survey of knowledge, perceptions and practices of Canadian physicians and physiotherapists. CMAJ open 2016;4(3):E448-E54. This study highlights important barriers to the implementation of rehabilitation interventions with critically ill patients in the ICU.

R1C5: P5, L12: the used references 9 & 10 were not point prevalence studies. Please, revise the sentence or the references.

R1A5: Thank you for highlighting this oversight. The reviewer is correct that these studies are not point prevalence studies, but rather observational studies with the aim of characterizing and quantifying physical rehabilitation with mechanically ventilated patients in the ICU.

We modified the following text (track changes page 5): For example, observational studies reported rehabilitation with mechanically ventilated (MV) ICU patients was uncommon [9, 10].

R1C6: P5, L13: usually, the abbreviation RCT stands for "randomized controlled trial", not "clinical". Please revise.

R1A6: Please see track changes on page 5 for the following modified text: In a randomized controlled trial (RCT) of intensive versus routine physiotherapy in the ICU…

R1C7: P5, L20: CYCLE is an abbreviation for …? Please use full wording at first appearance.

R1A7: Thank you for identifying this missing information. Please see the following revised text (track changes page 5): CYCLE (Critical Care Cycling to Improve Lower Extremity Strength) is a multiphase, multidisciplinary, international study evaluating the effectiveness of early in-bed cycling to improve functional outcomes for MV patients in ICU [18].

R1C8: P6, L8: please, report full wording first.

R1A8: Please see track changes on page 6 for the following revision: The Capability-Opportunity-Motivation-Behaviour system (COM-B) acknowledges the necessary interaction of capability, opportunity, and motivation attributes for behaviour to occur [19].

R1C9: P6, L18: "focus groups with therapists experienced with in-bed cycling" were not reported in reference 25. Please revise.
Thanks for the opportunity to clarify further. The therapists who participated in the focus groups had experience with in-bed cycling from the TryCYCLE study. However, we recognize this was not explicit. Please see the following revision to clarify (also see track changes pages 6-7): We reviewed a process evaluation of complex rehabilitation intervention implementation [24] and conducted focus groups with therapists experienced with in-bed cycling from TryCYCLE (the safety and feasibility phase of CYCLE [25]) to identify items for attitudes towards research, conduct of cycling, and outcome measures.

I do not find the full wording for the abbreviation "OM". Please revise.

Thank you for noting this. We included the full wording on page 6 with the research question, however we acknowledge this is not a common abbreviation. Therefore, we eliminated this abbreviation and spelled out ‘outcome measure’ in full throughout the manuscript. Please see track changes throughout the text.

just for my personal interest: the survey took nearly 30 minutes, and 45 persons completed the survey, leading to 22.5 working hours = 3 working days. Did participants answer the survey during their working or free time?

Thanks for your interest and your question. Unfortunately, we do not have data regarding when therapists completed the survey or if it was during their working hours, break times while at work (e.g., lunch time), or free time.

the analysis plan is very detailed and a little bit wordy for experienced readers, but a perfect description for beginners. Well done. Just one aspect: alpha was 0.05 in all analysis except for the Bonferroni correction.

Thanks for your positive feedback regarding our analysis plan and noting this clarification for our alpha. Please see the following revision (track changes page 9): Alpha for all analyses was 0.05 or 0.017 if Bonferroni corrections were used.
	his sentence is hard to read, please add the numbers to the terms (same to p11, L7)

Thank you for highlighting this. For clarity and ease of reading, we modified the text for each of the 3 sections on pages 10 and 11. Please see the following revisions (please also see track changes):
Rehabilitation Practice and Research (page 10): The median scores for Capability, Opportunity, and Motivation were: Capability: 96% (27/28; (89%,96%)), Opportunity: 84% (59/70; (81%,93%)), and Motivation: 79% (33/42; (71%,88%)) (Figure 2A).

Cycling (page 10): The median scores for Capability, Opportunity, and Motivation were: Capability: 74% (26/35; (66%,83%)), Opportunity: 81% (29/35; (73%,91%)), and Motivation: 77% (65/84; (64%,82%)) (Figure 2B).

Outcome measures (page 11): The median scores for Capability, Opportunity, and Motivation were: Capability: 82% (40/49; (73%,88%)). Opportunity: 80% (28/35; (71%,86%)), and Motivation: 76% (53/70; (66%,89%)) (Figure 2C).

R1C14: P13, L22: I do not understand the last two sentences: the topic of the paragraph is the conflict of PTs, but the last two sentences do not discuss this conflict.

R1A14: The reviewer raises an important point that requires further explanation. In this paragraph, we wanted to explore potential reasons for therapists’ conflicted feelings between attending to study patients and providing ‘equitable service’ to other patients on their caseload. We believe further information about how therapists allocate their time and the types of interventions therapists believe are important for their patients is needed to adequately address this.

Here is the paragraph from the original submission: While our respondents enjoyed participating in CYCLE, they also expressed concerns about providing equitable service to all patients on their caseload. This finding confirms similar concerns from 2 other acute care rehabilitation studies [24, 29]. In one study of a balance intervention for patients with MS, PTs perceived pressure to prioritize study patients over other patients, which led to negative feelings [29]. Another study of early mobility for patients post-stroke reported PTs felt conflicted due to their desire to provide equitable service to all patients [24]. These findings raise important questions about rehabilitation service provision, especially in this challenging era of higher demand with fewer resources [30]. It is important to examine the frequency, types, and duration of rehabilitation services provided to critically ill patients [31]. Unfortunately, few studies detailed the types of routine rehabilitation interventions received by critically ill patients [32].
We modified the text with the following revision (track changes page 14): While our respondents enjoyed participating in CYCLE, they also expressed concerns about providing equitable service to all patients on their caseload. This finding confirms similar concerns from 2 other acute care rehabilitation studies [24, 29]. In one study of a balance intervention for patients with MS, PTs reported negative feelings because of the prioritization of time to conduct study-related procedures over care for other patients on their caseload. They also perceived tension between themselves and their supervisors and colleagues [29]. In another study of early mobility for patients post-stroke, PTs felt conflicted about the time required for the research intervention due to their desire to provide equitable service to all patients [24]. Further information about how therapists allocate their time and the types of interventions therapists believe are important for their patients are needed. In addition, future studies involving frontline therapists in research protocols could consider an integrated knowledge translation approach to engage PTs in study design phases, and develop active strategies for caseload management with participating sites.

R1C15: P14, L13:
R1A15: The reviewer inadvertently excluded the comment for this section.

R1C16: P22, Ref 30 is incomplete
R1A16: Thank you for identifying this oversight. With the revisions relating to the above comment 14, this reference is no longer applicable and has been removed.

R1C17: Thank you!
R1A17: You’re welcome.

Reviewer 2:
General comments
R2C1: I agree with the authors that limited information is available in the literature about the perceptions of ICU therapists to engage in clinical research.
R2A1: Thank you for your support of our work.
R2C2: For the study, the authors developed 115 itemed electronic survey using knowledge translation models, which are the Capability-Opportunity-Motivation-Behaviour and The Theoretical Framework. Survey development and item generation was stated in detail. The authors reached forty-five respondents. Motivation and the time were interpreted to be the important barriers to engage research from the perspective of ICU therapists. Tables, figures, and limitations very well described.

R2A2: Thank you for your positive feedback on our work.

R2C3: My unique suggestion for the paper would be more comprehensive explanation of the possible solutions to overcome the barriers to enable the research engagement of the ICU therapists. This can be stated in the page 17, after line 3. I believe such kind of statement would be guiding for the future research, since there is limited evidence on this aspect.

R2A3: Thank you for this suggestion. Please see the following text added on page 17 in the “implications” section: Engaging frontline therapists represents an important opportunity to optimize implementation of research interventions. Different stakeholders can facilitate engagement. For example, researchers could engage therapists at participating centers in the study design phase or at protocol implementation to identify and minimize barriers. Therapists involved in research could consider how to support each other during the study (e.g., providing caseload support), and hospital leaders and management could consider their roles, including providing dedicated time for their staff to take part in research and encouraging interdisciplinary teamwork to implement protocols. In Table 3, we suggest specific ways to facilitate engagement in complex rehabilitation research interventions in ICU.

R2C4: Overall comment: Acceptable

This study seemed to me a hard work and I appreciate the idea of the authors about this topic. The manuscript was very well written, good enough to convey the scientific meaning adequately. The data was supported with the supplementary files in detail. I think the manuscript is acceptable for publication.

R2A4: Thank you very much for your thoughtful review of our manuscript. We are grateful for the opportunity to clarify our manuscript and improve our work.

Thank you for the opportunity to address these helpful comments and to resubmit our work. We look forward to a favourable response regarding our revised manuscript.

Kind regards,

Julie Reid, MSc PT, PhD Candidate
Corresponding Author