Journal of Acute Care Occupational Therapy

Volume 7 Issue 2 Original Research

Assessment Tool for Post-Intensive Care Syndrome: A Modified Delphi Process

Authors

Aubrey Riley, OTR/L, CSRS

Tom Cappaert, PhD, ATC, CSCS

Rebecca Majszak, MS, OTR/L, CBIS

Karen Vietz, PhD, CNS, RN

Author Contact Information

Aubrey Riley

aubrey.riley@rm.edu

Recommended Citation

Riley, A.L., Cappaert, T., Majszak, R., & Vietz, K. (2025). Assessment tool for Post-Intensive Care Syndrome: A modified Delphi process. *Journal of Acute Care Occupational Therapy, 7*(2), 1-36.https://doi.org/10.64517/BIEW2625

Abstract

Background: Post-Intensive Care Syndrome (PICS) describes new or worsening impairments in physical, cognitive, or mental health status that occur after critical illness and persist beyond hospitalization. There is no existing holistic assessment tool that detects PICS symptoms in an inpatient setting.

Methodology: The purpose of the study is to modify a current assessment tool, the *Healthy Aging Brain Care Monitor Self-Report Version (HABC-M SR)*, developed to detect PICS symptoms, using a modified Delphi process.The 20-30 expert panelists, consisting of five inpatient healthcare disciplines, completed three rounds of Qualtrics email surveys. The surveys consisted of lists of potential items for each subscale—physical/functional, psychological, and cognitive.

Results: The 20-30 expert panelists, consisting of five inpatient healthcare disciplines, completed three rounds of Qualtrics email surveys. Expert panelists used a five-point Likert scale to reduce each subscale to 10-15 items. Items that scored a mean of 3.5 or higher moved on to the next round. The panel achieved a 75% consensus after two rounds.

Discussion and Conclusion: Limitations include a decreased second round response rate, an expert panel with limited heterogeneity, and limited panelist input due to a lack of provided open-ended text boxes for suggestions. Occupational therapists could utilize the Modified HABC-M SR to identify PICS symptoms, provide objective data to show progress, strengthen clinician-patient communication, and help identify barriers to improve long-term health outcomes. The Delphi process successfully modified the HABC-M SR to have pertinent items for an inpatient setting in each subscale.

Keywords: delirium, Delphi process, interdisciplinary team, post-intensive care syndrome

Introduction and Background

Advances in critical care knowledge and technology have led to a steady decline in mortality and significant improvements in intensive care unit (ICU) survival rates (Inoue et al., 2019). Unfortunately, surviving an ICU stay comes with a high personal and financial cost. Intensive care unit survivors require a higher intensity of care, have longer length of stays (LOS), face substantial morbidity with poorer quality of life, have high mortality rates and multi-organ impact, and use a significant amount of healthcare resources with poor long-term functional outcomes (Berger & Braude, 2021).

Intensive care unit survivors frequently experience physical, psychological, and cognitive symptoms during and after critical illness, collectively termed post-intensive care syndrome (PICS) (Needham et al., 2012; Voiriot et al., 2022). The term post-intensive care syndrome was developed to raise awareness of critical illness impairments among clinicians, patients, families, and the public, increase screening for specific impairments after critical illness, and facilitate further research into ICU-specific comorbidities (Hiser et al., 2023; Voiriot et al., 2022). Post-intensive care syndrome is not a medical diagnosis but a recognized concept for improving education and awareness of post-ICU physical, psychological, and cognitive impairments (Hiser et al., 2023).

Physical, psychological, and cognitive symptoms from PICS exist months to years after hospital discharge (Rawal et al., 2017). Up to 75% of ICU survivors experience delirium after emergency surgery or high-risk surgeries, and it can persist for several months after hospital discharge (Ramnarain et al., 2023). Additional reported challenges that ICU survivors with PICS experience are difficulties completing activities of daily living (ADLs) and instrumental activities of daily living (IADLs), reduced quality of life, and difficulty returning to work or social participation (Ohtake et al., 2018). Patients with delirium, a brain dysfunction syndrome frequently observed in the ICU and associated with worse health outcomes, often report issues with completing activities of daily living (ADLs) and depressive and post-traumatic stress disorder (PTSD) symptoms (Kotfis et al., 2022; Ramnarain et al., 2023; Sakusic et al., 2018). These unique challenges may lead to poor long-term health outcomes and increased mortality risk (Held & Moss, 2019; Inoue et al., 2019).

Importance of Early Rehabilitation

Early rehabilitation in an intensive care unit effectively improves long-term health outcomes, increases functional independence, and decreases ICU length of stay (Costigan et al., 2019; Higgins et al., 2019; Schweikert et al., 2009). Occupational therapy practitioners are essential to the intensive care unit's early rehabilitation team by providing early engagement in activities of daily living to improve survivorship quality for conditions such as delirium, neuromuscular weakness, and post-intensive care syndrome (American Occupational Therapy Association, 2023). Occupational therapy services involving early mobility and cognitive therapy are safe and feasible with ICU survivors. The researched ICU survivors had improved functional outcomes, shorter instances of delirium, and more ventilator-free days (Weinrich et al., 2017).

Detecting Post Intensive Care Syndrome

Several research teams have created outcome measure sets to detect PICS symptoms (Spies et al., 2021; Flaws et al., 2022; Needham et al., 2017). Spies et al. (2021) created a two-step outcome measure instrument that initially assesses mental health, cognition, health-related quality of life, and physical function. If the participants had new or worsened symptoms after ICU discharge, a healthcare professional would administer the second set of instruments to assess the domains more thoroughly. Flaws et al. (2022) completed a prospective, multi-site observational study to create a potential protocol using patient-reported outcomes and clinical data from 300 participants in three ICUs to understand PICS better and measure recovery. Flaws et al. (2024) administered the outcome measure set at six months post-ICU discharge using self-report tools for physical function, depression, PTSD, cognitive function, and anxiety. The outcome measure set consists of six tools and was created for use six weeks and six months post-ICU discharge (Flaws et al., 2024).

Needham et al. (2017) completed a three-round Delphi consensus process to identify a core outcome set for survivors of acute respiratory failure for use after hospital discharge. The eight core outcomes included physical function, mental health, pulmonary function, pain, muscle and nerve function, cognition, and satisfaction with life or personal enjoyment. The panel was not able to come to a consensus for the cognitive outcome and the outcome measure set was created to evaluate symptoms after hospital discharge and not in an inpatient setting. Nakanishi et al. (2023) completed a scoping review and identified 107 instruments that identified PICS symptoms. A Modified Delphi panel reduced it to 20 instrument recommendations. Multiple instruments would need to be used to assess physical, cognitive, mental health, activities of daily living, quality of life, sleep, and pain in ICU survivors. While thorough and capturing of many aspects of PICS, the outcome measure sets were created for use in an outpatient setting and many outcome measures would need to be completed to cover all aspects of PICS, which is not feasible in an acute care inpatient setting.

Holistic Assessment Tools Related to Post Intensive Syndrome

Currently, five existing assessment tools assess aspects of post-intensive care syndrome (Puthucheary et al., 2022; Malmgren et al., 2021; Jeong & Kang, 2019; Bergbom et al., 2018; Wang et al., 2019). The Post-ICU Presentation Screen (PICUPS) was created to identify a need for rehabilitation using a checklist. It is not intended to be used as a numerical scale to quantify a severity level or provide specifics on symptoms to target clinical and rehabilitative services (Puthucheary et al., 2022). Malmgren et al. (2021) created the Provisional Questionnaire for Long-Term Related Quality of Life and Burden of Disease After Intensive Care, which comprises 113 questions and was developed for use after hospital discharge (Malmgren et al., 2021). The length of the assessment is not feasible or designed for use in an inpatient setting. Jeong and Kang (2019) created the Post-Intensive Care Syndrome Questionnaire to measure PICS symptoms in Korean outpatient settings. The measure focuses on physical frailty rather than physical or functional impairments and has items that do not translate well into English. The Recovery After Intensive Care Questionnaire (RAIN) was developed and validated for eight ICU patients to identify holistic post-ICU needs during recovery after hospital discharge (Bergbom et al., 2018). The RAIN emphases the existential aspects of critical illness recovery with a brief focus on physical and mental strength.

The Healthy Aging Brain Care Monitor Self-Report Version (HABC-M SR) is the most promising assessment tool that provides a single, validated clinical tool for ICU survivors. The HABC-M SR has been validated for use in an outpatient setting (Wang et al., 2019). The HABC-M SR has good to excellent internal consistency (Cronbach α 0.83-0.92) and a moderate interscale correlation between all the subscales ($r = 0.610\text{-}0.703$). For construct validity, the HABC-M SR has moderate correlations between the psychological subscale and the previously validated assessment tools for psychological impairments ($r = 0.73$, $r = 0.74$, and $r = 0.68$). The HABC-M SR consists of three categories of questions that target physical and functional, psychological, and cognitive impairments that detect PICS symptoms well. However, the questions are more pertinent for use in an outpatient setting (Wang et al., 2019).

Description of the Problem

There is limited research regarding screening for post-ICU impairments to determine the need for further medical intervention and rehabilitation. Healthcare practitioners use numerous outcome measures to detect physical, psychological, or cognitive symptoms, but there is scarce research on assessment tools that detect all PICS symptoms. While there is currently a shift in ICU care from the outcome of survival to quality of life, opportunity exists to improve critical care research focused on long-term health, function, and quality of life (Ely, 2021). Despite the increasing number of critical illness survivors and residual poor long-term health-related outcomes, there is is a gap in the existing assessment tools that holistically assess all domains of PICS in an inpatient acute care setting.

Methodology

Researchers aimed to address the gap in outcome tools for identification and progression of PICS for inpatient populations. We employed a modified Delphi process to modify a holistic assessment tool, the *Healthy Aging Brain Care Monitor Self-Report*

Version (HABC-M SR), which was valid for outpatient context. The modified tool will provide awareness and identification of critical illness survivors' impairments during early rehabilitation and recovery stages within acute care.

Researchers received multi-site institutional review board approval from Rocky Mountain University (#2023-118) and from the CommonSpirit Health Research Institute (2112899-1). The creation and validation of the Modified Healthy Aging Brain Care Monitor Self-Report Version (Modified HABC-M SR) occurs in two phases. Phase one utilizes a Delphi process to examine characteristics of the HABC-M SR using an expert panel of participants with expertise in an acute inpatient setting. The second phase will validate the newly modified assessment tool. Permission was received to modify the HABC-M SR from two of the original authors (Wang et al., 2019).

Modified Delphi Process

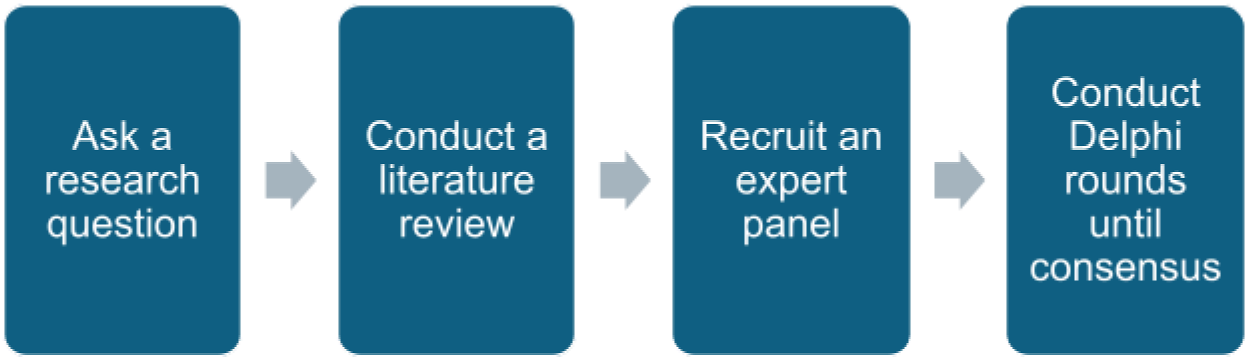
Modified Delphi methodology is utilized across health sciences research to identify research priorities, reach a consensus on important issues, establish clinical guidelines, and use expert opinions to address foundational healthcare-related questions (Shang, 2023). Researchers can assess content validity and provide revisions to minimize misunderstanding of test items using expert panelists by using the technique to come to a consensus that the questions reflect what the researchers want to measure. Researchers utilize a Modified Delphi process when the available knowledge on a given subject is incomplete, and researchers cannot utilize a method that provides a higher level of evidence (Boateng et al., 2018).

Modified Delphi studies typically involve two to three rounds with an expert panel of 20-30 individuals considered experts in their respective fields and work settings. Health science studies in medical, behavioral, and social science disciplines commonly utilize them to increase knowledge of the required evidence for reaching a desired effect for a particular intervention. The multitude of opinions that an expert panel allows provides a wide range of perspectives. A Delphi process is more valid than one expert's opinion within a particular topic or field. It is quantitative and establishes the highest possible consensus among the participating experts. The technique consists of taking accumulated group answers from previous questionnaires to modify and create a new questionnaire. Expert panelists can reconsider their judgments from the previous round and revisit them during the next round, revising a questionnaire until the group of panelists reaches a consensus (Niederberger & Spranger, 2020). Consensus is defined as the percentage of agreement based on a pre-defined cut-off point, a central tendency, or a combination of the two (Nasa et al., 2021).

The researcher utilized a Modified Delphi rather than a standard Delphi process to modify the tool. A standard Delphi study begins with an expert panel that meets and generates the research question through an open-ended discussion and undergoes the process to reach a consensus. Using an online Modified Delphi process, the researcher generates a research question through a literature review and the list of question items for the assessment tool and then recruits panelists to begin the consensus process using email and Qualtrics surveys (Keeney et al., 2021) (Figure 1).

Figure 1

Modified Delphi Process



Participants

The Modified Delphi process involved an expert panel of specially trained individuals who have experience as vital members of a critical care team: physician intensivists, critical care nurses, occupational therapists, and physical therapists (American Occupational Therapy Association, 2023). The panelists had real-world knowledge and experience for the content area of interest and agreed to provide their opinions and judgments based on relevant expertise, knowledge, and experience of critical care. Delphi panelists consist of the individuals who are going to use the assessment tool in clinical practice and will use results to make treatment plans and recommendations (Gorst et al., 2025).

Utilizing convenience sampling, the PI recruited 40 potential participants who have previously published literature on delirium, critical care, or post-intensive care syndrome or were current healthcare clinicians working in critical care settings. The PI recruited some participants via email, locating email addresses on hospital and clinic websites for acute care physicians and physical and occupational therapists who work in intensive care. Other participants were recruited through previous connections with physical and occupational therapist colleagues. Colleagues shared the study information at their workplaces and provided the PI with emails from potential interested panelists. The PI connected with them via email to confirm if they met the inclusion criteria. Nurses were recruited through snowball sampling. Nurses at the local hospital provided contact information for previous traveling critical care nurses from other states who had previously worked at the local hospital.

The term "expert" was defined as someone with relevant knowledge and experience in a critical care setting (Verweij et al., 2023). Each panelist had at least three years of experience working in a critical acute care setting. The PI utilized the hospital and clinic websites to assess the potential participants’ depth of knowledge through relevant degrees, certifications, or extensive experience in critical care. The PI confirmed years of critical care experience and depth of knowledge with potential participants who were recruited from physical and occupational therapy colleagues through email communication. To account for attrition, the PI recruited a total of 40 participants. All participants received an invitation to participate via email with an anonymous link to a Qualtrics survey. The cover page of the survey stated the purpose of the study and provided information on the informed consent process.

Procedure

Data collection took approximately eight weeks, with the participants completing two Modified Delphi rounds until consensus was achieved. Each round took three weeks to complete. Weekly reminder emails were sent at the end of weeks one and two of each round. Two weeks were allotted to data analysis—one week between rounds one and two and one week after round two for the PI to complete data analysis and provide participants with a results summary and feedback (Figure 2).

Through data analysis, items that expert panelists felt were not relevant to the modified tool were eliminated from the list. After data analysis, for the second Modified Delphi round, the principal investigator sent out a new email with a Qualtrics link for the modified questionnaire that contained the remaining list of items that scored between a 3 and 5, ranging from “important, but change the wording” to “very important.” The panelists had the same instructions for Rounds 1 and 2.

Survey Content & Structure

Researchers used Qualtrics XM as the electronic questionnaire for Round 1 and 2 feedback (Qualtrics XM, 2024). The questionnaire began with stating the Modified Delphi method instructions and providing the rating scale. Section one contained demographic questions in Round 1 to verify expert panelists had met the inclusion criteria. The demographic questions asked participants current or previous work experience with patients in a critical care setting or critically ill, the number of years of experience in acute or critical care settings, and their current practice setting location.

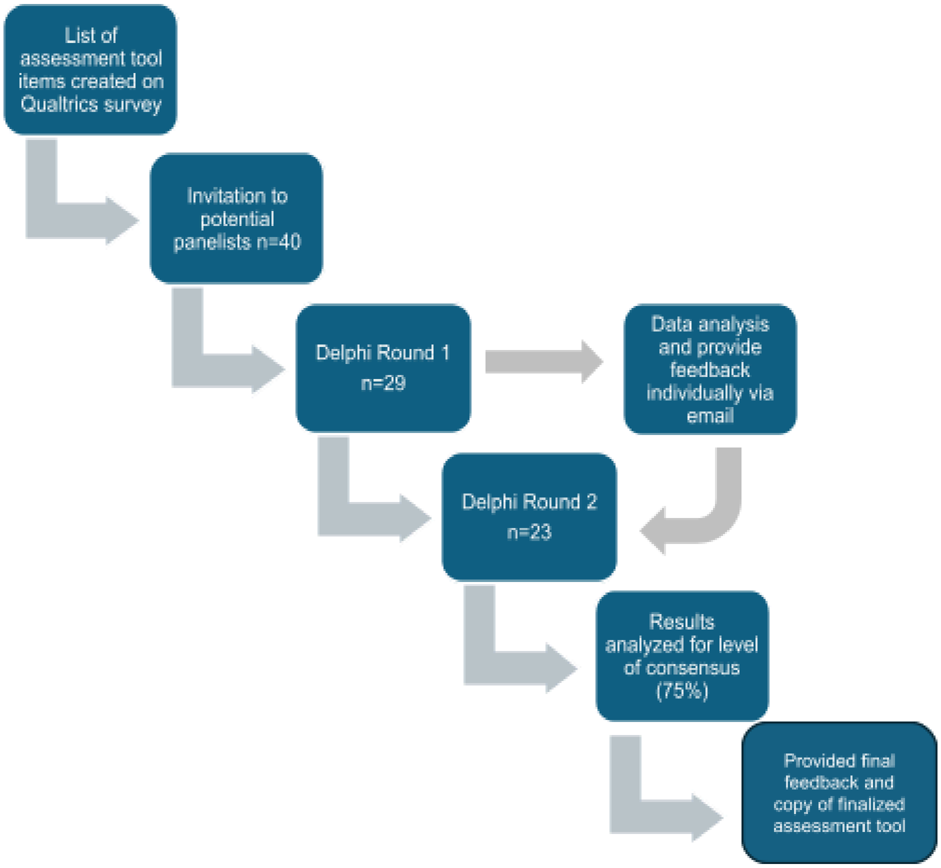
The questionnaire contained three categories, which included 1) physical-function, 2).cognitive function, and 3) psychological function, which were developed based on PICS symptoms and inspired by preexisting assessment tools that detect physical-functional, psychological, and cognitive symptoms. Questions were adapted from other outcomes tools specific to Stroke Impact Scale (SIS), Barthel Index (BI), Katz Index (KI), and the Delirium Rating Scale-Revised-98 (DRS) (Grover & Kate, 2012; Kancir & Koorsgaard, 2010; University of Kansas Medical Center, 2024; Yamada de Silveira et al., 2018). The SIS was developed with patient feedback on the most crucial aspects of stroke recovery. Questions were adapted from mobility, activities of daily living, emotion, and memory (Kansas University Medical Center, 2024). The BI and KI contain lists of items that ask about the performance of activities of daily living (Kancir & Koorsgaard, 2010; Yamada de Silveira et al., 2018). The DRS provided items related to cognition and psychological functioning to create a holistic assessment tool that addresses the three subscales of PICS (Grover & Kate, 2012).

The three sections in Round 1 included 123 items total (32 items for physical and functional, 50 items for psychological, and 41 items for cognitive impairments). The items were closed ended but provided open text boxes under each survey item for participants to provide specific recommendations on the best phrases for symptom detection accuracy and the reader's ease of understanding.

The expert panelists (n=40) rated the 123 items on a five-point ordinal scale for level of importance for being included in the modified assessment tool with a Likert scale (1= not at all important, 2= somewhat important, 3= important, but change the wording, 4= important, 5= very important). Items scored a 3 (important, but change the wording), an open text box was provided for expert panelists to provide information on how to edit the item for the next round (O'Malley & O'Neill, 2022).

Figure 2

Modified Delphi Flow Chart



Data Analysis

The principal investigator used Qualtrics XM and Intellectus Statistics software programs for descriptive analysis (e.g., average, range, mode) and consensus percentages of subscale items (Qualtrics XM, 2024; Intellectus Statistics, 2023). For each round, scores were collected and stored using the electronic software, Qualtrics. Incomplete data was eliminated prior to full analysis, and only those who consented to participate were included in the final analysis. . The principal investigator used Qualtrics to determine consensus percentages for each Likert scale value with verification of results with co-researchers. The principal investigator added the individual percentages for Likert scale values 3, 4, and 5 for a total consensus percentage. The items were considered to meet the minimum consensus if the added value exceeded 75% and if the mean of each item was greater than or equal to 3.5.

In previous modified Delphi studies, consensus has been considered to have been reached with a range of a 51% agreement to as high as 80% (Green et al., 1999; Loughlin & Moore, 1979; Sumsion, 1998). In this study, items were included if a 75% agreement was reached, and the item scored a 3.5 or higher (at least 70% agreement) as the benchmark for reaching consensus with each item and subscale (Barrios et al., 2021). If at least 75% of the panelists rated an item as a 3.5 or higher, the item remained part of the tool, and the principal investigator eliminated an item if it was rated as a 2 or lower (less than 50% agreement). Participants were provided with a summary of the data after each round. Consensus was reached on all items after two rounds.

Results

Participants

For Round 1, a 73% response rate (n=29) as achieved with 29 total responses were from: ten occupational therapists, eight physical therapists, three intensivist physicians, and eight registered nurses. The most common current work setting was an ICU (12), general acute care (8), higher education (3), outpatient (3), a research setting (2), and other settings (1). The top three most represented states were Ohio (7), California (4), and Montana (4). The expert panelists had an average of 9.8 years working within intensive and critical care units with a range of 2 -25 years of experience and most having 5 years of experience (Table 1).

Table 1

Round 1 Participant Panelist Results

Variable	n	Percentage	Cumulative Percentage
Profession			
Occupational Therapist	10	34.48	34.48
Physical Therapist	8	27.59	62.07
Registered Nurse	8	27.59	89.66
Physician	3	10.34	100.00
Current Work Setting			
Intensive Care Unit	12	41.38	41.38
Acute Care	8	27.59	68.97
Outpatient	3	10.34	79.31
Higher Education	3	10.34	89.66
Research	2	6.90	96.55
Other	1	3.45	100.00
Location			
Ohio	7	24.14	24.14
Montana	4	13.79	37.93
California	4	13.79	51.72
Pennsylvania	3	10.34	62.06
Nebraska	3	10.34	72.4
Idaho	3	10.34	82.74
Virginia	2	6.90	89.64
Florida	1	3.45	93.09
Illinois	1	3.45	96.54
Netherlands	1	3.45	100.00

Round 1

Using a mean score of 3.5, nine physical-functional subscale items moved on to the second round. A consensus of at least 75% was present with two items— “going from lying down to sitting at the edge of the bed” and “getting to the toilet or using the bedpan on time.” For the cognitive subscale, using a mean score of at least 3.5, 11 items moved onto the second round. Five items had reached at least a 75% consensus. For the psychological subscale, nine items had a mean score of at least 3.5, and three had a consensus of at least 75%.

In the open text boxes with scoring a 3 (“important but change the wording”) on an item, the principal investigator made the following proposed changes: change “walking” to “mobility” to accommodate patients who may be self-propelling a wheelchair or using another assistive device, add an option for ADLs rather than having individual ADL items, add problems with smell or taste, add an option for “bed mobility” instead of both items 2 and 3, and make some minor grammatical changes for some of the items in the cognitive and psychological subscales.

Round 2

Twenty-six of the 40 expert panelists provided a response for Round 2. Three of the 26 original survey responses were only partially complete, resulting in the elimination of the panelists’ responses. The remaining 23 total responses consisted of eight occupational therapists, five registered nurses, six physical therapists, three intensivist physicians, and one classified as other (Table 2).

Table 2

Round 2 Participant Results

Variable	n	Percentage	Cumulative Percentage
Profession			
Occupational Therapist	8	34.78	34.78
Physical Therapist	6	26.09	60.87
Registered Nurse	5	21.74	82.61
Physician	3	13.04	95.65
Other	1	4.35	100.00

For the physical-functional subscale, ten of the 12 items had a mean greater than 3.5. Items nine and ten, “brushing my teeth” and “having changes in smell and taste,” were eliminated from the subscale due to having a mean less than 3.5 (3.10 and 2.95, respectively). Seven of the ten items reached a consensus of at least 75% agreement. Items two and three (“going from lying down to sitting at the edge of the bed” and “moving from sitting at the edge of the bed to lying down in bed”) were removed from the subscale due to redundancy with the first item (“bed mobility”). After removing items two and three, the seven remaining subscale items had a consensus percentage of at least 75%.

All 11 items had a mean greater than or equal to 3.5 for the cognitive subscale, and the 11 items had a consensus of at least 75%. All 11 items will be included in the final version of the subscale. For the psychological subscale, all nine items had a mean of at least 3.5. Eight of the nine items had a consensus of at least 75%. Item 5, “having nightmares or disturbing dreams,” was eliminated from the subscale due to having a 67% consensus score. Agreement of eight of the nine subscale items was an 88.9% consensus, above the 75% threshold. The Delphi process did not require a third round since Round 2 provided results with at least a 75% consensus for each subscale (Appendix A).

Discussion and Conclusion

The Modified Delphi process met the study's aim by creating a modified version of the HABC-M SR containing questions that detect PICS impairments in an inpatient acute care setting. The final modified version was created after two rounds, beginning with 40 original Modified Delphi panelists, with all the final subscale items having a mean score of at least 3.5 and a subscale consensus score of at least 75%. The final modified assessment tool has seven physical and functional, 11 cognitive, and eight psychological subscale items.

Utilizing Modified Delphi techniques is becoming more common within healthcare research. The study follows recommendations for previous Delphi studies, which included anonymity, controlled feedback, flexibility for the choice of statistical analysis, and the ability to gather panelists from geographically diverse areas (Shang, 2023). Hernandez et al. (2019) created a written healthcare simulation scenario evaluation tool using a Modified Delphi method, following a similar content identification and consensus process that began with content delineation, followed by survey administration, and resulted in an expert panel consensus. Puts et al. (2022) utilized a three-round Modified Delphi process to create an online geriatric assessment tool, using weekly reminder emails and a virtual two-hour meeting to reach a final consensus.

A comprehensive literature search yielded no studies utilizing a Modified Delphi study to adapt an assessment tool for another setting. Two studies utilize Modified Delphi studies with critical illness survivors; however, the studies created outcome measure sets rather than a single assessment tool that can detect PICS symptoms

(Needham et al., 2017; Nakanishi et al., 2023). Researchers created a final modified version of the HABC-M SR using a Modified Delphi methodology. The tool can be administered to a pilot sample and validated for use in an acute care inpatient setting. The tool's items describe the unique features of the ICU survivor population in an acute care setting in a presentation that suits a hectic hospital setting with patients who are experiencing a significant level of fatigue.

Limitations

There are several study limitations to consider. First, the response rate decreased after the first round with weekly reminders and feedback emails, decreasing sample size. Second, the expert panel mainly consisted of occupational and physical therapists with limited representation of nurse practitioners, physician assistants, and physicians with critical care experience. The panelists were primarily from California, Montana, and Ohio due to convenience sampling. The panel's limited national representation decreases the heterogeneity of the sample and limits external validity and generalization at a national or international scale. Third, the survey did not include an open-ended text box for item suggestions, limiting input from panelists. Lastly, panelists rated many items lower than a 3 during the first round, eliminating the items from the instrument, and did not provide suggestions on how to change the wording. Despite these limitations, the project provides a foundation for effectively identifying physical, psychological, and cognitive symptoms of PICS in an acute care inpatient setting to improve our understanding of PICS and its effects on long-term health outcomes.

Future Considerations

Future Modified Delphi studies would benefit from gathering a larger expert panel group with a greater diversity-- a larger variety of health professions and panel locations. The PI could contact potential panelists through networking, calling organizations, or at national conferences, rather than solely relying on email to establish contact. Another Modified Delphi process could begin with a focus group to review the proposed item construct list and provide input on potential modifications before engaging in the Delphi rounds, or have the rounds include open-text boxes to receive participant suggestions. Now that the Modified HABC-M SR as been created, future research must be conducted to validate the new measure for future use with patients in an acute care setting.

Implications for Occupational Therapy

- Occupational therapy practitioners could utilize the Modified HABC-M SR in the ICU to identify PICS symptoms and institute a holistic plan of care to improve functional outcomes.
- Occupational therapy practitioners can use a modified Delphi research design for various outcome tools or contextual factors related to acute and critical care topics. Delphi studies is a feasible research design or approach for practitioners to promote engagement with large and diverse groups of practitioners in the development of future outcome measures and clinical practice guidelines to improve clinical practice.
- Occupational therapy practitioners could use modified outcomes tools to assist in showing objective data that reflects various patient priorities and progress.

Furthermore, some outcome tools may strengthen clinician-patient communication and help identify barriers to overcoming long-term adverse health outcomes from critical illness.

Conclusion

The healthcare field is growing in understanding the implications of post-intensive care syndrome. However, the evaluation of PICS, in the acute care setting, is inconsistent and limited in the presence of valid and reliable outcome tools for occupational therapy service delivery. The Modified HABC-M SR provides a holistic assessment tool that measures three domains—physical-functional, psychological, and cognitive impairments. With the use of a Modified Delphi process, the development of a modified Healthy Aging Brain Care Monitor Self-Report Version (HABC-M SR) can be used within acute care contexts. Occupational therapy practitioners and other healthcare professionals can use the Modified HABC-M SR to identify physical, psychological, and cognitive impairments and plan effective rehabilitative interventions in an acute care setting with various intensive care populations.

Acknowledgments

Thank you to all of the panelists who completed the Modified Delphi process to modify the HABC-M SR assessment tool.

Matt Stanger, OTR/L
Joan Barney, PT
Derek Schelske, PT
Kristen Jones, PT
Lindsay Scholes, OTR/L
Victoria McGaughey, OTR/L
Kelly Hensley, OTR/L
Nick Hensley, PA-C
Jessica Engle, OTR/L
Kyle Tierney, DPT
Julie Eberlein, OTR/L
Andrew Armstrong, OTR/L
Ashley Geist, OTR/L
Tracye Proffitt, PhD, RN, CNE
Courtney Robertson, OTD, OTR/L
Anna Nash, BSN, RN, CCRN
Ashley Snow, PT
Jake Riley, BSN, RN, CCRN
Dharmanand Ramnarain, MD
Kiruba Dharaneeswaran, MD
Karen Vietz, PhD, RN, CCRN
Laura Vielbig, PT
Majszak, Rebecca, OTR/L
Noelle Simpson, OTR/L
Sarah Limburg, OTR/L
Rachelle Janning, OTD, OTR/L
Katie Wharton, PT
K. David Bailey, PhD, MBA, RN, CCRN, NEA-BC, FACHE, FAONL, FAAN
Hannah Rapp, BSN, RN
Lisa Lazaraton, MPT
Bryce Crenshaw, PT, MBA
Jennifer Adamski, DNP, APRN, ACNP-BC, CCRN, FCCM
Ellie Hirshberg, MD
Tammy Eaton, PhD, RN
Marvin Delgado, NP, CCRN
Pratik Pandharipande, MD
Kylie Widhelm, OTD, OTR/L
Kristin Reitz, BSN, RN
Chari Day, MSN, RN, CCRN
Katie Wharton, PT

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Appendix A

Finalized Modified Healthy Aging Brain Care Monitor Self-Report Version

Over the past week, did you have problems with (use an X or check mark to indicate your answer):		Not At All (0-1 days)	More than Half the Days (4-5 days)	Almost Daily (6-7 days)
1	Bed mobility			
2	Getting to the toilet or bedpan in time			
3	Staying sitting without losing your balance			
4	Staying standing without losing your balance			
5	Transferring or moving from a bed to a chair			
6	Mobility (i.e. walking or propelling a wheelchair)			
7	Performing my self-care tasks (i.e. brushing teeth, face washing, getting dressed, etc.)			
8	Judgment or decision making			
9	Thinking or memory			
10	Remembering things people had just told you			
11	Remembering things that happened earlier in the day or the day before			

12	Concentrating on doing things			
13	Understanding what is being said during a conversation			
14	Paying attention			
15	Expressing what you are thinking			
16	Finding words or putting a name to things			
17	Understanding what is happening to you			
18	Noticing changes in your ability to think clearly or act in your usual way			
19	Having less interest or pleasure in doing things, hobbies, or activities			
20	Feeling down, depressed, or hopeless			
21	Feeling anxious, nervous, tense, panic[ky]			
22	Acting impulsively, without thinking through the consequences of your actions			
23	Feeling that you are a burden to others			
24	Feeling that life is not worth living			

25	Worrying a lot about what has happened or is going to happen			
26	Controlling your emotions			