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Educating Using Plain Language: Nighttime Postural Care Assessment Training Package

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Package

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Capstone Project completed in partial fulfillment of the Doctor of Occupational Therapy

Degree

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Contents

Abstract

Background. There is a lack of high-quality research and inadequate training available to healthcare professionals and caregivers on Nighttime Postural Care (NTPC).

Purpose. The purpose of this project was to 1) develop a training package on NTPC assessments to educate caregivers of children with cerebral palsy (CP) and the research team, and 2) educate clinical scientists on plain language. **Approaches.** The author used the Patient Education Materials Assessment Tool (PEMAT) and Program for Research Institute of Medicine and Science (PRISM) Editing Checklist to evaluate training materials and generated recommendations. Volunteer research team member representatives completed the training and pre-post training surveys. In addition, a presentation on plain language was delivered to a group of clinical scientists.

Outcomes. Mean PEMAT and PRISM Editing Checklist scores improved following revisions. Ratings of perceived competency in NTPC assessment and intervention increased following the training. Perceived knowledge and confidence in plain language among clinical scientists increased when comparing pre- to post-surveys, but perceived ability in plain language decreased. **Implications.** The evaluation of training materials resulted in improvements to ensure the training met the health literacy standards of the intended audience. Researchers and healthcare professionals need to evaluate the plain language of materials to ensure understandability.

Introduction and Background Literature

Children with severe cerebral palsy (CP) are at high risk of poor health outcomes due to prolonged periods of staying in the same position (Casey et al., 2020; Goldsmith, 2000; Hoffman, 2017; Porter, 2008; Rodby-Bosquet et al., 2013; Sato, 2020). This leads to postural asymmetries, body deformities, and other secondary health complications that worsen over time (Casey et al., 2020; Goldsmith, 2000; Jeffries et al., 2016; Rodby-Bousquet et al., 2013; Sato, 2020; Wynn & Wickman, 2009). Pain is a common secondary health issue among individuals with CP and is associated with an inability to change position (Casey et al., 2020; Hilberink et al., 2007). Infrequent position changes are especially noteworthy at night (Rodby-Bousquet et al., 2013; Sato et al., 2013). Furthermore, sleep problems are prominent for children with CP partly due to musculoskeletal issues (Dutt et al., 2015; Hulst et al., 2021; Lélis et al., 2016). The risk of body deformities and other health complications due to infrequent position changes, especially at night, justifies the need for regular monitoring and prevention of these issues for children with CP (Casey et al., 2020; Porter et al., 2008; Sato et al., 2013).

Nighttime postural care (NTPC) is an intervention that aims to promote symmetrical body alignment and prevent the development of destructive body shape changes (Goldsmith, 2000; Hill & Goldsmith, 2010). NTPC is a relatively new and emerging intervention. Evidence is mixed, but the literature suggests some promising outcomes related to NTPC (Goldsmith, 2000; Humphreys et al., 2019; Wood & Brown, 2022; Wynn & Wickman, 2009). While researchers have increased their attention toward NTPC within the past two decades, a systematic review found that only a few randomized controlled trials exist examining the effectiveness of sleep positioning

(Blake et al., 2015). Furthermore, the other existing research on NTPC is mostly of low quality and has significant limitations related to methodology and outcome measures (Humphreys et al., 2019).

Measuring outcomes of NTPC intervention is a crucial element of both clinical service delivery and research. In clinical practice, initial evaluation assesses postural needs and underpins the rationale for providing NTPC (Hoffman, 2017; Wynn & Wickman, 2009). Ongoing review is necessary to ensure the intervention is beneficial and allows for adjustments to maximize its benefit (Hoffman, 2017; Wynn & Wickman, 2009). Commonly used outcome measures in research on NTPC focus on pain, posture deformity, sleep quality, and quality of life (Goldsmith, 2000; Humphreys et al., 2012; Innocente, 2014; Underhill et al., 2012; Wood & Brown, 2022). The insufficient and mixed evidence on NTPC may be partially related to inappropriate assessment tools and insufficient intervention duration to measure change (Hill et al., 2009; Underhill et al., 2012). Thus, it is important to understand which outcome measures are most appropriate for the CP population and NTPC intervention.

Hutson and Snow (2020) published a scoping review evaluating six sleep-based assessment tools for children with severe CP and recommended the use of more than one measure to measure sleep changes related to postural care. Additionally, researchers identify a weakness of past methodology is difficulty with participant (caregiver) follow-through on continuous evaluation measures (Humphreys et al., 2019; Wood & Brown, 2022). Because of the importance of monitoring and measuring outcomes for NTPC, not only healthcare professionals but also caregivers need a high level of knowledge and skill related to NTPC assessment and evaluation.

Despite the high knowledge and skill level required, there is a lack of adequate training available. Several researchers note that high-quality training for all members involved is key to successful NTPC intervention (Blake et al., 2015; Goldsmith, 2000; Hill & Goldsmith, 2010; Hoffman, 2017; Humphreys et al., 2019; Humphreys et al., 2012& Poutney, 2006; Waugh & Hill, 2009; Wynn & Wickman, 2009). Even though NTPC requires specialized competency, healthcare professionals who provide NTPC services lack knowledge and training (Castle et al., 2014; Humphreys et al., 2012; Stinson et al., 2021). In addition to the limited training opportunities for clinical practice purposes, there is a gap in NTPC training within research studies. That is, the majority of studies use inconsistent or unspecified training methods to educate research teams and caregivers on the NTPC intervention and assessment.

A scoping review conducted by the author (see Appendix A) explored existing evidence on methods to educate healthcare professionals on postural care. Despite limited evidence, four key themes were identified: (1) Competence and confidence outcomes, (2) Practice, collaboration, and feedback, (3) Learner-centered mode of delivery, and (4) Multidisciplinary and familial involvement. Ultimately, the gap in NTPC training is important because insufficient training interferes with the optimal benefit of NTPC and may mask the true outcomes of research in this area.

Purpose

The primary purpose of the capstone project was to develop a comprehensive training package in preparation for a pilot study. Ultimately, the training package will educate research team members and English or Spanish-speaking primary caregivers of children with CP on assessment tools for NTPC for use in a pilot study. This project

aimed to ensure training materials meet the health literacy standard of the target audience. Past St. Catherine University Occupational Therapy students developed online tutorials on NTPC assessments for their master's project. Through a needs assessment, the need for expansion on the existing materials was identified (See Appendix B). Thus, the capstone project included 1) the development of a comprehensive training package, 2) a test run of the training package to evaluate readiness before the pilot study begins, and 3) education of clinical scientists on health literacy and plain language tools used to develop the training package.

This project provided a standardized and comprehensive training package for an NTPC pilot study which will be conducted by the St. Catherine University capstone mentor, Dr. Jennifer Hutson along with a physician from Gillette Children's Specialty Healthcare (which hereafter will be referred to as primary capstone mentor, secondary capstone mentor, and healthcare organization, respectively). This capstone project enhanced the future research study's methodology and integrity because the training will promote competency and effective data collection. The project aimed to address the following questions: "1) What changes are recommended to improve the readability and comprehensiveness of pre-existing tutorials? 2) How effective were those changes after implementation? 3) How effective is the training package in increasing the self-perceived competency of trainees? 4) How useful is an education session on plain language tools for clinical scientists?"

Approach

This capstone project was completed to support the final stages of preparation of the training packages for a pilot study. First, this author evaluated the study's intended

training packages by applying two standardized tools examining plain language. The evaluation resulted in recommendations including revisions and development of additional materials. Lastly, the author examined the effectiveness of the training package by administering pre- and post-surveys. Separate from the preparatory pilot study preparatory work, the author also co-created, co-delivered and examined the effectiveness of a health literacy presentation for clinical scientists by educating them on the two standardized plain language tools and administering pre- and post-surveys.

Participants

The primary capstone mentor recruited volunteer research team members and caregiver representatives (therapists and caregivers of children with CP). They completed the training package and provided feedback via surveys for the test run before the pilot study. In addition, the capstone co-mentor recruited clinical scientists from the healthcare organization. They received a presentation on plain language and health literacy and provided feedback via surveys.

Procedures

Development of Training Package

The first activity of this project was to evaluate the quality of pre-existing training tutorials by applying best practices for education delivery and health literacy. While readability formulas are one tool for gathering valuable information, it is recommended that readability formulas are used in conjunction with other assessment tools to provide a holistic evaluation (McGee, 2010; Ridpath et al., 2007). Thus, the author used two standardized tools to assess the quality of existing tutorials: Patient Education Materials Assessment Tool Audiovisual/Print (PEMAT-AV/P) and Program for Research Institute

of Medicine and Science (PRISM) Editing Checklist for Participant Materials (Shoemaker et al., 2020; Ridpath et al., 2007).

After viewing each tutorial twice, the author conducted an evaluation using the PEMAT-AV and PRISM Editing Checklist. Based on the assessment, the author generated and delivered recommendations to the research team. In addition, the author applied best practices in literature from three separate sources to further guide recommendations: 1) findings from a scoping review on best practices for educating rehabilitation professionals, 2) literature supporting best practices for linguistically diverse caregivers or low health literacy training/education, and 3) principles of Adult Learning Theory. This assessment generated the following project activities 1) development of a table of contents with descriptions (Appendix C) of the training package outlining recommended changes, 2) implementation of those changes through revision to the existing audiovisual materials (revised content and new recordings), 3) development of additional audiovisual and print materials to be added to the training package, and 4) design of an organized method of delivery. Due to the pilot study not being complete, the author published limited training package materials within this portfolio.

Training Package Test Run

After completing the evaluations and making revisions and updates to the research study training materials, the author completed a test run of the training package to further evaluate the training package after implementation of the recommendations. To do this, volunteer research team member and caregiver representatives (therapists and caregivers of children with CP) completed the training

package along with pre- and post-training surveys. Based on the survey feedback, the author compiled recommendations for training revisions and provided them to the research team to improve the team's readiness for the pilot study. The procedures for the test run prior to the research study were shared with the St. Catherine University Institutional Review Board (IRB) and determined to be "preliminary project steps and processes [that] do not appear to need IRB approval" for the capstone project.

Health Literacy Education

In addition to the primary project activity, the author co-developed and co-delivered a 30-minute virtual presentation to educate eight clinical scientists at a healthcare organization and the investigators of the pilot study on plain language, the PEMAT, and the PRISM Editing Checklist. This presentation was titled "Health Literacy Education Session" (Appendix D). Pre- and post-presentation surveys measured the presentation's utility. This part of the capstone project was submitted to the St. Catherine University IRB and approved as an exempt study.

Evaluation Process

Development of Training Package

The PEMAT assesses the understandability and actionability of audiovisual materials and calculates a percentage score for both categories. Past reports have deemed this tool to have good reliability and internal consistency ($\alpha = 0.71$; Shoemaker et al., 2014). The PRISM Editing Checklist focuses on reading level (Flesch Reading Ease and Flesch-Kincaid Grade Level), plain language, active voice, sentence length, structure/organization, and design (Ridpath et al., 2007). The author applied readability

scores to the transcribed narration of audiovisual training material and applied them to the text of print training materials.

The author analyzed the objective quantitative data gathered from these assessment tools (PEMAT understandability and actionability scores, PRISM Flesch Reading Ease, Flesch-Kincaid Grade Level, percentage of passive sentences, average number of words per sentence) and the primary capstone mentor and faculty advisor verified the analysis. Target cut-off values were based on those provided by Ridpath et al. (2007). The author computed descriptive statistics and compared the scores before and after the recommended changes were implemented to determine the effectiveness of the revisions. The author also calculated the frequency of materials with common problem items based on each tool. These items guided the recommendations to enhance education material quality. After the author implemented the recommended changes, these same measures were used to evaluate the training materials.

Training Package Test Run

For the training package test run, the author adapted a self-perceived competency survey from a pre-existing tool for both the research team and participant training package (Appendix E, F). A previous study showed that the original version has good internal consistency reliability of the questionnaire's knowledge, ability, and confidence subcategories (*p < 0.001; r = 0.66 to 0.95*) (Hutson et al., 2021).

The author calculated the mean of all ratings in each subcategory (knowledge, ability, and confidence) and total competency for each respondent for both pre- and post-surveys. In addition, the author calculated the mean of all the ratings of all respondents in each subcategory and total competency to obtain the mean across all

respondents for both pre- and post-surveys. The author analyzed the means across all respondents using a matching paired t-test to compare the total competency as well as subcategory competency before and after training. Comparison of ordinal data means using t-tests was determined to be sound based on the psychometric properties of the original questionnaire (Hutson et al., 2021). In addition to perceived competency items, the author analyzed post-survey items related to the training utility and delivery using descriptive statistics. The author categorized and summarized short answer survey questions as strengths and areas for improvements. The site mentor and faculty advisor verified the analysis.

Due to the timeline of data collection, the data collected for the participant training package survey was not included in this report.

Health Literacy Education

To evaluate the effectiveness of this project activity, the author co-administered pre- and post-surveys. Clinical scientists at the healthcare organization and the study's investigators completed the surveys before and after receiving the presentation. Together, the surveys included 20 close-ended (e.g., 2 nominal, 17 ordinal, and 1 interval) and 7 open-ended questions (Appendix G). The author co-developed the survey tool with the capstone peer student. This author distinctively focused analysis on closed-item items pertaining to rating knowledge, ability, and confidence in plain language and rating this author's presentation delivery and rating overall presentation delivery. The capstone peer student focused on open-ended survey items and rating her presentation delivery. The two capstone students designated the survey items in this manner because they respectively aligned with this author's project focus on

education and the capstone peer student's project focus on program development. The author analyzed the results in this project using descriptive statistics and the analysis was verified by the site mentor and faculty advisor.

Outcomes

Outcomes include information on the evaluation of the training materials themselves based on the PEMAT-AV and PRISM tools. Additionally, survey data analysis from participant responses related to the training materials and the plain language presentation are shared.

Change in Evaluation Tool Scores

Four pre-existing tutorials were evaluated using the PEMAT-AV/P before and after revisions were implemented. The initial review found that PEMAT-AV understandability scores ranged from 38-77% across tutorials and actionability scores ranged from 50-100% across tutorials. After revision implementation and creation of additional training materials, PEMAT-AV scores improved. Post-revision average scores included scores of the additional materials that the author created, some of which were evaluated using PEMAT-P. Understandability scores ranged from 85-100% across materials, and actionability scores of all materials were 100%. The tutorial with the largest percentage change in both understandability and actionability scores between pre- and post-revisions was the Posture and Postural Ability Scale Tutorial (understandability from 38% to 100%, actionability from 50% to 100%). See Table 1 for more information.

Table 1

Patient Education Materials Assessment Tool (PEMAT) Scores Pre- and Post-Revisions

Educational Material	Understandability (%)		Actionability (%)	
	Pre-	Post-	Pre-	Post-
SDSC Tutorial	77	100	100	100
CPCHILD Tutorial	54	100	75	100
PPP Tutorial	77	100	100	100
PPAS Tutorial	38	100	50	100
SDSC Handout	N/a	100	N/a	100
CPCHILD Handout	N/a	100	N/a	100
PPP Handout	N/a	100	N/a	100
List of Terms	N/a	85	N/a	100
Introduction videos	N/a	100	N/a	100
Training checklist	N/a	100	N/a	100

Note. The information presented in the table is a percentage score. Educational

materials that were created following the evaluation of pre-existing materials do not

have a pre-score since they did not undergo revisions. Educational material

abbreviations include: Sleep Disturbance Scale for Children (SDSC), Caregiver

Priorities and Child Health Index for Life with Disabilities (CPCHILD), Paediatric Pain

Profile (PPP), Posture and Postural Ability Scale (PPAS). Higher scores indicated

increased understandability an actionability.

The author also evaluated the four pre-existing tutorials using the PRISM Editing

Checklist before and after revisions were implemented and additional training materials

were created. All scores across all materials showed positive improvements. For Flesch

Reading Ease, initial scores ranged from 54.5 to 68.3 across materials. Post-revision

scores ranged from 53.8 to 80.8 across materials. Higher scores on Flesch Reading

Ease indicate greater ease of reading. The item with the largest change in Flesch

Reading Ease was the SCSC Tutorial. For Flesch-Kincaid Grade Level, initial scores

ranged from 8.2 to 11.3 across materials. Post-revision range of Flesch-Kincaid Grade

Level was 4.6 to 9.3 across materials. These numbers roughly translate to a grade

reading level and a grade level below 8th grade is recommended (Ridpath, 2007). All

items except the PPAS tutorial achieved the recommended reading grade level post-

revisions. For the percentage of passive sentences, initial scores ranged from 8.5% to

27.8% across materials. Post-revision range of passive sentences was 0% to 8%

across materials. Best practice recommends the percentage of passive sentences to be

10% or lower. The SDSC Tutorial and PPP Tutorial were the items with the largest

changes in the percentage of passive sentences. For the average number of words per

sentence, initial scores ranged from 18.3 to 22.9 words across all materials. Post-

revision range for the average number of words per sentence was 7.5 to 16.6 words

across materials. Best practice recommends an average number of words per sentence

to be 15 words or less (Ridpath, 2007). All items except the PPAS tutorial achieved the

recommended length of sentence post-revisions. See Table 2 for more information.

Table 2

Program for Readability Institute of Science & Medicine (PRISM) Editing Checklist

Scores Pre- and Post-Revisions

Educational Material	Flesch-Kincaid Reading Ease		Flesch-Kincaid Grade Level		% of Passive Sentence (%)		Average Words Per Sentence (words)	
	Pre-	Post-	Pre-	Post-	Pre-	Post-	Pre-	Post-
SDSC Tutorial	56.2	69.4	10.2	6.8	22.6	2.8	19.6	13.1
CPCHILD Tutorial	68.3	68.2	8.2	6.7	8.5	1.5	18.3	12
PPP Tutorial	61.5	69	9.3	7	27.8	3.1	18.6	13.7

PPAS Tutorial	54.5	53.8	11.3	9.3	11.1	8	22.9	16.6
SDSC Handout	N/a	74.4	N/a	5.6	N/a	0	N/a	11.2
CPCHILD Handout	N/a	70.7	N/a	6.4	N/a	0	N/a	12.3
PPP Handout	N/a	80.0	N/a	4.6	N/a	7.8	N/a	10.3
List of Terms	N/a	64.1	N/a	7.5	N/a	7.5	N/a	13.0
Introduction videos	N/a	72.0	N/a	6.4	N/a	4	N/a	12.9
Training checklist	N/a	72.3	N/a	5.0	N/a	0	N/a	7.5

Note. Scores were calculated based on slide narration for audiovisual materials and text on the document for print materials. Educational materials that were created following the evaluation of pre-existing materials do not have a pre-score since they did not undergo revisions. Educational material abbreviations include: Sleep Disturbance Scale for Children (SDSC), Caregiver Priorities and Child Health Index for Life with Disabilities (CPCHILD), Paediatric Pain Profile (PPP), Posture and Postural Ability Scale (PPAS).

Recommendations for Revisions and Additional Materials

As a result of the evaluation of the materials, outcomes indicated the need for revisions to existing tutorials. Problem areas found within the pre-existing tutorials included items related to wording/style, formatting/layout/design, organization, and content. Problem items with the highest frequency included passive voice, inconsistent/poor formatting, lack of summary following tutorial, and inaccurate or unclear information. The most frequent associated revisions included editing and re-recording narration with a focus on active voice, editing slide formatting with a focus on accessibility, adding a summary slide at the end of the tutorial and adding learning

objectives to the conclusion slide, and clarifying content on slide text and/or within the narration. See Table 3 for more information. Appendix C has more information on the extent of revisions for each tutorial.

Table 3

Frequency of Problems Items Identified During Evaluation of Pre-Existing Educational Materials and Associated Revisions

Category	Problem Item	F	Revision
Wording/ Style	Jargon/medical terms	3	Edited text on slides and edited/re-recorded narration with focus on plain language; added slide for definitions
	Passive voice	4	Edited and re-recorded narration with a focus on active voice
	Third person	2	Edited and re-recorded narration with focus on first/second person and directly addressing the audience
Format/ Layout/ Design	Dense text	1	Added bullet points to slides
	Inconsistent/poor formatting	4	Edited slide formatting with a focus on accessibility
	Lack of clarity of tables/illustrations	2	Recreated table with headings and increased spacing, added horizontal lines, increase the size of images
	Unclear narration	1	Re-recorded narration with adequate pacing
Organizat ion	Non-informative headers	1	Rearranged order and distribution of content on some slides
	Illogical order	1	Rearranged order of slides
	Address multiple topics on each slide	1	Rearranged distribution of slide content
	Lack of summary at the end	4	Added summary slide at the end of the tutorial and added learning objectives to the conclusion slide
Content	Lack of explanation of tables/figures	2	Added narration to explain the tables/figure and annotation to direct the attention of viewers to areas of the slide

	Inadequate context/amount of information	2	Added text on slides and narration to contextualize content, where appropriate
	Inaccurate or unclear information	4	Clarified content on slide text and/or within the narration
Content	Inadequate visual aids and/or opportunities for practice	2	Asked viewers to follow along with a copy of the assessment form, added picture illustrations of complex concepts, added examples and practice scenarios

Note. Frequency (F) is presented as the number of tutorials out of *n* = 4. Problems and revisions were guided by Patient Education Materials Assessment Tool (PEMAT), Program for Readability Institute of Science & Medicine (PRISM) Editing Checklist, and literature on best practices for education for rehabilitation professionals, best practices for linguistically diverse caregivers or low health literacy training/education, and Adult Learning Theory.

In addition to the revisions to pre-existing materials, the evaluation also indicated the need for the development of additional print/audiovisual educational materials. The author also recommended that the training materials be packaged into one organized unit in the form of a website. Additional materials were needed to enhance the comprehensiveness and quality of the training and enable the user to navigate the website for completion of all training components. These materials included three handouts to supplement tutorials, an actionable checklist outlining all training activities, a document providing commonly used terms in the training and associated definitions, and 11 short introduction videos providing the context of training activities and step-by-step directions for training completion. The author developed all the stated materials during this project.

Training Package Test Run

Three volunteer research team member representatives (reviewers) completed the training package for team evaluation. On average, reviewers spent 4.05 hours (3.4-4.7 hours) completing the training. One reviewer did not report a specific time duration but did report the training took more than 3 hours, which aligns with the mean. None of the reviewers completed the training in one sitting.

Within the pre-training survey, reviewers reported a variety of previous knowledge or training on the assessments included in the training. One reviewer reported having some previous knowledge on half of the assessments included in the training. One reviewer reported having previous training on all the assessments included in the training, and one reviewer reported "n/a". Despite subjectively reported differences, reviewers had similar perceived competence of the assessments at baseline based on pre-survey ratings. The mean rating for total competence on a 4-point Likert scale for each of the three reviewers was 1.6, 1.7, and 2.2, indicating little variance between reviewers.

Each reviewer rated their perceived knowledge, ability, and confidence in assessments before and after the training. Four survey items addressed knowledge, 12 items addressed ability, and 16 items addressed confidence. The author calculated the mean of all ratings in each subcategory and the total competency of each reviewer. In addition, the author calculated the mean of all the ratings of all reviewers in each subcategory and total competency to obtain the mean across all 3 reviewers. Out of all three subcategories on the pre-survey across all three reviewers, the mean score for knowledge was highest (2, SD = 0.74) followed by ability (1.83, SD = 0.97), then

confidence (1.79, SD = 0.71). However, for the post-survey, the mean score for

confidence was highest (3.54, SD = 0.50), followed by knowledge (3.50, SD = 0.52),

then ability (3.44, SD = 0.50). See Table 4 for more information. Within the post-

surveys, all reviewers rated their knowledge, ability, and confidence as either a 3

("some" or "somewhat") or 4 ("a lot" or "very") for all survey items.

Table 4

Mean and Paired T-Test of Knowledge, Ability, and Confidence Subcategories Pre- and

Post-Team Evaluation Training Package

Category	Pre/Post	Mean	Standard Deviation	*p*-value
Knowledge	Pre	2	0.74	0.059
	Post	3.5	0.52	
Ability	Pre	1.83	0.97	**0.022**
	Post	3.44	0.50	
Confidence	Pre	1.79	0.71	0.052
	Post	3.54	0.50	
Total	Pre	1.83	0.81	**0.040**
	Post	3.5	0.50	

Note. Mean of all ratings for each subcategory and total competence were calculated for

each reviewer and then averaged across the 3 reviewers for analysis and reporting. The

rating scale for all items was a 4-point Likert scale score ("1" is the lowest and "4" is the

highest). $n = 3$. Significance-level is $p < 0.05$. Bolding indicates a significant change in

perceived competency from pre- to post- survey.

Comparing pre- to post- surveys, the mean total competency score and all

subcategory competency scores increased. Significant changes include the total mean

competency scores significantly increased from 1.83 to 3.5 ($p<0.05$), and the ability

subcategory score significantly increased ($p<0.05$; Table 4). Across reviewers, each

reviewer reported similar increases in perceived knowledge, ability, and confidence

following the training. However, one reviewer consistently reported the largest increase for all three subcategories. The stated reviewer reported "4", or the highest rating, for all items. See Table 4 for more information.

Overall, when asked about the usefulness of the training and training delivery, all reviewers selected either agree or strongly agree, indicating a positive reflection of the training usefulness and delivery. The reviewers also described areas of strength and improvement for the training through the post-training survey. Strengths included the pacing/tone/cadence of tutorial narration, consistency throughout training, content quality, and use of visual aid in one of the tutorials. One reviewer stated "I love the consistency of the videos. It is much more fluid coming from one person. The tone and speed was great. The content is excellent." Areas for improvement included concern about remembering training information in the future, confusion on the standard deviation topic within a training tutorial, volume/sound inconsistency between tutorials, and five minor suggestions related to the training design to increase clarity. A reviewer stated, "I don't know when I will be completing these again, so I worry about how much I will remember."

Health Literacy Education Survey Outcomes

Since this was a dual presentation, data that the author analyzed and reported in this portfolio includes background/demographic information, knowledge, ability, and confidence in plain language, presentation delivery of this author, and overall presentation delivery (see Approach section for more information).

Clinical scientists reported their familiarity with the two plain language tools introduced during the presentation. The majority of clinical scientists (57.1%) reported

that they were not familiar with either tool. The majority of clinical scientists (57.1%) also reported that they had 16 or more years of experience in patient care and/or research. The remaining responses indicated either having 6-10 years of experience (28.6%) or 11-15 years of experience (14.3%).

Clinical scientists rated their knowledge, ability, and confidence in plain language before and after the presentation (Table 5). Seven clinical scientists completed the pre-survey, and six clinical scientists completed the post-survey. Both knowledge and confidence in plain language showed a positive change of similar magnitude between the pre- and post-surveys. Before the presentation, 57.1% of respondents were "somewhat" knowledgeable about plain language and the remaining 42.9% of responses were either "a little" or "not at all" knowledgeable. After the presentation, 100% of responses were "somewhat" knowledgeable. For confidence ratings, 57.1% of responses were "somewhat" and 42.9% were "a little" confident in utilizing plain language before the presentation. After the presentation, 66.7% of responses were "somewhat" and 33.3% of responses were "very" confident in utilizing plain language. Unlike knowledge and confidence, ratings for the ability to implement plain language decreased after the presentation. Before the presentation, 14.3% of respondents reported that they implement plain language into practice "very" well, 57.1% of responses were "somewhat", and 28.6% of responses were "a little". After the presentation, 66.7% of responses were "somewhat" and 33.3% of responses were "a little."

Table 5

Knowledge, Ability, and Confidence in Plain Language Pre- and Post- Presentation

Survey Item	Pre/ Post	Very	Some- what	A little	Not at all
How knowledgeable are you about plain language?	Pre	0	57.1	28.6	14.3
	Post	0	100	0	0
How well do you implement plain language in your practice as a clinical scientist?	Pre	14.3	57.1	28.6	0
	Post	0	66.7	33.3	0
How confident are you in utilizing plain language in your practice as a clinical scientist?	Pre	0	57.1	42.9	0
	Post	33.3	66.7	0	0

Note. Information presented in the table is presented as the percentage of responses. For pre- items, $n = 7$. For post- items, $n = 6$.

Finally, after the presentation, clinical scientists rated the quality of the presentation delivery and utility of the presentation (Table 6). For all seven items, responses ranged from fair to excellent. No responses were in the poor category. Four of the seven items ranged from good to excellent and the remaining three items ranged from fair to excellent. The three items that contained responses in the fair category include "How well did the presenter maintain your interest throughout the presentation?", "How practical were the examples?", and "How effective were the visual aids?". The item with the highest percentage (83.3%) of responses in the excellent category was "How useful was the presentation content?"

Table 6

Quality of Health Literacy Presentation Delivery and Utility of the Presentation

Survey Item	Excellent	Good	Fair	Poor
Explain material in a clear manner?	66.7	33.3	0	0

How well did the presenter…	Speak clearly enough to understand?	66.7	33.3	0	0
	Maintain your interest throughout the presentation?	33.3	50	16.7	0
	Explain the tools for plain language in a way that was easy to understand?	50	50	0	0
For the overall presentation…	How practical were the examples?	50	33.3	16.7	0
	How effective were the visual aids?	50	33.3	16.7	0
	How useful was the presentation content?	83.3	16.7	0	0

Note. Information presented in the table is presented as the percentage of responses. For all items, *n*=6.

Interpretation, Implications, and Recommendations

Development of Training Packages Interpretation

Compared to the initial review of all training materials, the quality of all training materials improved as evidenced by the positive change in PEMAT and PRISM Editing Checklist scores. All the training materials intended for caregivers are at an 8th-grade reading level or below, which meets the health literacy level requested by the research team. For the PRISM Editing Checklist scores, none of the training materials in this project met recommended criteria for Flesch-Kincaid Reading Ease. However, all the training materials met the recommendation for the remaining criteria except for the PPAS tutorial. The PPAS tutorial did not achieve recommended Flesch Kincaid Grade Level or average words per sentence. However, it is noteworthy that the PPAS tutorial was intended for research team members exclusively, not caregivers, so the audience likely has a higher health literacy level.

Training Package Test Run Interpretation

Overall, average scores for knowledge, ability, and confidence increased when comparing pre- to post- surveys, suggesting that the reviewers perceived themselves to be more competent on assessments after completing online training. Interestingly, the scores for knowledge, ability, and confidence by varying degrees. The mean score for confidence had the largest change before and after the training. However, the only statistically significant change for any of the three subcategories was for ability. This was due to the difference in variance among reviewers' responses with a small sample size. Given the small sample size, t-test results must be interpreted with caution.

Another interesting phenomenon exists in the data related to individual reviewer responses. The reviewer who reported the largest increase in competence based on the pre- and post-surveys selected the highest rating (4 or "a lot" or "very") for all items. Therefore, that individual's responses may not be a true reflection of their perceived competence due to survey question fatigue or answering in a way they thought this author desired. On the other hand, completion of the training may have reminded the reviewer of their high level of competence related to the training topics which was not reflected in the pre-survey.

Health Literacy Education Session Interpretation

A major outcome was that a brief presentation on plain language tools was effective in educating clinical scientists. Following the health literacy education session, clinical scientists reported a positive change in their knowledge and confidence in implementing plain language into their practice and research. Conversely, ratings related to the ability to implement plain language into practice and research decreased

among clinical scientists. An explanation may be that the brief education session made clinical scientists more aware of the complexity of plain language implementation. After learning about new strategies and tools during the presentation, they may have realized their overconfidence in pre-ability self-ratings, thus, rating their post-ability lower than pre-ability.

Limitations in Project Process and Outcomes

This project has limitations that we must consider. Firstly, this author was the only individual evaluating the training materials with the standardized evaluation tools and generating recommendations for changes, limiting the reliability. The author was also the individual who both revised and/or developed training materials and applied the evaluation tools. To address this, the author regularly collaborated with the pilot study research team throughout the process and the team approved major revisions. Secondly, the pre- and post-perceived competency surveys developed for both the test run of the training package and health literacy education session were self-report measures. Thus, the data may be less accurate than assessing the actual knowledge, ability, and confidence of participants.

Finally, the small sample size and type of data for both sets of pre- and post-surveys limit the interpretation and generalizability of the findings. The survey was set as a Likert scale with ordinal data which is generally not conducive to t-test analysis methods or calculation of mean scores. However, as the survey grouped items into categories, the research team treated the survey data as interval data by computing subcategory and total means to run t-tests. Also, it is noteworthy that the participants completed the survey as ordinal data. In addition, the pre- and post-perceived

competence survey utilized for this project was an adapted measure from the original version that was previously psychometrically verified (Hutson et al., 2021). Due to these stated limitations, the outcomes of this project must be interpreted with caution.

Implications and Recommendations

There are several implications and recommendations based on this project for the pilot research team. In addition, recommendations for the next steps in the training packages are shared. Finally, implications for clinical practice in nighttime postural care and health literacy are included. See Appendix H for poster highlighting key information for the project.

Pilot Research Study and Training Packages

Based on the data collected from the test run of the training package, there are a few recommendations for the pilot study investigators to consider prior to the initiation of the study. Firstly, this author provided a chart to share results and recommendations with the pilot study investigator. The chart outlined the training problem areas identified through the surveys along with this author's associated recommendation for change. A major overarching recommendation is that the study investigators split the training into two to three sessions rather than requesting research team members to complete the training in one sitting. For this project, none of the reviewers completed the training in one sitting; this training requires 3-5 hours based on survey results. By breaking the training into chunks and allowing mental processing time, we will also address the reviewer's concern related to remembering a high volume of content.

This author also recommends the study investigators further explore notable data trends for the team evaluation training package and continue reviewing and analyzing

incoming data for the participant training package survey. Within the team evaluation training package data presented in this report, this author observed preliminary differences in the change of perceived competency for different assessments. That is, when the author grouped survey items based on the training content topics (assessment type) rather than competency subcategories, trends existed. Thus, a further examination into comparing the changes in perceived competency across different training content areas is warranted. Also, this author recommends that the investigator reviews the incoming data for the participant training package. Due to the time constraints of this project, the author did not analyze nor report data collected from the participant training package pre- and post-surveys in this portfolio. While this author provided a chart outlining problems identified and associated recommendations for the participant training package, the author recommends that the study investigator reviews the remaining data from these surveys and considers adjustments to the training accordingly prior to pilot study initiation. Finally, the author recommends that the research team uses the standardized tools within this project to assess any additional participant-interfacing materials created or revised between the time of this project and the launch of the pilot study.

For future projects that involve a similar type of approach, this author has two recommendations. First, it was important to dedicate a significant amount of time to the groundwork to understand the various components of the pilot research study. A significant amount of work was already completed to prepare for the pilot study, and a thorough review of the IRB application was crucial to understanding the intricacies of all parts involved. Given the number of moving parts for the pilot study and the training

materials, this author also recommends a strong organization system for the team such as a shared drive for folders, files, and charts to track the status of each item and how it fits into the overall process.

This project provided the future pilot study with a training protocol that underwent a thorough evaluation of its quality and effectiveness. As a result of the project, the training protocol meets the standards for the health literacy of the audience and is ready for the pilot study. The reading level and plain language throughout the materials increase accessibility and will allow the research team to translate the materials more easily into Spanish. Once the materials are translated, the research team may consider applying Spanish health literacy tools to ensure the materials meet Spanish health literacy standards. The research team may use a guide written by the Center for Medicare Education (n.d.) as a starting point to promote best practice in healthcare translation of education materials. In addition, this project demonstrated to the research team that reviewers perceived themselves to be competent in the assessments after completion of the training. Together, these implications may increase the integrity of the pilot study. Current literature contains sparse high-quality research on NTPC and the studies that exist have limitations related to methodology and outcome measures (Humphreys et al., 2019). This project will address this gap because understandable and effective training on the study's outcome measure will promote effective data collection. Because of this project, it is more likely that the pilot study results will reflect the true impact of NTPC equipment on the health and quality of life of children with CP (Hill & Goldsmith, 2010).

NTPC Clinical Practice

In addition to the short-term benefits this project has on the upcoming pilot study, this project may increase the availability of training on NTPC for clinical practice. Past research shows that there is a lack of adequate training on NTPC and a gap in knowledge among healthcare professionals and caregivers of service users (Castle et al.; Stinson et al., 2021). Following the completion of the future pilot study, the principal investigator plans to release the training materials for public and free availability in an online format. The aim is to promote widespread access to training on NTPC for caregivers and healthcare professionals.

Health Literacy for Research and Practice

Not only does this project have a direct impact related to the pilot study and specific training materials, but it also has implications related to the conception of plain language. This project revealed that plain language is more complex than it seems on the surface. Assessing the reading level in isolation captures one sliver of the larger picture. Results from this project suggest that clinical scientists may have exaggerated their self-perceived ability to implement plain language before the presentation. After the presentation, their understanding of the complexity of plain language expanded and clinical scientists may have recognized opportunities for growth in their ability to implement plain language. Further examination surrounding the actual ability of clinical scientists in implementing plain language is needed. Nonetheless, the complexity of plain language is underrecognized and it encompasses more than just reading level.

In addition, plain language does not receive sufficient attention in the literature. A scoping review investigated best practices for education in preparation for this project

(Appendix A). Within the review of literature, plain language was not strongly represented as an element of educational methods. However, this project suggests that health literacy and plain language are integral parts of delivering clear education materials which need to be included in the literature.

Research teams working on future studies need to evaluate materials used to train participants. In this project, the participant training materials did not meet the recommended standard of education material readability upon initial review. The training would likely have been less effective for the intended audience if the research team used the training materials without evaluation and revisions that were completed for this project. This phenomenon is not unique (Ridpath, 2007). The original readability level of these training materials is likely similar to the readability level of training materials for participants of other research studies. Therefore, an evaluation of training materials prior to initiation of the study is a valuable strategy to ensure that education reaches an audience of diverse levels of health literacy.

Finally, this project postulates the need for increased awareness of tools to assess the health literacy of educational materials among interdisciplinary healthcare professionals and researchers. Before the health literacy education session, most clinical scientists had at least 16 years of professional experience yet were not familiar with tools beyond readability formulas. While this project's health literacy education session only brushed the surface, this group of clinical scientists has a starting point to expand upon. The results indicate the need for future education sessions or workshops that address practical health literacy tools and strategies for researchers and healthcare professionals to implement and plain language considerations into practice. Given that

professionals may be overconfident in their ability to use plain language, and consequently may choose not to attend optional training, healthcare institutions may consider required education on health literacy and plain language to reach a high volume of researchers and professionals.

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Appendix A: Scoping Review

Educating Healthcare Professionals on Clinical Skills for Postural Care Services:

A Scoping Review

Faye McGuire, OTD Candidate

Special Acknowledgement to Scoping Review Faculty Advisor: Dr. Hannah Oldenburg

Abstract

Background. Healthcare professionals lack adequate knowledge to implement night-time postural care (NTPC) services. This scoping review is needed to improve training programs by asking the question: What is the existing evidence on methods of educating healthcare professionals on NTPC services for children with CP? **Methods**. CINAHL Plus Full Text, ERIC, Google Scholar, and AJOT were searched in June 2021. Articles were included if they were written in English language, scholarly peer-reviewed journals, free full-text, published between 2000-2021, covering topics educational methods or models for healthcare professionals, postural care training programs, or healthcare professional NTPC knowledge. The articles were analyzed using the process outlined by Arksey and O'Malley (2005): scanning abstracts, completing initial and critical reviews, collating and summarizing data into themes. **Results**. Fifteen articles were included in the review; 10 were primary research, ranging from Level II to Level VI evidence, two were systematic reviews, two were conceptual/theoretical papers, and one source was grey literature. Four themes extrapolated from the literature suggest education for healthcare professionals on NTPC must (1) aim to increase both competence and confidence in trainees, (2) involve hands-on learning with opportunities for interaction and feedback, (3) incorporate learner-centered modes of delivery, (4)

utilize a multidisciplinary team approach and involve the family. **Conclusions**. The

evidence related to educating healthcare professionals on postural care is limited,

especially specific to NTPC. More research is needed to develop highly effective

training programs and ensure healthcare professionals have adequate knowledge and

skills to implement NTPC successfully.

Introduction and Background

      Nighttime positioning is essential to promote proper symmetrical positioning,

prevent poor health outcomes, and enhance the well-being of children with severe

cerebral palsy (CP; Hoffman, 2017; Wynn & Wickham, 2009). A growing body of

research suggests night-time postural care (NTPC) is effective in reducing body shape

distortion, reducing pain, and enhancing sleep (Goldsmith, 2000; Hill et al., 2009; Mol et

al., 2012; Pountney et al., 2009; Underhill et al., 2012). Unfortunately, as NTPC is in its

early stage of development in the United States (US), the literature lacks consistency

and standardization of training methods for NTPC interventions leading to limited

knowledge related to NTPC among healthcare professionals (Hoffman 2017; Hutson et

al., 2021).

      The gap in NTPC training programs negatively influences the effectiveness of

client outcomes and engagement in sleep. NTPC training programs are essential to

ensure that healthcare team members can successfully employ the interventions to

reduce disability burden and promote well-being for children with severe CP. In addition,

clinical studies on NTPC are of low-quality research design because of the

shortcomings of NTPC training programs (Hutson et al., 2021). Therefore, discovering

current evidence for training healthcare professionals on NTPC and developing effective

training programs will improve research quality, promote knowledge translation, reduce disability burden due to poor body alignment, and enhance participation in sleep, daily function, and well-being of children with severe CP.

Currently, a few scoping reviews exist in the literature on postural care for children with CP. Past studies have examined sleep-based assessments for NTPC services, client perspectives of NTPC equipment, evidence for the effectiveness of NTPC equipment, and best practices for the evaluation and provision of NTPC (Humphreys et al., 2019; Hutson & Snow, 2020; Innocente, 2014; Wynn & Wickham, 2009). However, the literature has gaps on this topic and there is no consensus regarding the training methods for healthcare professionals administering these interventions. No previously published systematic reviews address methods to educate healthcare professionals on NTPC services for children and adults with CP.

This scoping review asks the question: What is the existing evidence on methods of educating healthcare professionals on NTPC services for children with CP? The purpose of this scoping review is to explore what is currently available in the literature related to education for healthcare professionals to inform the development of future NTPC training programs. This scoping review aligns with the World Federation of Occupational Therapy (WFOT) and American Occupational Therapy Foundation (AOTF) research priorities, *evidence-based practice and knowledge translation*, and *technology and environmental supports in home and community* by supporting the translation of evidence-based training practices and addressing environmental supports that promote the health of children with CP (AOTF, n.d.; WFOT, 2018). Two theories, the adult learning theory and the social cognitive theory (SCT), will be used as a

framework for this scoping review, and they will provide recommendations for effective educational methods for new training programs. The results from the scoping review will increase understanding of what evidence exists related to educational methods for healthcare professionals to provide NTPC services, which will advance its research and clinical practice implementation.

Methods: Databases and Alternative Searches for Evidence

This scoping review used the scoping review framework by Arksey and O'Malley (2005). In essence, scoping reviews map out key concepts, explore existing evidence, identify gaps in knowledge, and analyze information dissemination regarding broad topics (Arksey & O'Malley, 2005). Investigators completed the following steps throughout the scoping review process: identify the research question, identify relevant articles, select articles, analyze articles (scan abstracts, complete initial and critical reviews, and collate and summarize results).

Research Question

The central question guiding this scoping review was: What is the existing evidence on methods to educate healthcare professionals on NTPC service for children with CP?

Search Process

The investigator searched for primary evidence using CINAHL Plus Full Text and ERIC between June 15-17, 2021. Search terms and term combinations were compiled throughout the search based on language and synonyms used in the relevant literature. Qualitative, quantitative, and mixed methods studies were included to consider different aspects of methods to educate healthcare professionals on postural care services. In

addition to the primary evidence database search, the investigator searched for grey

literature was conducted between June 19-21, 2021 using a keyword search via Google

Scholar (scholar.google.com), American Journal of Occupational Therapy

(ajot.aota.org) and pearling reference lists of relevant articles.

Selection Process

The primary evidence search had a total yield of 175 articles of which 16 were

assessed for eligibility (Figure 1). The investigator screened articles by reading the title

and abstract of the articles to identify potentially relevant articles. Relevant articles were

obtained from scholarly journals related to occupational and physical therapy,

rehabilitation, allied health professions, and education. Ten of these articles were

selected for critical review. The selection was based on the quality of evidence

(including qualitative and/or quantitative methodology), relevance to the scoping review

question, and integrity and authority of the publisher. To address the question related to

methods used to educate healthcare professionals on NTPC, selection criteria included

relevance to both evidence-based teaching methods for healthcare professionals and

evidence related to training programs for postural care. Papers were excluded if they

did not involve empirical research, did not include results due to incomplete trial status,

focused on clinical intervention efficacy, or did not include full text.

Regarding the alternative search strategies, resources were selected if they were

governmental, organizational, or professional resources related to education for

healthcare professionals or training for postural care. In all, the grey literature search

had a total yield of 843 resources of which 18 were assessed for eligibility (Figure 1).

Five of these resources were selected for critical review based on relevance to the

scoping review question and the integrity and authority of the publisher.

Figure 1

Flow diagram for search and selection process using databases and alternative search

strategies.
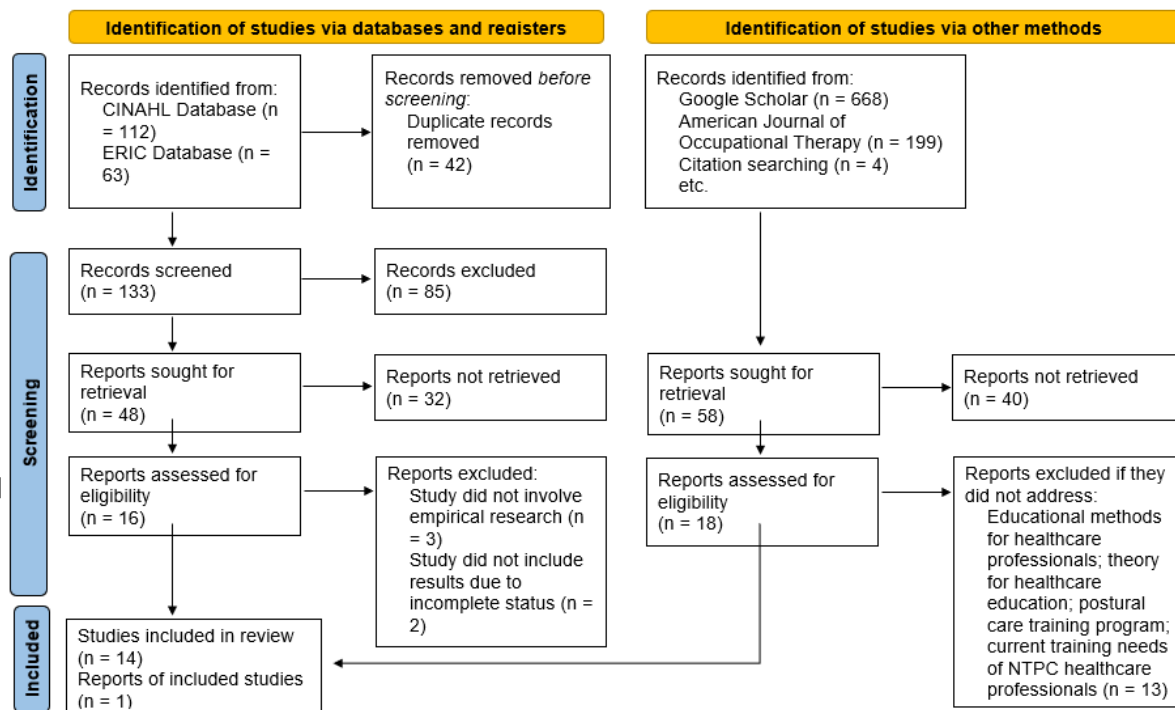
Note. Figure is adapted from PRISMA template for new systematic reviews which

included searchers of databases, registers, and other sources (From*:* Page MJ,

McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA

2020 statement: an updated guideline for reporting systematic reviews. BMJ

2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-

statement.org/)

Analysis: Charting, Collating, and Summarizing

Following article selection, the investigator conducted a critical review, including

initial and critical appraisals. The investigator selected articles for critical appraisals based on the publisher's integrity, quality of research (at least two primary research articles), and relevance to the scoping review question (three selected articles answer the entire question). Focus on methods to educate healthcare professionals on clinical skills and relevance to postural care were primary considerations in the decision of critically appraised articles. All relevant articles were read in full. A standardized template chart addressing the quality and relevance of the article guided the initial and critical appraisals. The investigator conducted numerical analysis by grouping articles into categories based on research design, source of literature, content relevant to the scoping review question, year of publication, population, country of origin, setting, and intervention. The investigator collated article characteristics and summarized data by extrapolating themes from the selected articles.

Results: Appraisals and Reviews of Evidence and Themes

The purpose of this scoping review was to examine existing evidence on methods to educate healthcare professionals on NTPC services. Subsequently, this review extrapolates evidence-based factors that support or hinder NTPC professional education. The search revealed a few relevant studies. The literature, however, lacks research on the topic due to a variety of factors: a) limited evidence supporting the use of NTPC, b) poor implementation and utilization of NTPC in practice, c) new introduction of NTPC to many countries, including the United States, resulting in limited awareness of NTPC, and d) limited availability of training programs on NTPC for healthcare professionals. Thus, the meager focus on methods to educate healthcare professionals

on NTPC in the research makes it difficult to identify many highly relevant and high-quality research articles on this topic.

Due to the aforementioned limitations, the selected articles are less specific to NTPC, but articles address training for general postural care or evidence-based methods for healthcare education. Methods to increase healthcare professionals' clinical skills in areas such as transfers, patient handling, or physical assessment are similar to NTPC clinical skill acquisition. Thus, the investigator applied themes from these articles to answer this scoping review question. The following approach was used to identify relevant articles:

1. Identify articles that address educational methods or instructional design strategies to enhance healthcare professionals' or students' clinical skills and learning outcomes.

2. Identify articles that describe an approach or theoretical framework relevant to educating healthcare professionals or students.

3. Identify articles that examine/outline a postural care training program for implementers (i.e. healthcare professionals, caregivers, school staff, etc).

4. Identify articles that support the current training needs of NTPC healthcare professionals.

Fifteen relevant articles were selected for the initial appraisal. Fourteen of these were primary research, systematic review, or theoretical papers. One source was grey literature, specifically, a program evaluation report. All fifteen articles were evaluated using a standardized initial appraisal template. Levels of evidence varied from level II to level VI (Table 1).

Table 1

Author, title, article type, and scope of articles included in critical review.

Author	Overall Article Type	Specific Article Type (Level of Evidence)	Type of Appraisal	Part of Question*
Baird et al. (2015)	Primary Research Study (Quantitative)	Single-Subject Design (Level VI)	Initial	1
Boucaut & Howson (2018)	Primary Research Study (Mixed-Methods)	Single-Subject Design (Level VI)	Initial	1
Carroll et al. (2009)	Review of Research Study	Systematic Review of Primary Research (Level V)	Initial	1
Castle et al. (2014)	Primary Research Study (Mixed-Methods)	Descriptive/Exploratory Research (Level VI)	Initial	2
de Aguiar et al. (2019)	Conceptual/Theoretical Article	Methodological Development Research	Initial	3
Hill (2011)	Grey Literature	Program Evaluation Report	Initial	4
Hotham et al. (2017)	Primary Research Study (Mixed-Methods)	Single-Subject Design (Level VI)	Critical	3
Hutson et al. (2021)	Primary Research Study (Mixed-Methods)	Randomized Control Trial (Level II)	Critical	4
Jay & Owen (2016)	Primary Research Study (Quantitative)	Non-Randomized, Controlled Trial (Level III)	Initial	1
King et al. (2011)	Primary Research Study (Mixed-Methods)	Non-Randomized Controlled Trial (Level III)	Initial	1
McCall et al. (2018)	Review of Research Study	Overview of Systematic Reviews (Level V)	Critical	1
Pittman & Lawdis (2017)	Primary Research Study (Mixed-Methods)	Single-Subject Design (Level VI)	Initial	1
Stinson et al. (2021)	Primary Research Study (Mixed-Methods)	Descriptive/Exploratory Research (Level VI)	Initial	2
Tolks et al. (2016)	Conceptual/Theoretical Article	Practical guide	Initial	1

| Zaghab et al. (2015) | Primary Research Study (Quantitative) | Single-Subject Design (Level VI) | Initial | 1 |

Note. The Level of Evidence is based on Level I-VII Evidence Pyramid. *1 - Educational methods for teaching healthcare professionals/students clinical practice skills; 2 - Stakeholders' perspective - current postural care training needs in practice; 3 - Development or effectiveness of a postural care training program for parents, school staff, and nurses; 4 - Postural care training programs intended for both parents and rehabilitation professionals.

Two primary research articles and one systematic review were selected for critical appraisals. The quality of research and relevance to the scoping review question determined the article selection. Focus on methods to educate healthcare professionals on clinical skills and relevance to postural care were primary considerations in the decision of critically appraised articles.

Several limitations related to the methodology were noted during the literature appraisals. First, the research design of primary studies was commonly classified as Level VI evidence such as descriptive, survey research, and single-subject design (Baird et al., 2015; Boucaut & Howson, 2018; Hotham et al., 2017; Pittman & Lawdis, 2017; Stinson et al., 2021; Zaghab et al., 2015). Including a control group for comparison in future studies would improve the quality of research. Many primary studies used non-probability purposive sampling methods (Castle et al., 2014; Hotham et al., 2017; Hutson et al., 2021; Jay & Owen, 2016; Stinson et al., 2021). Similarly, a few studies included participants who did not represent the general population (Boucaut & Howson, 2018; Hutson et al., 2021). Small scale studies such as small sample size, single geographic location, or single healthcare institution were common (King et al.,

2011; Pittman & Lawdis, 2017; Stinson et al., 2021). In addition, several studies utilized self-designed outcome measure tools or subjective self-report data, which may have led to biased findings (Baird et al., 2015; Boucaut & Howson, 2018; Hutson et al., 2021; Jay & Owen, 2016; Pittman & Lawdis, 2017). Finally, several studies failed to include a replicable description of the procedures or data analysis (King et al., 2011; Pittman & Lawdis, 2017; Zaghab et al., 2015). Therefore, researchers must implement a controlled research design, representative samples, outcome measures for skill competence, and replicable methodology to enhance research quality and advance understanding of methods to educate healthcare professionals on NTPC.

Despite limitations, the literature revealed a variety of methods to enhance outcomes of healthcare professionals specific to postural care. While there is a lack of standardized training programs specific to NTPC, Hotham et al. (2017) and Hutson et al. (2021) examined the effectiveness of novel postural care programs in improving competence and confidence in trainees. The training program developed and examined by Hotham et al. (2017) targeted parents and teachers and is a face-to-face format. On the other hand, the training programs developed and examined by Hutson et al. (2021) targeted non-professional (parents or family) and professional (healthcare providers) caregivers. Despite their differences, both training programs proved to be effective in knowledge acquisition and increasing confidence in trainees. Thus, Hotham et al. (2017) and Hutson et al. (2021) may inform the development of future training programs on NTPC.

While limited evidence exists specific to postural care training programs, the literature also addresses consistent instructional design strategies for healthcare

professionals in general. In a systematic review, McCall et al. (2018) synthesized

literature findings on digital education for healthcare professionals, which revealed that

digital education is equally or more effective than traditional methods in increasing

learning outcomes, student satisfaction, and clinical practice. In alignment with the

beneficial characteristics of educational programs highlighted by McCall et al. (2018),

other studies included in this review found that similar evidence-based factors increase

the effectiveness of healthcare education programs (Carroll, 2009; Hutson et al., 2021;

Pittman & Lawdis, 2017; Tolks et al., 2016; Zaghab et al., 2015). This evidence has the

potential to inform the development of NTPC training programs to ensure effectiveness

and improve the knowledge, understanding, skills, and confidence of healthcare

professionals employing NTPC services.

Collating

The purpose of this scoping review was to explore the existing evidence related

to methods to educate healthcare professionals on NTPC for children with CP. The

search resulted in 106 articles sought for retrieval after abstract screening (Figure 1).

Thirty-four articles met eligibility criteria, and 15 articles were selected for full-text

review. Ten articles were categorized as primary research, two articles were reviews of

research, two articles were conceptual/theoretical articles, and one article was grey

literature. During the search process, articles were included if they met one or more of

the following criteria:

- Characteristics, effectiveness, or facilitators/barriers of teaching methods to
  enhance clinical skills of healthcare professionals/students

- Theoretical model or framework utilized for educating healthcare

professionals/students

- Development, characteristics, effectiveness, or facilitators/barriers of postural care training programs

- Overview of current practice related to healthcare professionals' training and knowledge on NTPC.

Collectively, the 15 articles answer the whole scoping review question, but in isolation, most articles address only parts of the question (Table 1). Of the 15 articles, nine articles explore beneficial educational methods for teaching healthcare professionals/students clinical practice skills (Baird et al., 2015; Boucaut & Howson, 2018; Carroll et al., 2009; Jay & Owens, 2016; King et al., 2011; McCall et al., 2018; Pittman & Lawdis, 2017; Tolks et al., 2016; Zaghab et al., 2015). Two articles support the stakeholders' perspective involved in the scoping review question by examining the current postural care training needs in practice (Castle et al., 2014; Stinson et al., 2021). Two articles describe the development or effectiveness of a postural care training program for parents, school staff, and nurses (de Aguiar et al., 2019; Hotham et al., 2017). The two articles most relevant to the scoping review question examine and evaluate postural care training programs intended for both parents and rehabilitation professionals (Hill, 2011; Hutson et al., 2021).

Of the ten primary research studies, all were original research. The level of research includes one mixed-methods randomized controlled trial (RCT; Hutson et al., 2021), one quantitative non-RTC (Jay & Owens, 2016), one mixed-method non-RTC (King et al., 2011), two systematic reviews of mixed-methods evidence (Carroll et al., 2009; McCall et al., 2018), two quantitative single-subject design descriptive studies

(Baird et al., 2015; Zaghab et al., 2015), three mixed-methods single-subject design descriptive studies (Boucaut & Howson, 2018; Hotham et al., 2017; Pittman & Lawdis, 2017), and two mixed-methods descriptive exploratory studies (Castle et al., 2014; Stinson et al., 2021). The remaining articles were theoretical/conceptual articles or grey literature. Six of the primary studies utilized survey research (Baird et al., 2015; Boucaut & Howson, 2018; Castle et al., 2014; Pittman & Lawdis, 2017; Stinson et al., 2021; Zaghab et al., 2015), and five of the studies involved focus groups (Castle et al., 2014; Hotham et al., 2017; Hutson et al., 2021; King et al., 2011; Stinson et al., 2021).

Of the 15 articles chosen for this study, nine were published between 2016-2021, and six were published between 2009-2015. Ten of the selected articles for this review were identified from a database search, and five were located using alternative search strategies. All primary research studies, reviews of research, and conceptual/theoretical articles were peer-reviewed scholarly journal publications. Although no articles came from the same journal, the articles selected came from similar disciplines. Six articles came from allied health/rehabilitation (Baird et al., 2015; Boucaut & Howson, 2018; Castle et al., 2014; King et al., 2011; Hutson et al., 2021; Stinson et al., 2021), and six articles came from healthcare education/higher education **(**Carroll et al., 2009; Jay & Owen, 2016; McCall et al., 2018; Pittman & Lawdis, 2017; Tolks et al., 2016; Zaghab et al., 2015).

Of the ten primary research studies, four took place in the US (Baird et al., 2015; Hutson et al., 2021; Pittman & Lawdis, 2017; Zaghab et al., 2015), and three took place in the United Kingdom (UK; Castle et al., 2014; Hotham et al., 2017; Stinson et al., 2021), one took place in Australia (Boucaut & Howson, 2018), one took place in South

Africa (Jay & Owen, 2016), and one took place in Canada (King et al., 2011). Six of the

primary research studies were conducted at an academic institution (Baird et al., 2015;

Boucaut & Howson, 2018; Hotham et al., 2017; Hutson et al., 2021; Jay & Owen, 2016;

Zaghab et al., 2015), and four were conducted at a healthcare institution (Castle et al.,

2014; King et al., 2011; Pittman & Lawdis, 2017; Stinson et al., 2021). The studies

included in the systematic reviews were primarily from the UK and US (Carroll et al.,

2009; McCall et al., 2018), the conceptual/theoretical articles were from Brazil (De

Aguiar et al., 2019) and Germany (Tolks et al., 2016), and the grey literature article

evaluated a program in the UK (Hill, 2011).

The RCT participants included professional and non-professional caregivers of

children with CP completing online NTPC training (n=15 professional, n=23 non-

professional; Hutson et al., 2021). Of the two non-RCT, one compared the educational

curriculum (i.e., problem-based learning, self-evaluation, deliberate practice, and

feedback) for second-year occupational therapy students in four different cohorts (n=93

control, n=69 intervention; Jay & Owen, 2016). The other non-RCT compared the effect

of an 11-month group mentorship program between new and experienced pediatric

occupational therapists (n=8 new, n=17 experienced; King et al., 2011). Participants in

the quantitative single-subject design descriptive studies included occupational therapy

students in master's programs completing transfer simulations (n= 108; Baird et al.,

2015) and pharmacy students completing continuing education modules (n=769;

Zaghab et al., 2015).

For the three mixed-methods single-subject design descriptive studies,

participants consisted of first-year radiology students completing a peer-teaching activity

(n=73; Boucaut & Howson, 2018), parents and school staff receiving training on postural

care (n=20 parents, n=48 school staff; Hotham et al., 2017), and occupational therapists

participating in a 6-week multi-factorial online training (n=17; Pittman & Lawdis, 2017).

One mixed-methods exploratory study participants included multidisciplinary team

members referring individuals for 24-hour postural care (n=57; Castle et al., 2014). The

other mixed-methods exploratory study included occupational therapists and postural

care service users/caregivers (n=96 occupational therapists, n=9 users/carers; Stinson

et al., 2021).

   One systematic review selected 19 studies whose sample size ranged from 14 to

1564 nurses, midwives, allied professions, general practitioners, and hospital doctors

(Carroll et al., 2009). The other systematic review includes data collected from a total of

31,730 participants (predominantly nurses and general physicians) across 16

systematic reviews (McCall et al., 2018). Finally, the conceptual/theoretical articles

address the development of postural care training for NICU nurses (de Aguiar et al.,

2019) and the inverted classroom model for medical students' education (Tolks et al.,

2016). The participants in the program evaluation of an accredited postural care training

program were professionals and family members of children with postural needs (n=65;

Hill, 2011). Of the thirteen articles addressing a specific educational intervention or

program, six address online education (Carroll et al., 2009; de Aguiar et al., 2019;

Hutson et al., 2021; McCall et al., 2018; Pittman & Lawdis, 2017; Zaghab et al., 2015),

while the remaining address either in-person (n=6) or blended approaches (n=1).

Summarizing

The empirical studies selected for this review explored existing evidence on methods to educate healthcare professionals on NTPC for children with CP. Descriptive studies, reviews of research, conceptual/theoretical articles, and grey literature enrich experimental findings by providing a more comprehensive picture. This scoping review identified four themes. First, the educational methods may consider aiming to increase both the competence and confidence of healthcare professionals. Second, the educational methods may consider involving hands-on learning with opportunities for interaction and feedback. Third, the educational methods may consider incorporating learner-centered modes of delivery. Lastly, the educational methods may consider utilizing a multidisciplinary team approach and involving the family.

Theme 1: Competence and Confidence Outcomes. Ten studies included in this review addressed competence and confidence in clinical skills to achieve professional viability in postural care services (Baird et al., 2015; Carroll et al., 2009; Castle et al., 2014; Hotham et al., 2017; Hutson et al., 2021; Jay & Owen, 2016; King et al., 2011; Pittman & Lawdis, 2017; Stinson et al., 2021; Tolks et al., 2016; Zaghab et al., 2015). Professionals serving postural needs reported insufficient knowledge about 24-hour postural management, especially night-time positioning (Castle et al., 2014; Stinson et al., 2021). Higher knowledge and skills related to postural care are associated with more frequent utilization of the intervention (Pittman & Lawdis, 2017; Stinson et al., 2021).

Experimental studies in this review measured changes in self-perceived confidence and competence, knowledge and understanding, concerns, and actual skill

level of clinical skills (Baird et al., 2015; Hotham et al. 2017; Hutson et al., 2021; Jay & Owen, 2016; King et al., 2011; Pittman & Lawdis, 2017; Zaghab et al., 2015). For example, Hotham et al. (2017) and Hutson et al. (2021) found that a postural care training program increased competence and confidence among trainees. Other researchers described how increasing competence among healthcare professionals follows fundamental stages of progression from lower-order to higher-order knowledge acquisition (Pittman & Lawdis, 2017; Tolks et al., 2016; Zaghab et al., 2015). Therefore, NTPC training programs must address advanced skills such as head/neck alignment and closely fitting sleep system components to ensure competence, and future research should establish standardized cut-offs to define competence (Hutson et al., 2021). In addition to competence, confidence-building and self-efficacy are vital factors of effective continuing education and training programs for healthcare professionals (Baird et al., 2015; Carroll et al., 2009; Hotham et al., 2017). Ultimately, education for healthcare professionals should aim to increase both competence and competence.

  Theme 2: Practice, Collaboration, and Feedback. Eleven studies in this review highlighted essential components of instructional design for educating healthcare professionals on postural care, including practice, collaboration, and feedback (Baird et al., 2015; Boucaut & Howson, 2018; Carroll et al., 2009; de Aguiar et al., 2019; Hotham et al., 2017; Hutson et al., 2021; Jay & Owens, 2016; King et al., 2011; McCall et al., 2018; Tolks et al., 2016; Zaghab et al., 2015). First, opportunities for hands-on, practical, active learning experiences for healthcare professional skill development are well-cited within the literature (Baird et al., 2015; Boucaut & Howson, 2018; Jay & Owens, 2015; Hotham et al., 2017; Zaghab et al., 2015). Research suggests that

guided and deliberate practice-based learning (i.e. simulations, case studies, practice coaching, kinesthetic activities, and demonstrations) increases clinical reasoning and problem-solving (Baird et al., 2015; Jay & Owens, 2016; Zaghab et al., 2015). It also increases confidence, clinical service delivery, proficiency, and accuracy (Baird et al., 2015; Jay & Owens, 2016; Zaghab et al., 2015). Furthermore, social cognitive theory (SCT) and adult learning theoretical frameworks address active participation and experiential learning (Baird et al., 2015; Hotham et al., 2017; Zaghab et al., 2015). These frameworks commonly underpin healthcare professional continuing education development (Baird et al., 2015; Hotham et al., 2017; Zaghab et al., 2015). Importantly, research shows that exclusively theoretical and online modules for positioning and handling do not provide sufficient opportunities to learn about the equipment and transfer knowledge into practice, and thus, hands-on training may be necessary to reinforce skills (Boucaut & Howson, 2018; Hutson et al., 2021).

In addition to practice, evidence suggests that collaboration, interaction, and communication have positive benefits on healthcare professional education because it improves clinical skills, confidence, and learner's experience (Boucaut & Howson, 2018; Carroll et al., 2009; King et al., 2011; McCall et al., 2018; Tolks et al., 2016). Examples of collaborative learning activities for clinical skill development among healthcare professionals include mentorship, group discussion, pair work, problem-based learning, buzz groups, think-pair-share, discussion forums, and peer-teaching (Boucaut & Howson, 2018; Carroll et al., 2009; King et al., 2011; Tolks et al., 2016). Including collaborative learning, methods support the social nature of learning (Carroll et al.,

2009). It allows learners to reflect and discuss, which encourages communal support and learning from others (Carroll et al., 2009; King et al., 2011).

A final subtheme gleaned from the literature is the importance of feedback in healthcare professional education (Baird et al., 2018; Carroll et al., 2009; de Aguiar et al., 2019; Hutson et al., 2021; Jay & Owens, 2015; McCall et al., 2018; Tolks et al., 2016). Feedback on understanding and skills increases the learner's awareness of their acquired knowledge, which enables error correction, provides validation, and builds confidence and proficiency (Carroll et al., 2009; Hutson et al., 2021; Jay & Owens; 2015; Tolks et al., 2016; Zaghab et al., 2015). Self-assessment is one method to provide feedback on clinical skills and knowledge, including reflection, debriefing, and digital-recording review to remediate errors (Baird et al., 2015). Other methods reported in the literature include written or verbal feedback from instructors or peers, learning checkpoint quizzes with correct answers revealed, intermittent click and drag exercises, and final exam assessment with a minimum passing score threshold (Baird et al., 2015; de Aguiar et al., 2019; Hutson et al., 2021; McCall et al., 2018). These findings suggest that feedback promotes positive learning outcomes for healthcare professional education.

Theme 3: Learner-Centered Mode of Delivery. Seven studies suggest that the mode of delivery influences outcomes of education for healthcare professionals, and thus, learner-centered approaches are essential (Carroll et al., 2009; de Aguiar et al., 2019; Hill, 2011; Hutson et al., 2021; McCall et al., 2018; Pittman & Lawdis, 2017; Tolks et al., 2015). Online education is becoming more common as technology advances and proves beneficial for healthcare professional education (Carroll et al., 2009; McCall et

al., 2018). In fact, in an overview of 16 systematic reviews examining digital healthcare education, the majority indicated that combining or replacing traditional education with digital education is equally or more effective in improving learners' outcomes satisfaction (McCall et al., 2018). Online education is advantageous because it promotes learners' comfort, flexibility, accessibility, self-pacing, and independence (McCall et al., 2018; Pittman & Lawdis, 2017).

Furthermore, existing evidence on healthcare education frequently includes multi-factorial content delivery (i.e. text, images, animation, videos, audio, and games) because multiple mediums of sensory input support multiple learning styles and learning outcomes (Carroll et al., 2009; de Aguiar et al., 2019; Hill, 2011; Hutson et al., 2021; McCall et al., 2018; Pittman & Lawdis, 2017). When educational modules include multi-factorial materials (e.g., PDF version of video slides), learners can reference information from past modules for a refresher (de Aguiar et al., 2019; Pittman & Lawdis, 2017). As a method to promote multi-factorial learning, developers commonly incorporate educational videos into training modules, as visual learning styles tend to be preferred and beneficial for aiding comprehension (Carroll et al., 2009; Hutson et al., 2021; Pittman & Lawdis, 2017). However, the literature urges consideration of the length (i.e. maximum 10-20 minutes) and clarity (i.e. goal-oriented with learning objectives) to attend to learner's needs and optimize outcomes (McCall et al., 2018; Tolks et al., 2016). Overall, learning-centered principles such as delivery modes, formats, and mediums and striving to accommodate multiple learning styles are vital considerations for healthcare education development.

Theme 4: Multidisciplinary and Familial Involvement. Four primary studies and one program evaluation report emphasized that postural care training programs must utilize a multidisciplinary approach, including the family (Castle et al., 2014; Hill, 2011; Hotham et al., 2017; Hutson et al., 2021; Stinson et al., 2021). While postural care services are multidisciplinary, multidisciplinary team members reported inadequate training (Castle et al., 2014; Stinson et al., 2021). Poor knowledge base hinders their ability to recognize postural problems, refer patients to appropriate services, understand the purpose of postural care, and incorporate postural care management into their practice (Castle et al., 2014; Stinson et al., 2021). Due to these gaps, the involvement of multidisciplinary team members in postural care training is essential for successful implementation.

In addition, the literature suggests that providing training and support to the family and caregivers is a fundamental element of postural management training because of the constant nature of the intervention (Hill, 2011; Hotham et al., 2017; Hutson et al., 2021; Stinson et al., 2021). Caregivers of children receiving postural care services in the UK reported frustrations with the lack of support from therapists in implementing positioning interventions for their children at home, highlighting the importance of including caregivers in training (Stinson et al., 2021). Caregivers need to be knowledgeable and competent on NTPC to ensure follow-through and successful implementation in the home environment. Postural care training programs must not only be designed for healthcare professionals but also for parents and teachers to address this need (Hill, 2011; Hotham et al., 2017; Hutson et al., 2021).

Research shows that postural care training programs for parents and teachers have a positive impact, but parents and teachers may need additional training compared to professionals (Hill, 2011; Hotham et al., 2017; Hutson et al., 2021). For example, Hotham et al. (2017) designed a postural care training program and found that the reassurance, encouragement, and opportunity to discuss concerns helped them feel empowered to implement the program. Hutson et al. (2021) also found that a self-created NTPC training program improved caregivers' competence and skills, but their skills were significantly lower than professionals who completed the same training. Therefore, more examination on recommendations for caregiver training content is required to ensure adequate skill level. Nonetheless, training initiatives establish a partnership between family caregivers and professionals, supporting successful postural care implementation (Hill, 2011; Hotham et al., 2017; Hutson et al., 2021; Stinson et al., 2021).

Discussion: Implications, Limitations, Recommendations, and Conclusions

This scoping review answers the scoping review question on general current methods used to educate healthcare professionals and specific training programs for postural care, however, it does not specifically address care for children with CP. Much of the evidence included in this review did not specifically address NTPC for children due to limited research on the topic. Despite this, the literature relating to general postural care management was appraised and subsequently applied to the question appropriately. The themes identified from this review revealed the importance of increasing both competence and confidence of healthcare professionals, providing opportunities for practice, collaboration, and feedback, incorporating learner-centered

modes of delivery, and utilizing a multidisciplinary team approach that includes the family in NTPC education.

The investigator identified issues exist related to the quality of evidence included in this scoping review. For instance, many of the studies were of low quality due to design, sampling, outcome measures, and procedural limitations. Many studies were descriptive, used non-probability sampling, and either did not report cultural demographics or lacked diversity, limiting generalizability (Baird et al., 2015; Boucaut & Howson, 2018; Castle et al., 2014; Hotham et al., 2017; Hutson et al., 2021; Pittman & Lawdis, 2017; Stinson et al., 2021; Zaghab et al., 2015). In addition, self-created and self-report outcome measures were common, and researchers often failed to report replicable methodology for the procedure, data collection, and data analysis (Baird et al., 2015; Boucaut & Howson, 2018; Hutson et al., 2021; Jay & Owen, 2016; King et al., 2011; Pittman & Lawdis, 2017; Stinson et al., 2021). Therefore, low research quality warrants the need for more research to be conducted on educational methods for healthcare professionals.

In addition, the literature has gaps in knowledge regarding NTPC training for healthcare professionals. The majority of the articles in this review addressed general postural care training or healthcare professional education. For instance, articles included in this review address training for transfers, patient handling, or clinical assessment. While this research contains elements that apply to NTPC training, more research is needed on training programs specific to NTPC to improve generalizability. In regards to knowledge gaps surrounding the review's themes, several articles suggested that providing opportunities for practice and feedback enhances learning

outcomes for healthcare professional education (Baird et al., 2015; Jay & Owens, 2015; Hutson et al., 2021; Zaghab et al., 2015). However, the literature does not address how much practice and the type of feedback. More research would inform education developers to optimize the benefits of feedback. Lastly, while articles in this review highlighted the importance of including family members in NTPC training, no clear recommendation exists in the literature regarding the distinction between professional and caregiver training programs. Some postural care training programs include both parent and professional trainees, but research also suggests that parents may need more extensive training than professionals to attain the same level of skill. Therefore, more knowledge about the content and format of NTPC education best suited for parents versus professionals is needed.

Implications

This research has broad implications for knowledge translation, occupational therapy practice, and service delivery of NTPC. Despite the therapeutic benefits of NTPC for children with CP, there is a need for improved training opportunities to educate healthcare professionals on NTPC for better practice and research. Occupational therapists, who are predominantly involved in NTPC, have limited knowledge and skills in night-time positioning, and there are limited professional training opportunities (Stinson et al., 2021). The methods and considerations of NTPC education identified in this review will inform training development and support NTPC competency in occupational therapists. Increased knowledge and skills related to postural care among occupational therapists are associated with more frequent intervention utilization, advancing healthcare services for children with CP (Stinson et

al., 2021). Findings indicate the value of multidisciplinary and family involvement in NTPC, so occupational therapists must prioritize caregiver training, collaboration, and partnership regarding NTPC service delivery (Castle et al., 2014; Hill, 2011; Hotham et al., 2017; Hutson et al., 2021; Stinson et al., 2021). In addition to practice implications, the findings from this review may lead to higher-quality research on NTPC. Namely, this overview may influence the development of standardized and effective training protocols for clinical studies. High-quality research will ultimately promote the widespread implementation of NTPC into practice.

The findings of this scoping review can inform the development of future educational programs on NTPC, which will benefit the site of a future capstone project. Occupational therapy students will use the findings of this review to evaluate NTPC training modules. Then, a research team will use the training modules as part of a clinical intervention trial conducted by St. Catherine University in collaboration with two healthcare organizations that serve individuals with disabilities. Moreover, the findings from this scoping review will generate recommendations for the research team to develop an effective training program, which supports the aim of each organization to advance knowledge and provide specialized, high-quality, and family-centered care to clients (Gillette Children's Specialty Healthcare, 2022a; Methodist Le Bonheur Healthcare, 2022).

The findings from this review inform aims, outcomes, and approaches for educational development related to NTPC. Based on the results, the primary goal of NTPC educational programs must aim to increase both competence and confidence of healthcare professionals. While increasing knowledge and skill is vital to implementing

evidence-based interventions, self-efficacy also influences a professional's quality of service delivery (Pittman & Lawdis, 2017; Stinson et al., 2021). To determine the effectiveness of an NTPC educational program, training developers can use competence and confidence as outcome measures pre- and post-completion. Furthermore, the scoping review findings suggest that competence among healthcare professionals progresses from lower-order to higher-order knowledge acquisition (Pittman & Lawdis, 2017; Tolks et al., 2016; Zaghab et al., 2015). This implies that developers must design NTPC educational programs to range from factual knowledge to clinical reasoning, and additional attention on the most challenging tasks of NTPC is warranted.

Additionally, the findings suggest that including hands-on practice, collaboration, feedback, learner-centered modes of delivery, and multidisciplinary approaches improve the effectiveness of education for healthcare professionals (Baird et al., 2015; Carroll et al., 2009; Jay & Owens, 2016; McCall et al., 2018; Pittman & Lawdis, 2017; Zaghab et al., 2015). One way to implement these elements may be to design a multi-factorial video-based module followed by a group workshop for healthcare professionals with opportunities to practice positioning using equipment and exchange verbal feedback. Through such a program, professionals would have the chance to gain basic knowledge independently at their own pace, and then they can discuss concerns, reinforce their skills, and assimilate knowledge. Ultimately, these methods, informed by scoping review findings, would enhance competence and confidence among rehabilitation professionals delivering NTPC.

Limitations

Limitations exist related to the scoping review process. First, the scoping review search and appraisal process did not use a standardized tool to evaluate the evidence quality. To address this factor, the investigator selected five uniform research-quality criteria to enhance standardization. The review also included a wide range of research designs and source types, which made it difficult to apply consistent appraisal methods across all resources. In addition, the fact that there was only one investigator and two databases searched limited the number of articles screened and the number of search strategies utilized. The search process, article screening, inclusion criteria and article selection, appraisals, and theme extrapolation may be incomplete or biased. The investigator attempted to address these factors by receiving critiques from peer reviewers during each phase of the process. Finally, a limitation regarding the overall scoping review is that it provides a broad overview of available literature rather than an exhaustive search with specific answers.

Recommendations

The results of this scoping review suggest the following specific considerations related to methods to educate healthcare professionals on NTPC. First, authors recommend incorporating the following instructional design elements into online education for healthcare professionals: (1) learning objectives, (2) clear, short segments, (3) multi-factorial, student-centered activities, (4) interactivity, (5) practical examples (McCall et al., 2018). For example, using video, text, and images within modules that are less than 20 minutes long enhances learning outcomes in healthcare professional education (McCall et al., 2018). The literature also suggests that future

healthcare professional education programs may consider providing opportunities for deliberate practice and feedback to enhance clinical skill proficiency among healthcare professionals (Jay & Owens, 2016).

Specific to NTPC training programs, the literature recommends developing an interactive, video-based 2-hour online program embedded with feedback to increase confidence, competence, and awareness of skills (Hutson et al., 2021). In addition, the authors recommend allocating extra attention to teaching challenging tasks related to NTPC in training programs such as head/neck alignment and closely fitting sleep system components (Hutson et al., 2021). Finally, future postural care training programs must be developed for both professionals and family members (Hotham et al., 2017; Stinson et al., 2021).

Conclusion

In conclusion, this scoping review appraised 15 articles to explore the existing literature on methods to educate healthcare professionals on NTPC. Findings indicate that NTPC educational programs may consider incorporating practice, collaboration, feedback, and learner-centered principles to increase learners' competence and confidence. Furthermore, multidisciplinary teams and family members must be involved in NTPC training and service delivery. This knowledge can enhance occupational therapy practice and NTPC service delivery by informing the development of NTPC educational programs for healthcare professionals in the future.

Appendix B: Community Needs Assessment

Doctoral Capstone Project Proposal Needs Assessment

Satisfactory completion of the Doctoral Capstone Project Needs Assessment is required for completion of doctoral capstone project proposal course.

Student Name	Faye McGuire
Primary Area of In-Depth Exposure	Education
Secondary Area of In-Depth Exposure	N/a
Working Title of Doctoral Capstone Project	Evaluation/Outcome Measures NTPC Training Package
Capstone Mentor name and credential	Dr. Jennifer Hutson Ph.D., OTR/L, ATP
Capstone Mentor role and expertise	Role: Assistant professor of occupational therapy at St. Catherine University and Principal Investigator (PI) of the pilot research study; Expertise: Postural care/seating and positioning, background in educating rehabilitation professionals on postural care, clinical experience in pediatric seating and positioning rehabilitation, and research initiatives in sleep and sleep positioning for persons with cerebral palsy
Capstone Site	St. Catherine University, A healthcare organization that serves individuals with disabilities in Minnesota
Capstone Faculty Advisor	Dr. Stephanie de Sam Lazaro
Date	4/29/2022

Part 1: Description of the Organization or Community

Description of Organization/Community

      The site of my doctoral capstone experience and project is a pilot research study examining the impact of night-time postural care (NTPC) on children with cerebral palsy. NTPC is an intervention that employs sleep systems to promote symmetrical body alignment and improve sleep quality in users. The research study is affiliated with two organizations: St. Catherine University (SCU) and a healthcare organization that serves individuals with disabilities in Minnesota. The latter will be referred to as a healthcare organization. SCU has an active role in the study and is responsible for the research team members who are involved in coordinating the research. Primary stakeholders from SCU include the principal investigator (Dr. Jennifer Hutson, Ph.D., OTR/L, ATP), capstone students, and research team members. The healthcare organization plays a passive role in the research study whose main role is to serve as a resource to recruit participants for the study. Primary stakeholders from the healthcare organization include the participants (10 children ages 2-12 with severe cerebral palsy [GMFCS IV or V] who speak either Spanish or English), their caregivers, the site principal investigator (physiatrist), and the research administration team. The mission/values, physical environment, and background of both SCU and the healthcare organization are important considerations for the purpose of a needs assessment.

      SCU is a private women's liberal arts institution whose mission is to "educate women to lead and influence" (St. Catherine University, 2022b). SCU is rooted in Catholic Social Teaching, inclusivity, social justice, community, scholarship, and academic excellence (St. Catherine University, 2022a). The university was founded in 1905 by the Sisters of St. Joseph of Carondelet in St. Paul, Minnesota, and currently houses 3 colleges including baccalaureate, graduate, and adult colleges (St. Catherine University, 2022a). Henrietta Schmoll School of Health was established in 2007 with a commitment to advanced healthcare education and houses the Department of Occupational Therapy (St. Catherine University, 2022a). SCU students and faculty are involved in research and scholarship activities to advance knowledge of the world, which aligns with this research study project.

      The healthcare organization is a non-profit children's hospital whose mission is to "partner with individuals and families to provide specialized, coordinated care for individuals who have complex, rare, or traumatic conditions starting in childhood" (Gillette Children's Specialty Healthcare, 2022a). The healthcare organization was founded in 1897 as the first hospital in the U.S. dedicated to providing care for children with disabilities and has expanded significantly (Gillette Children's Specialty Healthcare, 2022b). The organization has four locations within the Twin Cities, four locations across greater Minnesota, and serves children and families from 42 different states and 8 countries through physical and virtual care visits (Gillette Children's Specialty Healthcare, 2022c). The healthcare organization provides surgical, medical, and rehabilitative care to children with highly specialized needs and musculoskeletal and neurological conditions such as cerebral palsy (Gillette Children's Specialty Healthcare, 2022c).

The care model values family collaboration, and the organization is involved in research initiatives on medical conditions including cerebral palsy (Gillette Children's Specialty Healthcare, 2022c). The healthcare organization serves over 25,000 patients and families each year, 4,000 of which are children with cerebral palsy (Gillette Children's Specialty Healthcare, 2022c). Therefore, the healthcare organization will provide access to the patient population that aligns with this research study project.

Although physical sites exist for both SCU and the healthcare organization, the study itself will take place in different locations. The coordination of the study will primarily occur virtually and participants (collected from populations the healthcare organization serves) will be completing the study protocol within their homes with possible home visits from the research team for follow-up. In addition, the primary social structures impacting the interaction between SCU stakeholders and study participants recruited from the healthcare organization include religion (SCU is a Catholic institution), education (possible different levels of education), and family (family caregivers carrying out study protocol).

In the past, Dr. Jennifer Hutson and students in the SCU Occupational Therapy Master's program have conducted research and developed materials which will continue to be built upon during the capstone experience and project. Ultimately, the background initiatives combined with the capstone project activities will contribute to the conduction of a pilot study. Within the past 2 years, Dr. Jennifer Hutson published two research articles. Both studies relate to nighttime postural care and promote research integrity and feasibility of the upcoming study. First, a scoping review examined assessment tools that are suitable for measuring sleep-based intervention changes (Hutson & Snow, 2020). Based on the literature findings, the study's principal investigator selected specific assessment tools to measure outcomes (quality of life sleep, pain, body shape) in the pilot study. Previous SCU students then developed online training modules on each of the specified assessments for their Master's project. Another group of SCU students developed online training modules on the nighttime postural care intervention. The second research study published by Dr. Jennifer Hutson was a randomized controlled trial that investigated the effectiveness of the student-developed online modules in increasing competence for implementing nighttime postural care (Hutson et al., 2021). The study findings indicated that online modules were effective in increasing learner competence. Therefore, the present study will utilize pre-existing training modules to educate the research team (team evaluation and team fitting) and study participants/caregivers in preparation for carrying out the research study.

> **Priority/Need/Issue #: 1** All participants (research team, caregivers) need to be educated on their role in the research study.
>
> Primary Goal: Develop a comprehensive online training package on evaluation/outcome measures including relevant educational modules and standardized scripts.
>
> Strategy: Evaluate and identify gaps in pre-existing video-based modules (developed by past St. Catherine University Occupational Therapy Master's students) by applying best

practices of education. Create supplemental modules to fill the gaps. Write scripts to support the development of a standardized research protocol. Compile training materials into an accessible unit with a checklist.

**Priority #1 is the priority addressed in the needs assessment.

Priority/Need/Issue #: 2 Training packages need to be accessible to Spanish-language speakers.

Primary Goal: Coordinate Spanish translation of evaluation/outcome measures training package.

Strategy: Receive contact information for translator services and meet with the translator to provide necessary information for translation.

Priority/Need/Issue #: 3 All research team members (and participants/caregivers, time permitting) must complete the necessary training.

Primary Goal: Administer virtual training for research team members (and participants/caregivers, depending on the timeline of participant recruitment).

Strategy: Communicate with trainees to answer questions. Ensure all links for training modules are working. Determine the effectiveness of training materials through post-training self-perceived competence measures.

Part 2: Preliminary Information and Resources for Learning about a

Priority/Need/Issue

Internal Information and Resources

Name of Information or Resource	Description of Information or Resource	Brief Summary of Key Learning
Meeting with Dr. Hutson	Met with Dr. Hutson and Ellie (peer capstone student) to discuss the current status of the research study and site needs/priorities	- The site needs training packages (both Spanish and English) to educate the research team on the intervention and outcomes of the pilot study - Assessment/outcome data will be collected at baseline, 3 months, and 6 months - Gillette physician is the site principal investigator who will be involved in research administration and participant recruitment
Service delivery care pathway	This confidential document contains flow charts and tables	- The outcomes and measures included in the study will be quality of life, sleep,

	outlining the care pathway, timeline to collect outcomes, and potential outcome measures to be used within the research study. The document also contains links to learn more information on specific assessments.	pain, and posture; these are what the research team will need to be educated on. - Caregivers must be educated on how to utilize the assessment tools that are used to continuously track outcomes
and measures document		
Night positioning: Online training of care providers training lesson	Dr. Jennifer Hutson, associate professor at St. Catherine University, developed a training lesson at the International Seating Symposium. This 4-hour session (comprised of six videos and intermittent quiz questions) was designed to educate rehabilitation professionals on providing postural care services to children and caregivers.	- The primary outcome measures used for NTPC include pain, body shape, and sleep since those are the characteristics targeted by sleep systems. - Before and after measurements are required - PPP = pain; SDSC = sleeping; PPAS = position - Overview of each assessment provided

External Information

Name of Information or Resource	Description of Information or Resource	Brief Summary of Key Learning
Hutson, J., & Snow, L. (2020). Sleep assessments for children with severe Cerebral Palsy: A scoping review. *Archives of Rehabilitation Research and Clinical Translation,* 2(4), 1-8. https://www.sciencedirect.com/science/article/pii/S2590109520300756?via%3Dihub	Research article (scoping review) examining the suitability of various sleep-based assessments to measure postural care outcomes for children with cerebral palsy.	- Sleep disturbances for children with CP are more common and frequent, but they are under-recognized by rehab professionals They include sleep initiation, maintenance, breathing, sleep-wake transition, daytime sleepiness, and total sleep time - To measure changes in sleep, the use of both the Sleep Disturbance Scale for Children and actigraphy are most appropriate for children with CP receiving postural care, as they performed best on the evaluation. - Utilizing multiple measures may produce the best results.
Hutson, J. A., Hodges, J. S., & Snow, L.	A randomized controlled trial examining the effectiveness of	- Researchers found that the interactive online training modules effectively increase the NTPC self-perceived

(2021). Educating caregivers of persons with cerebral palsy in night-time postural care: A randomized trial comparing two online training programs. *Clinical Rehabilitation*, 1-12. https://doi.org/10.1177/02692155211009484	interactive vs. self-guided online training for NTPC.	competence of trainees compared to self-directed modules - There seems to be a difference in learning between rehabilitation professionals and caregivers, so there needs to be more focus on the learning needs of caregivers.
Wood, N., & Brown, S. (2022). An exploratory study: The effects of sleep systems on sleep quality, pain and carer goals for non-ambulant children and young people with cerebral palsy. *Journal of Rehabilitation and Assistive Technologies Engineering, 9*, 1-9. https://doi.org/10.1177/20556683211070729	An exploratory research study looking at the impact of sleep systems on sleep and pain in children with cerebral palsy.	- Past research has collected outcome measures for a short amount of time (a few days), which has limited opportunities to see changes. - Outcome measures such as sleep diaries (caregiver report-times going to bed and waking, night waking frequency, duration and reason as to waking, nap times) were meant to be completed daily but had difficulty with compliance. - The Chailey Sleep Questionnaire and PPP (pain) were administered monthly for 5 months by therapists - Caregivers received education, guidance in pictorial formats, and support

Gaps in Learning:

- Training modules on outcome measures for NTPC
- Administration of intervention and outcome tools
- Best practices for online education
- Details on the study protocol

Part 3: Informational Interviews

Interview 1 - Dr. Jennifer Hutson, Ph.D., OTR/L, ATP, Assistant Professor of

Occupational Therapy, Capstone site mentor

In April 2022, there was an informational interview with the capstone site mentor and the peer capstone student, Ellie Leabch, to discuss the current status of the research study and site needs/priorities. The meeting took place over Google meets and students took notes on the conversation.

During the interview, Dr. Hutson shared that the research study has changed to a small-scale 6-month pilot study (previously planned RCT, 1 year) due to a lack of grant funding. A company that distributes sleep systems (Simple Stuff Works) will be donating and providing equipment for the study. The study will be randomized and blinded. A total of 10 children ages 2-12 with severe CP will be recruited for the study and half will receive a full sleep system while the other half will receive a partial sleep system. The research team, participants, and caregivers will need to be educated on the intervention and outcome measures, which will be collected at baseline, 3 months, and 6 months. SCU plays an active role in coordinating the research, and the healthcare organization plays more of a passive role in providing access to recruiting participants. The study must undergo internal review through the healthcare organization, then IRB approval through the U of M is required and capstone students are to supplemental materials students will be expected to complete for contribution to the IRB process.

For the capstone project, there need to be training packages created to educate the research team on the intervention (Ellie-peer capstone student) and outcome (Faye McGuire) to be utilized during the study. These training materials will then educate caregivers/study participants on the sleep system and outcome measures. Depending on the study timeline with participant recruitment, training of study participants/caregivers may also be a part of the capstone project. Some education modules have already been created, so the role of the capstone students is to identify and fill the gaps as well as coordinate Spanish language translation since many viewers will be Spanish speaking. As far as project evaluation, possible ideas include analysis of student field note journals throughout the experience or administration/analysis of learner competence following completion of the training package. Due to the research nature of the project, confidentiality may limit collectible and shareable data, which will be further discussed with the healthcare organization site principal investigator. The informational interview was helpful to inform the needs assessment and introduction to the capstone experience/project.

A follow-up meeting was held with Dr. Hutson, Dr. de Sam Lazaro (faculty advisor), and Ellie Leabch (peer capstone student) for some clarification on the timeline and vision/contents of the training packages. During this meeting, a rough outline of activities to be completed during the summer months helped inform MOU and project goals. Additionally, concrete outcome

measures were provided to each capstone student (examination of post-training self-perceived competence) and the team discussed student contributions to the IRB process.

Overall, key learning from the interview includes there is a need for training packages to be developed and delivered to educate research staff and caregivers/participants on outcome measures to be used in the study; capstone students will contribute to supplemental materials (i.e. participant recruitment flyers and consent forms) for IRB study protocol; self-perceived competence following training will be used as an outcome measure.

Interview 2 - Physiatrist at the Healthcare Organization, Site Principal Investigator

Capstone students met with the physician and Dr. Hutson on 4/27/22 for 30 minutes over Google Meets. The purpose of the meeting was to introduce members of the research team and outline the role of each team member in the pilot study and capstone project. Gillette physician is a rehabilitation medicine physician who currently works in the adult clinic at the healthcare organization. She primarily works with the cerebral palsy and spina bifida population. She has been involved in clinical research throughout her career. As the principal investigator of the site, she will be involved in providing flyers to patients/caregivers for participant recruitment. She is also willing to provide additional mentorship for capstone students through arranging shadowing opportunities and discussing particular diagnoses or interventions with students. The physician will send capstone students information for setting up shadowing opportunities. Throughout the capstone experience, students and mentors will meet virtually every month. Since the role of the healthcare organization is passive, there is no additional action needed by the students to support the physician's role at this time.

Part 4: Public Records and Organizational/Community Resources

1. Night positioning: Online training of care providers training lesson

   Description: Dr. Jennifer Hutson, associate professor at St. Catherine University, developed a training lesson at the International Seating Symposium. This 4-hour session (comprising six videos and intermittent quiz questions) was designed to educate rehabilitation professionals on providing postural care services to children and caregivers.

   Summary: This series of online training lessons on nighttime positioning contributed a colossal amount of understanding related to night-time positioning. The first lesson summarized all currently existing evidence on the effectiveness of sleep positioning systems succinctly and systematically. The first lesson also addressed the service delivery pathway and seller/payment process for sleep systems. The second lesson discussed health risks to monitor such as pain, body temperature, swallowing, pressure ulcers, and breathing. These precautions are critical to be aware of to prevent safety risks for the users, and the lesson provides a simple checklist to complete during a two-hour trial followed by a three-day trial with the sleep system. The third lesson introduced

three sleep systems available in the United States and the key similarities and differences. When deciding which sleep system to use, all factors must be considered to best fit the sleep system characteristics to the user's needs.

Next, the fourth lesson provided a visual demonstration of setting up different sleep system types. The module highlighted the various components of each system, along with the logistics of setting it up. The fifth lesson demonstrated positioning a person within the sleep system to promote neutral posture. Positioning and alignment principles and person/environmental factors play a role. Because each individual's positioning needs are different, a foundational understanding of these principles is critical for guiding clinical practice. Finally, the sixth lesson introduced specific outcome measures that may be used to measure the effectiveness of a sleep system. Learning how to select and administer these assessments is essential for ensuring quality outcomes for night positioning services.

The first five lessons will provide a foundation of background knowledge on the topic of NTPC for the capstone project. The sixth lesson contains information that will be used more directly for the development of the assessment/outcome training package. The video instruction and links to access assessment tools will be valuable tools to learn each assessment and educate other individuals on the assessments.

2. Hutson, J., & Snow, L. (2020). Sleep assessments for children with severe Cerebral Palsy: A scoping review. *Archives of Rehabilitation Research and Clinical Translation, 2*(4), 1-8.
https://www.sciencedirect.com/science/article/pii/S2590109520300756?via%3Dihub .

Description: Research article (scoping review) examining the suitability of various sleep-based assessments to measure postural care outcomes for children with cerebral palsy.

Summary: The purpose of this study was to evaluate sleep-based assessments using Coster's guidelines to determine which assessments may be suitable to measure postural care outcomes for children with CP. Hutson and Snow (2020) searched databases for relevant outcome measures and identified 6 relevant sleep-based assessments (actigraphy, Chailey Sleep Questionnaire, Pediatric Sleep Questionnaire, polysomnography, sleep diary, and Sleep Disturbance Scale for Children). Using Coster's questions, they analyzed and ranked each assessment tool in terms of suitability for the population/intervention. Based on the literature findings, the authors also indicated that in order to be considered suitable, the assessment tool needed to show change over months (to be in congruence with the amount of time it takes for sleep-related changes to occur) and show change within a several sleep domains (children with CP have issues in a variety of domains). Hutson and Snow (2020) determined that the Sleep Disturbance Scale for Children and actigraphy performed best on the evaluation and could pair well to assess sleep for children with CP. Importantly,

researchers noted that utilizing multiple measures may produce the best results. This study informs the capstone project because it provides an overview and quality analysis of a collection of assessments that are included in the pilot study protocol. In order to deliver training on these assessments, an understanding of their suitability for the study and understanding of their strengths/weaknesses is necessary.

Part 5: Organization or Community Assets

1. Simple Stuff Works

   Description: Simple Stuff Works is a sleep system manufacturer in the UK.

   Summary of Asset: Simple Stuff Works is an asset to the pilot study for multiple reasons. First, the company will be providing the sleep system products to SCU for the conduction of the pilot study. Due to limited external funding upon multiple attempts, the study is made possible due to the company's donation. In addition, the company has several training materials and resources (handouts with pictures and videos) on its website to inform customers on how to use the sleep systems (https://www.simplestuffworks.com/). Because the SCU study will be utilizing Simple Stuff Works sleep systems, this will be a vital resource during the capstone experience and project to ensure research team members, participants, and caregivers understand how to set up and utilize the sleep system for increased research integrity.

2. Gillette Phycisian

   Description: The physician is a physiatrist at the healthcare organization and is the site principal investigator for the pilot study.

   Summary of Asset: The Gillette physician will coordinate participant recruitment through the research administration team at the healthcare organization. She will support the needs of the capstone experience by providing feedback on training packages, providing information on the Spanish translation of training materials, and setting up means of communication with caregivers/participants. She will also be a resource for determining what data can be collected and shared for the purpose of the capstone project. Finally, the physician will provide mentorship through discussing conditions/interventions and arranging shadowing opportunities for the capstone experience.

Part 6: Proposed Methods to Collect Other Information During the Doctoral

Capstone Experiences and Project

Internal Information and Resources

Name of Information or Resource	Description of Information or Resource	Brief Summary of Focus of Learning
Dr. Jennifer Hutson	PI of research study and mentor-weekly check-in meetings via Google Meets and email communication	Collaboration on project/experience goals, provide feedback on training package materials, guide project needs to be based on research study status
Gillette Physician	Site PI of research study - monthly virtual meetings throughout capstone experience and email communication	Provide feedback on training packages, provide information for Spanish translation, set up means of communication with caregivers/participants, share knowledge through discussions on conditions/interventions and shadowing opportunities
Post-Training Competency Survey	Dr. Hutson used a self-developed Likert scale for a past NTPC research study to measure self-perceived competence. Will explore other pre-existing tools and determine if complementary/alternative tools are necessary.	Source of data for capstone project evaluation; trainees will complete a survey following their completion of training modules
"24-7 Posture Care Management (24-7 PCM): what is the body of Evidence? What questions remain?"	Bibliography document/reference list created by Patricia Toole MAT, MsOT, OTR/L, ATP, Jennifer Hutson Ph.D., OTR/L, ATP, Lee Ann Hoffman OT, ATP/SMS, and Kourtni Reed OTD, OTR/L, ATP/SMS, provided to capstone students by site mentor (Dr. Hutson).	Contains literature and additional resources (websites links, videos) related to 24-7 posture care management including assessments, outcome measures, service delivery, training, and secondary complications. Learning will focus on assessment literature as well as links to assessment websites, which will increase the ability to develop/deliver

		comprehensive training packages
Outcome/assessment training modules and cultural fluency training module	These video-based modules were created by past SCU students and will be the foundation of the outcome/assessment training package	Provide an overview of assessment tools that the research team and caregivers/participants will need to utilize; capstone project activity will be to view modules, organize training materials, formulate questions, and identify gaps not addressed by modules
IRB study protocol	The research team has completed the majority of the IRB study protocol which outlines the specifics of the research study	Provide a plan of action for study methodology, participant recruitment, data collection, etc.; capstone project activities will include creating supplementary materials for IRB study protocol (i.e. participant flyers, scripts, etc)

External Information

Name of Information or Resource	Description of Information or Resource	Brief Summary of Focus of Learning
Simple Stuff Works	Company providing sleep system equipment for the pilot study https://www.simplestuffworks.com/resources/ - Provides resources including body symmetry measurement and clinical resources (clinical justification, checklist tools, literature, and care pathway)	Exploring the website will increase understanding of how to use the equipment as well as protocols for implementing assessment tools
RENSA 24-7 Posture Care Management Special Interest Group	International community of rehab professionals internationally that focuses on supporting knowledge around 24-hour positioning; founders of the SIG are experts on the niche topic and development of PCM in the US	Previously joined RENSA Connect community to learn more about topic of postural care through access to monthly SIG meeting recordings, discussion posts, published resources, and networking; learning through this community will support the ability to develop/deliver comprehensive training packages and professional experiential goals

Materials from Educational Methods Course	Lectures, scholarly articles, and assignments provided through and/or completed in the Educational Methods course (Occupational Therapy Program)	Review information pertaining to best practices for education and select models to guide the evaluation/development of training packages for the capstone project
Scoping Review	Completed as a part of the OCTH program; Scoping review question was: What evidence-based practices can be used to guide the NTPC education of rehabilitation professionals serving children with CP and impaired mobility?	Apply theme findings to evaluate existing educational modules and guide recommendations for finalizing the training package

Part 7: SWOT Analysis: Strengths, Weaknesses, Opportunities, and Threats

Internal		External	
Strengths	**Weaknesses**	**Opportunities**	**Threats**
Online educational modules (assessments and cultural fluency) have already been established	Low credibility/small-scale research study	Accessibility to virtual world and increased virtual utilization following pandemic	Reimbursement structure in the US to support the use of sleep systems
Assessments selected for study are supported by research	Multiple evaluators – decreased interrater reliability	Majority of households have Wi-Fi/smart device	Formal training/education opportunities on 24-hour postural care for caregivers and professionals are lacking
Funding - resources available for Spanish Language translation, sleep systems donation	Self-reported outcomes measure and possible poor adherence to completion of assessment items	More families are familiar with telemedicine	AT equipment abandonment phenomenon
SCU has access to research team and The healthcare organization has access to the target population	No internal funding and denied grant funding	Expand utilization of sleep systems to the US - Pilot study may provide evidence supporting clinical use of sleep systems	Still pending IRB approval through U of M or The healthcare organization
Value of IDT collaboration and family-centeredness	Limited ability to collect/share data	Collaboration and/or dissemination of findings through	Sleep system interventions are not included in national

	due to it being a research study	RENSA 24-7 PCM SIG	policy standard of care
Past publications by Dr. Hutson on the topic	Uncontrollable factors and variety in the home environment of participants		
High research integrity – double-blinded and randomized	Possible difficulty/inability to recruit participants		

Part 8: Preliminary Evidence Review on Populations, Interventions, and Programs

of the Organization/Community

List of key topics to inform capstone project specific to site:

- Best practice for online educational methods
- Learning theories to support adult education
- Outcome measures to determine the impact of NTPC (and psychometric properties)
- Service delivery of NTPC
- Evidence on previously developed training programs on NTPC
- Evidence surrounding the effectiveness (benefits/risks) of sleep systems

Review of Evidence

1	**Overview of Article**
Type of article	Overall Type: Primary Research (Quantitative)
	Specific Type: Psychometric Evaluation
APA Reference	Bruni, O., Ottaviano, S., Guidetti, V., Romoli, M., Innocenzi, M., Cortesi, F., & Giannotti, F. (1996). The Sleep Disturbance Scale for Children (SDSC) Construction and validation of an instrument to evaluate sleep disturbances in childhood and adolescence. *Journal of Sleep Research, 5*(4), 251-261. https://doi.org/10.1111/j.1365-2869.1996.00251.x
Abstract	"To attempt a categorization of sleep disorders in children, we developed a 27 item Likert-type rating scale (Sleep Disturbance Scale for Children: SDSC) and assessed the psychometric properties was developed. The scale was distributed to the mothers of 1304 children (1157 controls, mean age 9.8y; 147 sleep disorder subjects, mean age 9.2y, composed of four clinical groups: Insomnia 39 subjects, Hypersomnia 12 subjects, Respiratory disturbances during sleep 25 subjects and Parasomnias 71 subjects). The internal consistency was high in controls (0.79) and remained at a satisfactory level in sleep disorder subjects (0.71); the test/retest reliability was adequate for the total (r = 0.71) and single item scores. The factor analysis (variance explained 44.21%) yielded six factors which represented the most common areas of sleep disorders in childhood and adolescence. Enuresis was the only item with a factor loading lower than 0.40 and with a low inter-item correlation and was therefore eliminated, resulting in a final scale of 26 items. The re-evaluation of the sample, using the factor scores, supported the validity and the discriminating capacity of the scales between controls and the four clinical groups. The correlation between factor

	scores corroborated the hypothesis that childhood sleep disturbances are not independent entities nor do they cluster into different groupings related to each other. The SDSC appears to be a useful tool in evaluating the sleep disturbances of school-age children in clinical and non-clinical populations." (p. 251)
Author	Credentials: MD
	Position and Institution: Chief of the Pediatric Sleep Centre of the Department of Developmental Medicine and Psychiatry of the Sapienza University of Rome (Italy)
	Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: Scholarly peer-review journal
	Publisher: The European Sleep Research Society and Wiley
	Other: N/a
Date and Citation History	Date of publication: 1996
	Cited By: 992
Stated Purpose or Research Question	"The purpose of the study was to assess the psychometric properties, to define the factor structure of the questionnaire and to evaluate if it could fit into the categories of the ASDC" (p. 252)
Author's Conclusion	"The results appear to demonstrate that: (1) the SDSC is an easy-to-fill form to collect data on sleep behaviour of children and adolescents; (2) the internal consistency is god in spite of the relative heterogeneity of the items; (3) both item and total scores do not change significantly when tested and retested; (4) the six factors extracted, representing the most common areas of sleep disorders in childhood and adolescence, could be used to design a 'child's sleep disturbance profile' and would be useful for directing the clinician toward specific areas of dysfunction that require further investigation; (5) the evaluation of the clinical groups using factor scores confirms the discriminating capacity of the scales derived from factor analysis" (p. 258)
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Good
	Rationale: The assessment tool examined in this study (SDSC) is the sleep-based assessment tool which will be a part of the training package for the capstone project. The psychometric properties validate the use of this assessment tool and this article provides background information on its development. This study is not specific to children with cerebral palsy, so the validity of using this tool on that specific patient population requires further investigation.
Overall Quality of Article	Overall Quality of Article: Good
	Rationale: Strengths of this study include large sample size and inclusion of multiple psychometric evaluation measures. Limitations of this study include the retrospective nature of data collection, parental report, no test of external consistency, and narrow population of controls (white, middle class).
Your Focused Question and Clinical Bottom Line	*Question:* What are the psychometric properties of assessments used to measure sleep-based changes following postural care interventions?
	Clinical Bottom Line: Evidence supports the use of the SDSC for determining sleep issues in children. SDSC has good internal consistency, test retest reliability, sensitivity, and specificity. The assessment allows for groupings into 6 factors that correlate to common areas of sleep disorders.
Your Lay Summary	This article addresses sleep issues among children. The number of children with sleep issues is rising. There was not a good way to measure what these sleep issues look like for children. The researchers developed a tool to fill this gap. They also tested it to see how accurate and consistent it is. During its development process,

	researchers took out questions that did not make sense. The assessment tool looks at sleep over the last 6 months. The first part asks for background information. The second part asks parents to rate 27 questions of sleep on a 1-5 scale. The researchers had a control group (healthy) take this assessment. They compared their results to a group of children who had sleep disturbances to see if the measure was accurate and consistent. Researchers discovered that the tool they developed has good consistency between questions. The tool also produces similar results when retested. The researchers grouped the items into six categories to describe different characteristics of sleep disorders. These were good groupings because the group of children with known sleep disorders scored differently than the healthy group in each of these categories. These findings show that this tool is trustworthy and accurate to measure sleep issues in children.
Your Professional Summary	Past research shows that the prevalence of sleep issues is increasing for children and adolescents, but a gap exists in a reliable and valid standardized sleep questionnaire for the stated population. The researchers of this study developed a standardized assessment tool, the Sleep Disturbance Scale for Children (SDSC), and the study aim was to assess the psychometric properties, assess the relationship between factors on the questionnaire, and compare that to the diagnostic system proposed by the Association of Sleep Disorders Center. The SDSC was completed by two different groups of children: (1) 1157 children who were normal healthy control subjects recruited from public schools in Rome, and (2) 147 children referred to the Sleep Disorders Center for consecutive sleep disorders. Researchers conducted reliability analysis, (internal consistency, construct, test-retest), factor analysis, sensitivity and specificity, and validity. Results for both groups supported strong internal consistency (.79 and .71) and test-retest reliability (r=0.71). Utilizing factor analysis, researchers grouped the 26 items into six different factors. The two different groups had significantly different total and factor scores, indicating good validity. Strengths of this study include a large sample size and the inclusion of multiple psychometric evaluation measures. Limitations of this study include the retrospective nature of data collection, parental report, no test of external consistency, and narrow population of controls (white, middle class). Overall, this study supports the use of the SDSC to measure sleep disturbances among children in both clinical and non-clinical settings.

2	Overview of Article
Type of article	Overall Type: Primary research
	Specific Type: Cross-sectional, quantitative
APA Reference	Casey, J., Rosenblad, A., & Rodby-Bousquet, E. (2020). Postural asymmetries, pain, and ability to change position of children with cerebral palsy in sitting and supine: A cross-sectional study. *Disability and Rehabilitation*, 1-9. https://doi.org/10.1080/09638288.2020.1834628
Abstract	"Purpose: To examine any associations between postural asymmetries, postural ability, and pain for children with cerebral palsy in sitting and supine positions. Methods: A cross-sectional study of 2,735 children with cerebral palsy, 0-18 years old, reported into the Swedish CPUP registry. Postural asymmetries, postural ability, the gross motor function classification system levels I–V, sex, age and report of pain were used to determine any relationship between these variables. Results: Over half the children had postural asymmetries in sitting (n¼1,646; 60.2%) or supine(n¼1,467; 53.6%). These increased with age and as motor function decreased. Children were twice as likely to have pain if they had an asymmetric posture (OR 2.1–2.7), regardless of age, sex and motor function. Children unable to maintain or change position independently were at higher risk for postural asymmetries in both supine (OR 2.6–7.8) and sitting positions (OR 1.5–

	4.2).Conclusions: An association was found between having an asymmetric posture and the ability to change position in sitting and/or lying; and with pain. The results indicate the need to assess posture and provide interventions to address asymmetric posture and pain. IMPLICATIONS FOR REHABILITATION Postural asymmetries are present in children with cerebral palsy at all levels of gross motor function. Postural asymmetries increase with age and are associated with pain. Assessment of posture should be included in surveillance programs to enable early detection and treatment." (p. 1)
Author	Credentials: MSc, PhD
	Position and Institution: Research student - Department of Clinical Sciences, Orthopedics, Lund University, Lund, Sweden; Occupational Therapist Regional Rehabilitation Engineering Centre, Musgrave Park Hospital, Belfast Health & Social Care Trust, Belfast, Northern Ireland
	Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: Scholarly, peer-review
	Publisher: Taylor & Francis
	Other: N/a
Date and Citation History	Date of publication: 2020
	Cited By: 6
Stated Purpose or Research Question	"The purpose of this study was to examine any associations between postural asymmetries, postural ability, and pain for children with CP in sitting and supine positions" (p. 1)
Author's Conclusion	"In conclusion, in this population-based study 60.2% of children with CP had postural asymmetries in sitting, and 53% in supine, while 39.2% were reported to have current pain. Postural asymmetries increased as age increased, and gross motor function decreased. Children with severe postural asymmetries in either sitting or supine position were twice as likely to have pain and children unable to change position in supine were twice as likely to have postural asymmetries" (p. 8)
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Moderate
	Rationale: This study utilizes one of the assessments (PPAS) which will be central to the capstone project. The study examines the relationship between posture and pain in children with cerebral palsy, which provides a background understanding of the population relevant to the project. Because of the high correlation between postural difficulties, pain, and severity of CP, this study justifies the importance of postural care management for children with severe CP which is the underlying purpose of the pilot study associated with the capstone project.
Overall Quality of Article	Overall Quality of Article: Moderate
	Rationale: This study was cross-sectional and does use self-report as a measure for pain, which suggests bias may be present. However, the study includes sample representation from all GMFCS levels (I-V) and includes a large sample size.
Your Focused Question and Clinical Bottom Line	*Question:* How are posture, postural ability, and pain correlated for children with cerebral palsy, and what are the implications for management?
	Clinical Bottom Line: Research suggests that severity of cerebral palsy is positively correlated with postural asymmetries and postural ability. Postural asymmetries affect more proximal parts of the body for children with more severe cerebral palsy. Postural asymmetries were positively associated with age. Postural asymmetries and inability to change position was positively correlated with pain. Finally, the inability to

	change position was positively correlated with postural asymmetries. Early postural management is key, especially for children with more severe cerebral palsy.
Your Lay Summary	Individuals with cerebral palsy have difficulty with movement. This affects their posture and ability to change positions. Past research shows that children with less severe cerebral palsy have pain in their feet and more severe cases have pain in their hip and back. This study aims to find out if children who have difficulty with changing positions also have body deformations and pain. The researchers used a standardized test to rate how the child's posture looked while sitting and laying on their back. The test also looked at how well the child could go from sitting to lying on their back and back to sitting. The researchers also asked the child or caregiver if there was any pain. The study found that children had worse posture in sitting compared to laying down. Children who had more severe cerebral palsy or were older also had worse posture. Children who had the worst posture had the most pain. Children who had less ability to lay down on their own had the worst posture. This study shows there is a concerning amount of children with CP who have posture issues and pain. When a child stays in one position for a long time because they are unable to move, their posture worsens. These poor posture tendencies are even noticeable in young children, but they do worsen over time. Postural management and regular assessment are key in preventing this.
Your Professional Summary	Research shows that individuals with cerebral palsy are at risk for body deformations and poor postural alignment due to a lack of ability to move in and out of positions. Most research on this topic addresses adults with cerebral palsy. Therefore, the aim of this study was to examine correlations between posture, postural ability, and pain for children with cerebral palsy. This was a cross-sectional involving 2,735 children enrolled in a national registry for children with cerebral palsy in Sweden between 2017-2018. Three different measures were utilized to collect data pertaining to severity, posture, and pain. The Gross Motor Function Classification System classifies the severity of cerebral palsy based on functional limitations, and the Posture and Postural Ability Scale (PPAS) assesses the individual's postural alignment in sitting and standing as well as their ability to move in and out of specified positions. Pain was assessed through a child/caregiver report of pain. The researchers performed statistical analysis to compute categorical frequencies, correlations, and magnitude of associations. Results show a strong positive correlation between postural asymmetries in supine/sitting and pain, as well as a strong positive correlation between the inability to change position in supine and postural asymmetries. Strengths of this study include sample representation from all GMFCS levels (I-V), large sample size, and inclusion of data within results. However, this study only represents children from Sweden, where postural care is a prevalent preventative intervention. Since it was a cross-sectional study, this study does not reveal changes in posture over time. Finally, the measurement of pain may not provide a comprehensive picture, as it is limited to self-report and does not elicit any description of the pain beyond its presence.

3	**Overview of Article**
Type of article	Overall Type: Primary Research Study (Mixed-methods)
	Specific Type: Descriptive study, Single-subject design
APA Reference	Hotham, S., Hamilton-West, K. E., Hutton, E., King, A., & Abbott, N. (2017). A study into the effectiveness of a postural care training programme aimed at improving knowledge, understanding and confidence in parents and school staff. *Child: Care, Health and Development, 43*(5), 743-751. https://doi.org/10.1111/cch.12444
Abstract	"Background: Parents and school staff lack knowledge and confidence when providing postural care to physically disabled children. This can act as a barrier to the successful implementation of therapy. To address this problem, we developed a

	novel training programme to improve knowledge and confidence in providing postural care and evaluate the impact of the training programme in parents and school staff. Methods: The postural care training programme included three elements: a 2-h interactive workshop facilitated by physiotherapists and occupational therapists, a follow-up home/school visit and a follow-up telephone call. The Understanding, Knowledge and Confidence in Providing Postural Care for Children with Disabilities questionnaire was utilized to evaluate the impact and includes subscales assessing knowledge and understanding, concerns and confidence in providing postural care. The Understanding, Knowledge and Confidence in Providing Postural Care for Children with Disabilities questionnaire was completed at baseline and 6 weeks later. The training programme was delivered to N = 75 parents and school staff. Of these, N = 65 completed both baseline and follow-up measures and were used in the data analysis. Participants and therapists were also invited to provide further feedback on the overall training programme via interviews and focus groups. Results: Paired samples t-tests were used to determine statistically significant differences between baseline and follow-up scores for each of the three subscales. Mean levels of understanding and knowledge and confidence improved (P < 0.001), while concerns decreased (P < 0.001). Qualitative data were collected via interviews and group discussions providing an in-depth perspective on how participants experienced change. Discussion: Results suggest improvement in knowledge, understanding and confidence in parents and school staff that care for children with significant physical postural care impairments." (p. 743)
Author	Credentials: BA, BSc, MSc, PhD, C.Psychol
	Position and Institution: Senior Research Fellow at the Centre for Health Services Studies, University of Kent, Canterbury, UK
	Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: Scholarly peer-reviewed journal
	Publisher: Child: Care, Health and Development, Wiley-Blackwell
	Other: published on behalf of British Association of Community Child Health, the Swiss Paediatric Society, and the European Society for Social Pediatrics
Date and Citation History	Date of publication: 2017
	Cited By: 2
Stated Purpose or Research Question	"In light of these findings, we aimed to develop a novel postural care training programme with the capacity to improve understanding, knowledge and confidence among those responsible for the postural care of children with physical disabilities, attending mainstream schools." (p. 746).
Author's Conclusion	"This study developed and evaluated a short training programme on postural care management with the specific aim of improving knowledge, understanding and confidence in parents and teachers for children with physical disabilities. The results provide preliminary evidence that short-term improvements in these areas can be achieved through this type of training programme." (p. 750).
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Good
	Rationale: This article provides quantitative and qualitative data supporting the positive outcomes on knowledge, concerns, and confidence of participants following a training program for postural care for children, which relates to the aim of the capstone project in developing/delivering a training program to increase knowledge and skills pertaining to postural care evaluation. The study shows that the caregivers (trainees) experience should be considered when designing the training program for the capstone project, and particular elements such as feedback, practice, and collaboration will be considered for training package development.

Overall Quality of Article	Overall Quality of Article: Moderate
	Rationale: Although citation history is poor, the article was published within the past 5 years and the credibility of the primary author is good. The outcomes tool is valid, reliable, and covers the scope of the research question.
Your Focused Question and Clinical Bottom Line	*Question:* What are the beneficial characteristics of an effective pediatric postural care training program?
	Clinical Bottom Line: Research shows the *UKC PostCarD Program* increases knowledge and confidence and decreases concerns related to postural care following training. This program involved a 2-hour interactive workshop, follow-up visits, and follow-up phone calls six weeks following training. During the workshop, trainees had the *opportunity to practice* and employ clinical reasoning. Trainees benefited from understanding the impact of posture on function, learning the importance of postural care, and practical activities. During the follow-up, trainees had opportunities to observe and perform postural care tasks, *receive feedback*, and *discuss concerns*. Trainees benefited from receiving reassurance and reminders during follow up. The training program established a partnership between the parent/teacher and therapist. Self-efficacy components of social cognitive theory and environmental supports and barriers to function (ICF) provide a theoretical basis for postural care training.
Your Lay Summary	Children with physical disabilities need help managing their posture at school and at home. Researchers developed a training program on postural care for parents and teachers. This program was created by and is carried out by therapists. In this study, researchers looked at how well the program works. The participants were parents and teachers involved in a mainstream primary school in England. They completed a questionnaire on knowledge, confidence, and concerns about postural care. Then, they attended a 2-hour workshop involving background information and practical activities. During the following six weeks, the therapists did follow-up visits and phone calls with the participants. Participants completed the same questionnaire a second time. Finally, they had the option to share their experience with researchers verbally. The questionnaire results show increases in knowledge and confidence and decreases in concerns following the training. Also, parents and teachers expressed that the training had a positive impact on their understanding and confidence. These results suggest that a 2-hour workshop on postural care may improve the knowledge and confidence of carers. The topics/content, format, and model framework of this program could be applied to other postural care training programs.
Your Professional Summary	The aim of this study was to develop and evaluate the effectiveness of a postural care training program ("UKC PostCarD" program) for parents and teachers working with children with postural needs. Theoretical frameworks such as the International Classification of Functioning, Disability and Health (ICF) and social cognitive theory (SCT) underpin the training program. Researchers conducted a mixed-methods, single-subject descriptive study involving 65 parents and teachers from a mainstream primary school in England. All participants completed The UKC PostCarD Questionnaire before and after the intervention, which consisted of a 2-hr interactive workshop training, follow-up visits, and phone calls for six weeks post-training. 50/75 participants also completed semi-structured interviews and focus groups that addressed their overall experience. Researchers analyzed quantitative data using paired samples t-tests and qualitative data using Framework approach and thematic coding. Quantitative results indicate a significant increase in knowledge and confidence and a significant decrease in concerns related to postural care after the intervention. Qualitative results deepen understanding of participants' experiences and support quantitative findings. The strengths of this study include strong methodology in training program development and standardization and valid/reliable outcome tools. Limitations include lack of control group, short-term study duration, narrow sample population, and training program topics, and small number of parents in the sample. Additionally, researchers used non-probability sampling and failed to

describe the thematic analysis process. The findings of this study suggest that a 2-hour interactive group workshop on postural care is effective in increasing knowledge and confidence among parents and teachers. Elements of the UKC PostCareD program may inform postural care training for professional populations such as the importance of opportunities for practice and clinical reasoning, the partnership between therapists and carers/teachers, and theoretical underpinnings of postural care training (ICF, SCT).

4	Overview of Article
Type of article	Overall Type: Review of Research Specific Type: Systematic Review
APA Reference	Humphreys, G., King, T., Jex, J., Rogers, M., Blake, S., Thompson-Coon, J., & Morris, C. (2019). Sleep positioning systems for children and adults with a neurodisability: A systematic review. *British Journal of Occupational Therapy, 82*(1), 5-14. https://doi.org/10.1177/0308022618778254
Abstract	"Introduction: Sleep positioning systems are often prescribed as part of a 24-hour postural management programme for children and adults with neurodisabilities. In a search for evidence of effectiveness for children with cerebral palsy a recent Cochrane review found two randomised controlled trials. This review aims to appraise a broader set of studies including any neurological diagnosis and users of all ages to inform therapists about the quality of the evidence underlying practice. Method: A comprehensive search for all peer-reviewed studies that evaluated the use of sleep positioning systems was conducted in MEDLINE, EMBASE, CINAHL, Cochrane Library databases, BNI, HMIC, PEDro, OTSeeker and clinical trials registries. Disability organizations, manufacturers and colleagues worldwide were also contacted. Titles were screened for relevance by two reviewers. Data were extracted into bespoke quantitative or qualitative forms by one reviewer and checked by a second. Findings were analysed into simple themes. Results: A total of 14 studies were eligible for inclusion; all were small and most were of low quality. Inferences of benefits cannot be made from the literature but also no harm was found. Conclusions: The body of evidence supporting practice remains small and mostly of low quality. Therapists should remain cautious when presenting the benefits to families." (p. 5)
Author	Credentials: D.PT, MSc, MCSP Position and Institution: Clinical Director Vranch House, Head of Profession for Children's Physiotherapy for Devon Publication History in Peer-Reviewed Journals: Limited
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: Sage Publishing
Date and Citation History	Date of publication: 2019 Cited By: 10
Stated Purpose or Research Question	"Primary research questions: 1. What benefits for users of sleep positioning systems are reported in the literature? 2. What risks or adverse reactions are reported? Secondary research questions: Can/do users and carers adhere to the prescribed therapeutic regimens?" (p. 6)
Author's Conclusion	"A consensus statement in 2006 (Gericke, 2006) recommended that children with cerebral palsy in Gross MotorFunction Classification System (GMFCS) levels IV and V should begin postural management in lying soon after birth and that more evidence for the effectiveness of the intervention needs to be obtained. Another review of the literature published up to 2007 (Wynn and Wickham,2009) also found very limited

	evidence and recommended further research. Although 12 of our 14 included studies have been conducted since that date, evidence to support these recommendations remains weak and of low to medium quality." (p. 12)
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Moderate
	Rationale: This article provides an overview of existing evidence on various outcomes related to nighttime postural care for children with cerebral palsy. Understanding the amount and type of evidence on various outcomes is important so that the pilot study and capstone project training modules include relevant outcomes of nighttime postural care. The lack of high quality evidence on the benefits/risks of sleep systems noted within this study provides a justification and need for the pilot study and capstone project. This study also justifies the need for high caregiver support for NTPC training, which is a primary aim of the capstone project. The capstone project is hoping to provide high-quality standardized training to prevent the training component from being a limitation of the pilot study. High support is needed for successful clinical implementation as well as follow through while conducting the pilot research study.
Overall Quality of Article	Overall Quality of Article: Moderate
	Rationale: This systematic review includes both qualitative and quantitative peer-review studies. Multiple investigators screened articles and reviewed identified themes. Because of the scarcity of RCT and higher-level evidence on the topic, this review includes lower levels of evidence.
Your Focused Question and Clinical Bottom Line	*Question:* What is the existing evidence on health-related outcome changes following the use of a sleep system? Where are the gaps?
	Clinical Bottom Line: Some evidence shows possible benefits to sleep, posture, and quality of life in individuals who use sleep systems. More research on pain, sleep, quality of life, and posture is needed. Many of the current studies lack credibility due to the following: duration is too short to measure outcomes, laboratory setting, participants have used equipment in the past, small sample size, and missing data (difficulty following through).
Your Lay Summary	Individuals with neurodisabilities have muscular spasticity. This leads to permanent changes in posture. In the UK, the use of equipment to support posture is commonly recommended. There is not a lot of research on the topic. One systematic review only looked at a very high level of evidence. Since there are not a lot of high-level studies, the review did not give a whole picture. Therefore, this review includes a wider pool of studies. The researchers found 14 articles in their search. Results showed limited evidence that sleep systems improve pain as well as comfort. There is some small evidence showing improved posture, but for the most part evidence shows that posture didn't get worse. Evidence shows some slight benefits on sleep, but it's inconsistent. There is no notable change in breathing in the research. Some weak evidence shows improved quality of life. Some studies did report possible negative impacts like choking and vomiting. The group most likely to benefit seems to be children with cerebral palsy. About 20% of participants in studies dropped out because of difficulty adjusting. Research shows families need lots of training and support for success in using the equipment. This shows outcomes including pain, sleep, quality of life, and posture needs to be examined more closely.
Your Professional Summary	Although the clinical use of sleep systems is prevalent to address postural concerns for children and adults with neurodisabilities, there is a lack of high-level evidence to support the benefits. Past systematic reviews have exclusively examined randomized controlled trials, which are extremely limited on the topic. This article examines qualitative and quantitative literature to discover evidence-based benefits and risks of sleep position systems and discover the adherence/training required for success. Researchers utilized the PRISMA checklist for systematic review methodology. In 2015-2018, the researchers searched databases using MeSH key terms. They also

searched non-academic sources such as websites, organizations, and sleep system manufacturers for published reports. All studies had some external scrutiny, included children over 3 months and adults with a neurodiagnosis, addressed sleep positioning systems, examined benefits or adverse events, and took place in a home or care setting. Researchers screened abstracts, extracted data, and synthesized themes. Researchers identified 2324 studies and included 14 in the review. Four were considered medium quality and the rest were low-quality evidence. The results suggested that there is some evidence supporting improved sleep, quality of life, and hip stability, but the quality of evidence is poor. Evidence suggests users/families have difficulty following through with the sleep system and significant, prolonged training is required to implement sleep systems successfully. This review noted the significant need for high-quality research to determine the benefits/risks of sleep systems to support the clinical recommendation of its use. Strengths of this study include non-bias inclusion of both risks and benefits and a methodological search process. However, this study did not indicate how evidence quality was determined and the majority of studies included were low quality.

5	**Overview of Article**
Type of article	Overall Type: Primary Research Study (Mixed-methods)
	Specific Type: Parallel-group double-blind design with random assignment
APA Reference	Hutson, J. A., Hodges, J. S., & Snow, L. (2021). Educating caregivers of persons with cerebral palsy in night-time postural care: A randomized trial comparing two online training programs. *Clinical Rehabilitation,* 1-12. https://doi.org/10.1177/02692155211009484
Abstract	"Objective: Compare effectiveness of two differently formatted training programs in educating night-time postural care implementers. Design: Mixed-methods parallel-group double-blind design with random assignment. Setting: United States academic institution. Participants: Thirty-eight adult caregivers/providers of children with cerebral palsy. Interventions: Both 2-hour online programs included content on night-time postural care evidence, risk factor monitoring, sleep-system types, positioning methods, and assessments. Group A used interactive videos, Group B summary information with web-links. Main Measures: We measured self-perceived competence via questionnaires (baseline, post-training, post-simulation) containing 4-point rating-scales of knowledge, ability, and confidence and measured positioning ability via a simulation observation instrument comprising 16 positioning-task ratings with space for describing performance. We recorded participant actions/statements using fieldnotes. Results: Thirty-eight completed training (19 per group). Group A (vs B) showed significantly greater self perceived competence changes post-training (0.46 points (SE 0.17), P=0.008). Thirty-seven positioned a standardized "client," with groups not differing significantly on total tasks completed correctly (F(1, 92.32)=1.91, P=0.17) averaging 11.85 (SE 0.83) and 12.60 (SE 0.84) of 16 tasks correct. Group A's post positioning/simulation self-ratings were significantly associated with actual ability (r=0.53, P=0.019). In both groups ⩾47% of caregivers incorrectly completed the tasks of placing head and neck in neutral and snugging up all [positioning] parts. Conclusion: The sleep care positioning training program (interactive video-based format) is effective in building caregivers' self-perceived competence for night-time postural care. While the lesson was well-received by caregivers and considered a "match [to their] learning style," the lesson did not lead to greater improvement in actual ability to position the "client" compared to control training."
Author	Credentials: PhD, OTR/L, ATP
	Position and Institution: Associate Professor, Department of Occupational Therapy, St. Catherine University, St. Paul, MN
	Publication History in Peer-Reviewed Journals: Limited

Publication	Type of publication: Scholarly peer-reviewed journal
	Publisher: Clinical Rehabilitation, Sage Journals
	Other: N/a
Date and Citation History	Date of publication: 2021
	Cited By: 0
Stated Purpose or Research Question	"Addressing this need, we compare two differently-formatted online training programs (Group A and B), answering the primary questions: (1) Do these groups show differences in self-perceived competence to implement aspects of night-time postural care and in actual ability to position a person in a sleep system? (2) What number and types of positioning tasks (as well as task errors) do caregivers complete post-training?" (p. 1)
Author's Conclusion	"After either 2-hour online training caregivers correctly complete 12 of 16 positioning tasks. Common problems include head/ neck alignment errors and not fitting sleep system components closely to the person. Sleep care positioning training program is more effective, resulting in caregivers' having greater self-perceived competence post-training and better accuracy in self assessing positioning ability." (p. 11)
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Good
	Rationale: This article examines the effectiveness of training modules similar to the pre-existing training modules utilized in the capstone project with high quality research. The research found that video based modules are more effective than self-directed modules and establishes that effective online training is possible for NTPC. The capstone project will build upon this by continuing to develop a video-based training package for NTPC evaluation. This study also uses a self-perceived competence scale following training completion which may be used (with adaptations) for the capstone project evaluation measure.
Overall Quality of Article	Overall Quality of Article: Good
	Rationale: Investigators developed a sound methodology including controlling for variables when assigning participants. However, the participants represented a highly educated population and more than one person filled the role of the client during simulations.
Your Focused Question and Clinical Bottom Line	*Question:* What type of online educational design/format leads to best outcomes for educating rehabilitation professionals on nighttime postural care?
	Clinical Bottom Line: A 2-hr interactive training module is more effective in increasing self-perceived competence, increasing self-assessing ability, and enhancing the trainee's learning experience, but it is no more effective in NTPC skill performance compared to the self-directed module. Thus, any online NTPC training may require supplemental hands-on or clinical tool components in order to achieve competence in trainees. Additionally, caregivers may require increased support to gain similar skills.
Your Lay Summary	Researchers compared two training lessons for positioning. Both lessons were online but one was interactive and the other was self-directed. Caregivers (family members and therapists) participated in the study. First, they completed a questionnaire on self-perceived competence of positioning. Half of the caregivers did the interactive lesson and half did the self-directed lesson. Researchers randomly assigned the groups. They completed another questionnaire on self-perceived competence. Then, each caregiver completed a simulation where they had to position a person role-playing the client. This tested their actual ability. Finally, they took the questionnaire a third time. Participants had the option to complete the opposite lesson and told researchers about their experience after. The results show that self-perceived competence increased more for caregivers who did the interactive training. This group was also better at self-assessing their ability. Caregivers seemed to like this

	lesson better than the self-directed one. Both groups performed similarly in the simulation, so the training had no effect on actual ability. Caregivers had trouble with getting the head and neck positioned correctly. They also struggled to make sure there was a tight fit. This study shows that interactive lessons are useful but supplemental training may be needed to reduce errors.
Your Professional Summary	Researchers examined the effectiveness of two differently formatted online training modules on the self-perceived competence and skills of caregivers on night-time postural care. The study was a mixed-methods parallel-group double-blind design involving 38 caregivers (both professional and non-professional). Participants were randomly assigned to Group A (interactive module with learning checkpoints) or Group B (self-directed module with written summaries and weblinks), with balanced numbers of professional and non-professional caregivers in each group. After online education, participants completed a standardized positioning simulation to assess acquired skills by a clinical rater. Raters used a 16-item observation instrument and fieldnotes. Participants completed a 4-point rating scale questionnaire assessing self-perceived competence at baseline, post-training, and post-simulation. Findings suggest Group A achieved significantly more gains in self-perceived competence following training compared to Group B. Actual ability did not differ significantly between Group A and Group B, but Group A was more consistent in the type of errors. Strengths of this study include strong methodological design, interrater reliability, and control for group biases. However, researchers utilized non-probability sampling, and most participants were highly educated, limiting the generalizability of results. Also, more than one assistant played the client in simulations, potentially limiting the credibility of the results. Although outcome tools were self-designed, the researcher conducted a literature review, consulted with a measurement scholar, and proved internal consistency reliability through a pilot study. Study results suggest that an interactive online training module on the positioning is effective for educating caregivers. Because actual ability was similar between groups, additional supplemental components (hands-on training or clinical resources) may bolster the positioning ability of caregivers. Finally, training must address challenging tasks related to positioning revealed in this study.

6	**Overview of Article**
Type of article	Overall Type: Review of Research Study Specific Type: Scoping Review
APA Reference	Hutson, J., & Snow, L. (2020). Sleep assessments for children with severe Cerebral Palsy: A scoping review. *Archives of Rehabilitation Research and Clinical Translation, 2*(4), 1-8. https://www.sciencedirect.com/science/article/pii/S2590109520300756?via%3Dihub
Abstract	"Objectives: To identify the sleep-based instruments in postural care intervention research and examine whether the instruments are suitable as postural care outcome measures specifically for children with severe cerebral palsy. Data Sources: Investigators searched the electronic databases from 2 university library systems, including OVID Medline, CINAHL, OT Search, Cochrane Database of Systematic Reviews, and Health and Psychosocial Instruments for articles published between 2000 and October 2019. Study Selection: The initial search yielded 1928 abstracts. Two independent investigators identified 8 English-language peer-reviewed articles that published postural care intervention study results. Data Extraction: Investigators screened the 8 articles and found that 6 included sleep as a primary or secondary intervention outcome. The principal investigator then fully reviewed these 6 publications, recorded their sleep-related instruments, and applied Coster's published guidelines (2013) to analyze the sleep-based instruments' suitability as outcome

	measures. Data Synthesis: Collectively, the 6 studies used 8 distinct measures, 6 of which (actigraphy, Chailey Sleep Questionnaire, Pediatric Sleep Questionnaire, polysomnography, sleep diary, and Sleep Disturbance Scale for Children) underwent analysis. As stand-alone instruments, none completely met criteria for suitability as outcome measures for those with severe cerebral palsy. Conclusions: Combined use of the Sleep Disturbance Scale for Children and actigraphy may be favorable for assessing the sleep-related domains relevant to children with severe cerebral palsy. However, rehabilitation professionals should test sensitivity and specificity to understand the instruments' ability for capturing changes in sleep from postural care intervention." (p. 1)
Author	Credentials: PhD, OTR/L, ATP
	Position and Institution: Associate Professor, Department of Occupational Therapy, St. Catherine University, St. Paul, MN
	Publication History in Peer-Reviewed Journals: Limited
Publication	Type of publication: Scholarly peer-reviewed journal
	Publisher: American Congress of Rehabilitation Medicine
	Other: N/a
Date and Citation History	Date of publication: 2020
	Cited By: 2
Stated Purpose or Research Question	"This scoping review aims to (1) identify the sleep-based instruments used in postural care clinical intervention research, (2) critique the instruments based on their suitability as postural care outcome measures specifically for children with GMFCS IV and V CP, and (3) make outcome measure recommendations. We define this scoping review as an in-depth coverage of a particular concept based on existing gaps in the literature" (p.2)
Author's Conclusion	"None of the sleep-based instruments used in past postural care intervention studies meet the criteria as stand-alone outcome measures for use in children with GMFCS IV and V CP. By pairing the SDSC with actigraphy, rehabilitation professionals could assess all sleep-related domains identified as relevant to those with severe CP." (p. 7)
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Good
	Rationale: This article critically evaluates assessment tools that will be included in the training packages for the capstone project. Therefore, this study provides justification of the quality of the assessment tools. Understanding the strengths and weaknesses of each sleep-based assessment is necessary to provide education on the assessment tools. Additionally, this article notes important criteria that must be considered when measuring postural care outcomes for children with CP (i.e. timeline to see changes, domains of sleep, caregiver burden, updated assessment tools).
Overall Quality of Article	Overall Quality of Article: Moderate
	Rationale: This article was published within the past 2 years, was published in a credible journal, and the researcher utilized a standardized analysis tool to evaluate each assessment. However, there was only one investigator.
Your Focused Question and Clinical Bottom Line	*Question:* What sleep-based assessment tools are suitable to measure changes in children with CP following postural interventions? Any additional considerations for assessment tools?
	Clinical Bottom Line: The Sleep Disturbance Scale for Children and actigraphy are appropriate tools to utilize based on the factors of Who, What, and When. Additional considerations include: at least 6 month duration is required to see sleep-based changes, SDSC does not consider nocturnal epilepsy sleep domain and actigraphy

	does not consider obstructive sleep apnea, updated version of SDSC-R (revised) may be more relevant for children with CP, triaxial actigraphy is supported by research, sleep diaries may need to be paired with actigraphy, caregiver burden must be considered.
Your Lay Summary	Many children with cerebral palsy have issues sleeping and posture. Therefore, many use sleep systems to help in that area. There is a problem with healthcare workers not evaluating sleep. It is important to measure changes in sleep to see if the sleep system is working. This research aims to determine what assessments might be appropriate for measuring those changes. The researchers found 6 different assessments cited in the literature that apply to sleep and posture. They used a stop light system to show which assessments are "good enough", "mostly adequate", or "inappropriate". The highest ranking assessments (mostly green) were the Sleep Disturbances Scale for Children and the actigraphy. The SDSC has 26 questions and caregivers respond about their child's sleep. Actigraphy is a sensor device that records sleep quality. Overall, researchers recommend using both of these tools to measure the impact of a sleep system. If using actigraphy, it may be beneficial to also use sleep diaries to get the whole picture. It could be stressful for caregivers to use all three measures, so that must be considered as well when teaching caregivers how to measure change.
Your Professiona l Summary	This study was a scoping review. The purpose of this study was to evaluate sleep-based assessments using Coster's guidelines to determine which assessments may be suitable to measure postural care outcomes for children with CP. Hutson and Snow (2020) searched five databases for relevant outcome measures and identified 8 relevant publications which used 6 sleep-based assessments (actigraphy, Chailey Sleep Questionnaire, Pediatric Sleep Questionnaire, polysomnography, sleep diary, and Sleep Disturbance Scale for Children). Using Coster's guiding questions, they analyzed and ranked each assessment tool in terms of suitability for the population/intervention. Based on the literature findings, authors also indicated that in order to be considered suitable, the assessment tool needed to show change over a period of months (to be in congruence with the amount of time it takes for sleep-related changes to occur) and show change within a number of sleep domains (children with CP have issues in a variety of domains). Hutson and Snow (2020) determined that the Sleep Disturbance Scale for Children and actigraphy performed best on the evaluation and could pair well to assess sleep for children with CP. Importantly, researchers noted that utilizing multiple measures may produce the best results and sleep diaries may be necessary if using actigraphy based on other research. The strengths of this study include standardized analysis of assessment tools, rooted in the context of other research, and concrete recommendations provided. Limitations of this study include a limited number of investigators who completed the analysis, and lack of inclusion of psychometric properties of the assessments.

7	**Overview of Article**
Type of article	Overall Type: Review of Research Study
	Specific Type: Overview of Systematic Reviews
APA Reference	McCall, M., Spencer, E., Owen, H., Roberts, N., & Heneghan, C. (2018). Characteristics and efficacy of digital health education: An overview of systematic reviews. *Health Education Journal, 77*(5), 497-514. https://doi-org.pearl.stkate.edu/10.1177/0017896918762013
Abstract	"Objective: The primary aim of this overview was to synthesise results from studies including digital education and its effect on knowledge or learning outcomes, student satisfaction, student enrolment, attendance rate, course completion rate, clinical practice, health outcomes for patients and cost-effectiveness in health-care

	education. A secondary aim was to report on successful instructional design strategies, and barriers or contextual factors influencing the effectiveness of online learning course delivery in healthcare education. Method: We conducted an overview of systematic reviews (SRs) for digital education interventions delivered to health-care students and practitioners. Results: We scanned 848 titles, reviewed 247 abstracts and assessed 49 full-text articles against predetermined inclusion and exclusion criteria. This overview includes data collected from 31,730 participants across 16 SRs. The quality of evidence included in the SRs ranged from very low (n = 2), low (n = 6) to moderate (n = 8). The best available SRs were of moderate quality (7.4 of 11 AMSTAR). SR authors did not report other teaching methods as being superior to digital learning. In most cases (n = 9), digital education when used in addition to traditional methods augmented knowledge acquisition. Other SRs (n = 7) did not show statistically significant differences across interventions including digital education as a replacement, or additive resource to traditional intervention. Conclusion: Student enrolment, attendance rates, course completion rates, cost-effectiveness and changes in clinical outcomes for patients are underreported in the existing evidence. Although the quality and quantity of data are limited, evidence-based instructional design for digital education is becoming more possible, especially as educators establish learning activities that track to learning objectives for knowledge acquisition in health care." (p. 497)
Author	Credentials: BKin (McMaster) MSc (LSE) DPhil (Oxon)
	Position and Institution: Lecture and Senior Research Fellow at Nuffield Department of Primary Care Health Sciences, University of Oxford, Oxford, UK
	Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: Scholarly peer-reviewed journal
	Publisher: Health Education Journal, SAGE Publications
	Other: N/a
Date and Citation History	Date of publication: 2018
	Cited By: 16
Stated Purpose or Research Question	"The primary aim of the overview was to synthesise results from studies of digital education in terms of knowledge or learning outcomes, student satisfaction, student enrolment, attendance rate, course completion rate, clinical practice, health outcomes for patients and cost-effectiveness. A secondary aim of this overview was to report effective instructional design strategies and list barriers or contextual factors that influence the effectiveness of online learning course delivery in health-care education. In addition, we sought to explore different types of student- or teacher-specific characteristics that might improve either the quality, satisfaction or performance in digital learning in health care." (p. 498)
Author's Conclusion	"The digital education interventions analysed are at least equal to traditional methods in terms of knowledge outcomes and learner satisfaction. Student enrolment, attendance rates, course completion rates, cost-effectiveness and changes in clinical outcomes for patients are underreported in the existing evidence. Barriers to implementing digital education include skills training for faculty, technological glitches and lack of resources (time, money) to invest in the course." (p. 511)
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Good
	Rationale: This article addresses existing evidence on digital education for healthcare providers and specific characteristics that support or hinder online health education. This article focuses on a target audience of healthcare professionals rather than caregivers, which will be included in the capstone project. The main findings related to evidence-based methods for effective instructional design for online healthcare

	education are relevant to the capstone project because these findings will be applied to the development of online training modules.
Overall Quality of Article	Overall Quality of Article: Good
	Rationale: Authors used the AMSTAR tool and GRADE parameters to assess quality of studies included, but the quality of evidence from RCT was low consistently across systematic reviews. The authors explicitly stated methodological process and criteria for selection, and they used triangulation for data analysis.
Your Focused Question and Clinical Bottom Line	*Question:* What is the existing evidence on effective methods to educate healthcare professionals using an online platform?
	Clinical Bottom Line: Systematic review evidence shows that digital education is equally or more effective than traditional methods on increasing learning outcomes, student satisfaction, and clinical practice. Evidence shows that instructional design elements can improve learning outcomes and student satisfaction. Beneficial elements include interactive opportunities with immediate feedback, a variety of content delivery mediums (audio, visual, etc.), case-based scenarios, goal-directed learning objectives, and clear and small units of material.
Your Lay Summary	Many learning options exist online. This study reviews research on online healthcare education. Specifically, it looks at education for healthcare students and clinicians. The authors aimed to find out if research supports the effectiveness of online education. They also wanted to know what factors make online education effective. Researchers searched on several databases for reviews on the topic. They looked for changes in things like learning outcomes and clinical practice. The authors identified over 1000 articles. Three reviewers looked them over. 16 systematic reviews were included. They were of moderately good quality. Research is mixed if online education is better or the same as other methods. All studies agree that other methods are not better than online education. All also agree that online education is better than no education. Studies show that students like flexibility, accessibility, and self-pacing. Students like interaction and feedback. They like when online education is in small chunks. Finally, having both visual and auditory elements is best. Overall, this study shows that online education is a useful method for healthcare education. The design strategies mentioned are important to improve the benefits of online education.
Your Professional Summary	This systematic review aims to identify, evaluate, and synthesize current evidence relating to the efficacy of digital education for healthcare professionals or students. Researchers also examined evidence-based instructional design strategies and factors that promote or hinder effective online education. Before beginning the search process, the researchers established inclusion and exclusion criteria relating to the quality of evidence, participant characteristics, and intervention characteristics. The researchers searched 12 databases for outcomes related to knowledge, satisfaction, enrollment/attendance, course completion, clinical practice, health outcomes, and cost-effectiveness. After initial record identification, three reviewers assessed title, abstract, and full text using the AMSTAR tool and GRADE tool. Out of the 1,009 records initially identified, researchers selected 16 articles for full analysis. Results suggest that digital education methods are more effective or equally effective in improving healthcare student/professional learning outcomes and student satisfaction compared to traditional methods. Results suggest that learners are satisfied with the flexibility, accessibility, and self-pacing aspects of digital education. Learners also benefit from interactive opportunities with immediate feedback, a variety of content delivery mediums (audio, visual, etc.), case-based scenarios, goal-directed learning objectives, clear and small units of material. Strengths of this systematic review include the thorough analysis using standardized tools of quality of research included, the detailed description of inclusion and exclusion criteria, and the detailed description of characteristics of included studies. A major limitation of this study is the insufficient reporting and heterogeneity of data reported in the systematic reviews,

	limiting credibility and preventing researchers from performing subgroup meta-analyses. Additionally, the quality of research within the included systematic reviews was low. Although there is more research needed, this systematic review suggests promising possibilities for educating healthcare students/professionals digitally.

8	**Overview of Article**
Type of article	Overall Type: Theoretical/conceptual article
	Specific Type: Commentary
APA Reference	Ozuah, P. O. (2016). First, there was pedagogy and then came andragogy. *Einstein Journal of Biology and Medicine, 21*(2), 83-87. https://einsteinmed.edu/uploadedFiles/EJBM/21Ozuah83.pdf
Abstract	N/a
Author	Credentials: MD, PhD
	Position and Institution: Professor and Vice Chairman Department of Pediatrics Albert Einstein College of Medicine
	Publication History in Peer-Reviewed Journals: Limited
Publication	Type of publication: Scholarly, peer-review
	Publisher: Albert Einstein College of Medicine
	Other: N/a
Date and Citation History	Date of publication: 2016
	Cited By: 348
Stated Purpose or Research Question	"The assertion that first, there was pedagogy and then came andragogy, is simultaneously true and misleading. What is pedagogy? What is andragogy? Which preceded the other? And what, if anything, does any of this have to do with medical education? In this article, we will explore the answers to these questions, review the historical bases for the pedagogical and andragogical paradigms, and discuss learning theories and their relevancy to teaching and learning in medicine." (p. 83)
Author's Conclusion	"Adult learning theory contends that as a person matures, his self-concept moves from dependency to self-directedness and autonomy. It maintains that adults accumulate a growing reserve of experiences, which form the richest resource for their learning. It argues that readiness to learn is increasingly oriented toward tasks associated with social roles. Adult learning theory also asserts that an adult's time perspective changes from the postponed application of knowledge to immediacy of application and accordingly, orientation to learning shifts from subject-centered to problem-centered." (pg. 86)
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Good
	Rationale: This article outlines adult learning theory principles, which will inform the content and design of the training materials developed in the capstone project. Specifically, Table 1 along with the 5 listed principles of adult learning theory will guide the evaluation and development of educational materials for the research team/caregivers.
Overall Quality of Article	Overall Quality of Article: Moderate
	Rationale: This article cites several sources throughout, but does not include research/evidence applying the theories. The author has valuable credentials.
Your Focused Question	*Question:* What is best practice for educating adults?
	Clinical Bottom Line: Adult learning theory has five guiding principles including the need to know, the learner's self-concept, the role of experience, readiness to learn,

and Clinical Bottom Line	orientation to learning, and motivation. Adult learners perform well with problem-based/active learning, self-direction, clear objectives, progression from simple to complex, reinforcement and feedback.
Your Lay Summary	This article describes how the teaching of a child, pedagogy, and the teaching of adult, andragogy, compares and contrasts. Pedagogy was developed in the 17th century. It focuses on how the teacher chooses content and directs learning. The children do not know what they need to learn. The learning focuses on the subject and provides rewards. The knowledge and understanding of the child don't really matter. Every child has a blank slate. In the 1800s, andragogy was developed and involved problem-solving. Adults do best when they know what they need to learn and why. They direct their own learning rather than a teacher. Adults use their past experiences to build upon and apply to learn. Also, adults are self-motivated to learn. Child and adult learning theories go hand in hand. Even though the formal naming of pedagogy came first, elements of andragogy were used in ancient times. Five different learning theories have been developed that all overlap with adult learning in some way. The outline of educational theories in this article is the basis for developing education materials.
Your Professiona l Summary	The aim of this article is to describe the principles and origin of pedagogy and andragogy, and the authors argue the importance of using andragogy principles in medical education. Pedagogy first emerged in the 17th century in Europe as formal educational institutions were developed for young children. The assumptions and principles of the model influenced the educational system. Primary assumptions include: learner was unaware of learning needs, subject-centered learning, extrinsic motivation, irrelevance of prior experience. Andragogy, on the other hand, was given a formal name in 1833 and guiding principles are the result of several scholars. Adult learning includes the following core principles: the need to know, the learner's self-concept, the role of experience, readiness to learn, orientation to learning, and motivation. The adult learner differs from pedagogy because adult learners direct their own learning, focus on problem solving,and involves experiential learning. Authors note that pedagogy is more suitable to teach adults in some instances when learning subjects that are brand new, but moving toward self-directed learning is ideal. Authors also note that although it seems andragogy was developed after pedagogy, that is not the case. Teachers used concepts from adult learning theory in ancient days, but it wasn't until the 19th century that the theory received formal acknowledgment. Since then other scholars have contributed to what is known about adult learning including learning theories. Behavioral theory, cognitive theory, developmental theory, and humanistic theory all inform understanding of different aspects of adult learning theory. Strengths of this article include a description of theoretical principles and groundedness in literature. Weaknesses of this article include a lack of research/evidence and no visual diagrams provided.

9	**Overview of Article**
Type of article	Overall Type: Primary Research Study (Mixed-methods)
	Specific Type: Evaluation of psychometric properties
APA Reference	Rodby-Bousquet, E., Persson-Bunke, M., & Czuba, T. (2016). Psychometric evaluation of the Posture and Postural Ability Scale for children with cerebral palsy. *Clinical Rehabilitation, 30*(7), 697-704. https://doi.org/10.1177/0269215515593612
Abstract	"Objective: To evaluate construct validity, internal consistency and inter-rater reliability of the Posture and Postural Ability Scale for children with cerebral palsy. Design: Evaluation of psychometric properties. Setting: Five child rehabilitation centres in the south of Sweden, in November 2013 to March 2014. Subjects: A total of 29 children with cerebral palsy (15 boys, 14 girls), 6-16 years old, classified at

	Gross Motor Function Classification System (GMFCS) levels II (n = 10), III (n = 7), IV (n = 6) and V (n = 6). Main measures: Three independent raters (two physiotherapists and one orthopaedic surgeon) assessed posture and postural ability of all children in supine, prone, sitting and standing positions, according to the Posture and Postural Ability Scale. Construct validity was evaluated based on averaged values for the raters relative to known-groups in terms of GMFCS levels. Internal consistency was analysed with Cronbach's alpha and corrected Item-Total correlation. Inter-rater reliability was calculated using weighted kappa scores. Results: The Posture and Postural Ability Scale showed construct validity and median values differed between GMFCS levels ($p < 0.01$). There was a good internal consistency (alpha = 0.95-0.96; item-total correlation = 0.55-0.91), and an excellent inter-rater reliability (kappa score = 0.77-0.99). Conclusion: The Posture and Postural Ability Scale shows high psychometric properties for children with cerebral palsy, as previously seen when evaluated for adults. It enables detection of postural deficits and asymmetries indicating potential need for support and where it needs to be applied." (p. 697)
Author	Credentials: PhD
	Position and Institution: PT, Associate Professor, Orthopaedics Lund University, Centre for Clinical Research Västerås
	Publication History in Peer-Reviewed Journals: Limited
Publication	Type of publication: Scholarly peer-review journal
	Publisher: Sage Publishing
	Other:
Date and Citation History	Date of publication: 2016
	Cited By: 14
Stated Purpose or Research Question	"The purpose of this study was to evaluate construct validity, internal consistency and inter-rater reliability of the PPAS for children with cerebral palsy." (p. 698)
Author's Conclusion	"The PPAS shows construct validity, internal consistency and excellent inter-rater reliability for raters with experience of children with cerbral palsy. It can detect postural deficits and asymmetries, which enable early detection of potential problems and provides information relevant to postural support solutions in order to improve function and prevent musculoskeletal deformities." (p. 703)
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Good
	Rationale: This study examines the psychometric properties of the PPAS, which is one of the assessment tools used in the training package of the capstone project. Understanding these properties is important to support their use in research. The authors indicate critical considerations related to the administration of PPAS in the methodology section that will be important to address during training.
Overall Quality of Article	Overall Quality of Article: Good
	Rationale: Strengths of this study include thorough data analysis and presentation of results, diverse motor abilities within the sample, and the rating occurred on the same occasion. Limitations include varying levels of experience among raters and a limited number of participants with severe CP (GMFCS level V).
Your Focused Question and Clinical Bottom Line	*Question:* What are the psychometric properties of assessment tools to measure posture in children with cerebral palsy?
	Clinical Bottom Line: The Posture and Postural Ability Scale has high internal consistency, construct validity and inter-rater reliability for children with cerebral

	palsy. Considerations mentioned by the authors include: recommending training on an assessment tool to minimize errors by having multiple raters compare ratings on the same occasion; there is increased difficulty rating sitting in sagittal view depending on the position of pelvis and height of supporting surface.
Your Lay Summary	This study looks at an assessment tool measuring posture. The tool looks at the alignment of the body and how well a person can move into and hold positions. It looks at four positions including laying on the back, laying on the stomach, standing and sitting. The tool has strong reliability for adults with cerebral palsy. This study tests the tool on children with cerebral palsy. Two different therapists and a surgeon assessed with children of varying severity of cerebral palsy. The results showed that the different evaluators scored children similarly. There were differences in assessment scores depending on the level of severity of cerebral palsy. Therefore, this tool is a good way to measure posture and change/maintain posture in children with cerebral palsy. This is important because children with cerebral palsy are at risk of body shape changes. The tool can help determine if interventions are working or not. It can also promote early identification and location of problems.
Your Professional Summary	The Posture and Postural Ability Scale (PPAS) is a clinical assessment tool that measures body alignment and the ability to change/maintain among individuals with motor impairments such as cerebral palsy. Past research has indicated the tool has strong psychometric properties for adults with cerebral palsy. The purpose of this study was to examine the psychometric properties of the PPAS for children with cerebral palsy. The study design was an evaluation of psychometric properties and included a total of 29 children with Gross Motor Function Classification System levels ranging from II-V. Three professionals (2 physiotherapists, and one orthopedic surgeon) simultaneously and independently rated the children using the PPAS. The researchers analyzed construct validity, inter-rater reliability, and internal consistency. Results showed significant differences in PPAS scores depending on GMFCS level, indicating good construct validity. Inter-rater reliability and internal consistency were both high (0.77-0.99; 95% CI 0.60-1.0) (0.95–0.96; 95% CI 0.90-0.98). Strengths of this study include thorough data analysis and presentation of results, diverse motor abilities within the sample, and ratings that occurred on the same occasion. Limitations include varying levels of experience among raters and a limited number of participants with severe CP (GMFCS level V). These results suggest that the PPAS is a valid and reliable tool to measure posture and postural ability in children with cerebral palsy.

10	Overview of Article
Type of article	Overall Type: Primary Research Study (qualitative, quantitative, etc.)
	Specific Type: Exploratory, descriptive
APA Reference	Wood, N., & Brown, S. (2022). An exploratory study: The effects of sleep systems on sleep quality, pain and carer goals for non-ambulant children and young people with cerebral palsy. *Journal of Rehabilitation and Assistive Technologies Engineering, 9*, 1-9. https://doi.org/10.1177/20556683211070729
Abstract	"Sleep systems are supports used in lying, forming part of 24 h posture management programmes, for children and adults with severe motor disorders. Improved posture reduces likelihood of secondary complications such as pain and poor sleep quality, thus improving quality of life. The study aims are to investigate the effect of sleep systems on sleep quality and quantity, pain for young people with Cerebral Palsy and outcomes for carers. Baseline data were gathered for 1 month prior to sleep system provision. Comparative data with the sleep system in place, were gathered for 5 months. The sample comprised four children with Cerebral Palsy, GMFCS level V, average age of 11.5, who did not have a sleep system. Data on sleep quality and quantity was gathered using the Chailey Sleep Questionnaire and sleep diaries and

	pain levels using the Paediatric Pain Profile. GAS Light verbal outcome measure was used to measure carer goals. Descriptive statistics and paired sample t-tests were used, demonstrating pain levels remained static, improvements in sleep quality and quantity were found and carer goals achieved. Small sample size and subjective data collection methods were used; further research is required to obtain more conclusive results." (p. 1)
Author	Credentials: N/a
	Position and Institution: Wheelchair Hub, Hounslow and Richmond Community Healthcare NHSTrust, Hounslow, UK
	Publication History in Peer-Reviewed Journals: limited
Publication	Type of publication: Scholarly peer-reviewed journals
	Publisher: Sage Publishing
	Other: N/a
Date and Citation History	Date of publication: 2022
	Cited By: 0
Stated Purpose or Research Question	"The aim of this study is to investigate the effects of sleep systems on pain and sleep quality and quantity and whether carer goals for the outcome of the sleep system were met." (p. 2)
Author's Conclusion	"Previous authors have recommended that sleep systems are prescribed as part of a 24 h posture management program for children with CP from an early age. Assessment of sleep quality, sleep quality, pain and carer goals should be considered as part of the prescription process. Due to the small sample size of this study and limitations in measurements taken, further studies are required to ascertain what changes to sleep quantity, quality and pain can be expected with sleep systems as an intervention and what impact they have on carer burden and carer goals." (p. 7)
Overall Relevance to your Doctoral Capstone Project	Overall Relevance of Article: Good
	Rationale: This article has similar population, purpose, and methodology to the pilot study related to the capstone project. Specifically, background information on assessments used will inform the justification of assessment tools used in the capstone project. The researchers note a need for more research on the impact of sleep systems on sleep and pain for children with CP, which is the aim of the pilot study. The limitations of this study will be important to consider since the capstone project/pilot study will be building on this recent research and addressing some of the shortcomings of this study.
	- Caregiver follow through on assessment completion was poor, so how can this be addressed through caregiver training prior to study initiation?
	- This study uses a different assessment for sleep quality compared to pilot study
	- Different brand sleep system was utilized
Overall Quality of Article	Overall Quality of Article: Moderate
	Rationale: The study only includes a sample of 4 children, which may not be sufficient to achieve potential outcomes. The study may be biased since there was no randomization and researchers were not blind. The authors provide a good review of background research and a description of their procedure.
Your Focused Question	*Question:* What does long-term research conclude about the impact of sleep systems on the well-being of children with cerebral palsy?

and Clinical Bottom Line	*Clinical Bottom Line:* Limitations in this study decrease reliability of findings, but preliminary research suggests improvements in sleep following 5-month usage of sleep systems in children with cerebral palsy. More research is needed on changes in sleep quality, sleep quantity, and pain with the use of a sleep system.
Your Lay Summary	There is not a lot of high-quality evidence on sleep systems for children with cerebral palsy. Much of the evidence has flaws. More research is needed to look at the impact of sleep systems on pain, sleep quality/quantity, and caregiver goals. This study provided sleep system equipment to 4 participants. None of the participants have used a sleep system before. The intervention took place in the homes of the participants. Families filled out a sleep log 1 month prior to receiving the intervention. An additional sleep questionnaire and family goals were completed also. Then families received instructions on how to use the sleep system. Data was collected every month for 5 months while the sleep system was in use. Results suggest that the majority of participants had positive changes in sleep quality and quantity. No participants had any change in pain. The majority of caregivers had their goals set at baseline met by the end of the study. This study shows some evidence supporting improved sleep with the use of sleep systems. Evidence is not yet clear enough for widespread clinical use. There were some difficulties with follow-through/compliance. More research is needed. Future research needs a bigger sample size.
Your Professional Summary	This exploratory design study investigates the impact of sleep systems on the sleep quality and quantity and pain of children with cerebral palsy. The study also examines whether or not caregiver goals are met following the use of sleep systems. Past research has suggested there may be some benefits to sleep systems for children with cerebral palsy, but poor standardization and methodology have limited research quality. The current study includes 4 children who have severe cerebral palsy and an average age of 11.5. Researchers collect data over 6 months (intervention is implemented 1 month into the study). Researchers utilize assessments including sleep diaries, Chailey Sleep Questionnaire, Natural Zero joint range assessment, Pediatric Pain Profile, and Goal Attainment Scale. With the exception of sleep diaries (daily caregiver report) and Goal Attainment Scale (pre- and post-intervention), all assessments were administered by therapists at one-month intervals. Results suggested positive improvements in sleep quality and quantity, no change in pain, and success/improvement in caregiver goals after the 6-month study. Overall, the strengths of this study include a review of literature, a thorough description of methodology and procedure, and multiple outcome measures used. There were several limitations including small sample size, lack of randomization and blinding researchers, inappropriate use of sleep measures (Chailey Sleep Questionnaire is intended for one-time snapshot), limited sample pool, and confounding factors during the study (poor questionnaire compliance, unexpected events). Due to the number of limitations, no strong conclusions can be made from the results in this study and more research is needed.

Appendix C: Table of Contents – Training Package Recommendations

There is a separate training package for 1) participants/primary caregivers titled "Nighttime Postural Care Participant Training", and 2) team evaluation (TE) titled "Training for Team Evaluation" (research team members who will measure outcomes). Throughout this table of contents, the version will be referred to as the audience for which it's intended: 1) participants and 2) TE. Each training package is a separate Weebly website, which houses all training materials specific to the individual's role in the research study (created by Faye McGuire). Please see a sample Weebly website for the format here. The website has a home page, as well as 2 additional pages: 1) Tutorials, and 2) Contact Us. When the website opens, the title is in large font. Then, it tells the viewer to scroll down on the home page to watch the introduction video.

The introduction and conclusion video, as well as each "introduction video" throughout the training, gives viewers context regarding their role in the study and directions to complete the training. They are short, narrated slideshow videos on the home page. The training package includes tutorials and supplemental downloadable documents.

Between the two different packages (one for participants and one for TE), the format and some of the training materials are identical. However, some training materials between the two packages serve the same purpose but were developed separately for the participant and TE package in order to be most relevant to the viewer's role. Other training materials are exclusive to only one of the training packages.

Please see the steps/components of each training package below. Each training item indicates in which training package it appears (Participants or TE). Pre-existing tutorials were evaluated and edited for accuracy, plain language, understandability, and/or actionability. Other materials were developed to enhance the comprehensiveness, understandability, and/or actionability of the training package. Here is a key to indicate which items Faye McGuire developed/edited:

- **bold headings and associated content** = developed by Faye McGuire
- *Italicized headings and associated content* = developed by Faye McGuire and Ellie Leabch (capstone peer partner)
- <mark>highlighted headings and associated content</mark> = pre-existing and edited/adapted by Faye McGuire.

1. *Introduction video:*
   - This provides the viewer with an overview of the training expectations, the definition of assessments (Participants only), their role in the study, and instructions for training completion. Then, the video tells the participant step-by-step instructions to find the following materials on the website and how to use each one: Training checklist, List of definitions (Participants only), "Pre-training questionnaire instruction video." The slideshow has visual aids to illustrate this.
   - There is a separate introductory video for each training package (Participants and TE)
2. **Training checklist:**

- o This is a one-page checklist of each item the viewer needs to complete, and they appear in the order each task needs to be completed.
  - Faye McGuire used the PEMAT-P and PRISM checklist to verify quality
  - Each checklist is specific to the training package (one for Participants and one for TE)

3. *List of definitions (Participants only):*
   - o This is a 5-page document that has a table with 3 columns: Term, Definition, and Source. The participant can use it to find the meaning of words that may be unfamiliar to them during the training.
     - Faye McGuire used the PEMAT-P and PRISM checklist to verify quality

4. *Pre-Training Questionnaire Introduction Video*
   - o After watching the introduction video and locating resources, viewers watch this video on the home page of the website. It gives viewers instructions on how to fill out the pre-training questionnaire and tells the viewer how to find it on the website and what to do after they complete the questionnaire.
   - o There is a separate pre-training questionnaire introduction video for Participants and TE.

5. ==Pre-Training Questionnaire==
   - o This is the Self-perceived competency survey (see Appendix E & F). For participants, it addresses the competency of both intervention and assessments before they complete any training. For TE, it addresses the competency of assessments before they complete the training.
   - o There is a separate pre-training questionnaire for Participants and TE.

6. *VoiceThread Introduction*
   - o This is a narrated slideshow video that introduces the basic functions of the platform used for all tutorial videos (VoiceThread).
   - o This is the same for both packages (Participants and TE)

7. **Multicultural Competency Introduction Video (TE only)**
   - o This is a narrated slideshow video on the home page. It introduces the viewer to the first tutorial video on multicultural competency and contextualizes the tutorial for the purpose of the study. Finally, it tells the viewer how to find the tutorial as well as a resource (Multicultural Competency Slides) and how to find the video that will give them the next instruction.

8. **NTPC Brief Overview Video (TE only)**
   - o This is a narrated slideshow video on the home page. It introduces the viewer to the intervention used in the pilot study and the basic principles underlying the intervention. Then, it tells the viewer how to find the next video that will give them the next instruction.

9. **SDSC Introduction Video**
   - o This is a narrated slideshow video on the home page. This is the start of the assessment training section. It introduces the assessment called the **S**leep **D**isturbance **S**cale for **C**hildren. It tells the viewer how to find the tutorial as well as a couple of resources they will open in a different tab while watching the tutorial: SDSC blank copy of the assessment, and SDSC sample scoring form.

Finally, it tells the viewer how to find the SDSC summary page (Participant only) or SDSC Slides (TE only) and how to find the video that will give them the next instruction.

- o Separate instructions and portions of the tutorial were created for Participants and Training Evaluation

10. ==SDSC Assessment Form & SDSC Sample Scoring Form==
- o Viewers will follow along with these during the tutorial. Located on the tutorials tab. Faye McGuire modified the formatting to remove sample answers.
- o Participants and TE forms are identical

11. ==SDSC Tutorial==
- o 18-31 min VoiceThread tutorial on the purpose, administration, scoring, and interpretation of the SDSC assessment. Participants will watch slides 1-29, the last section is about T-score interpretation and is for the TE only. Located on the tutorials tab.
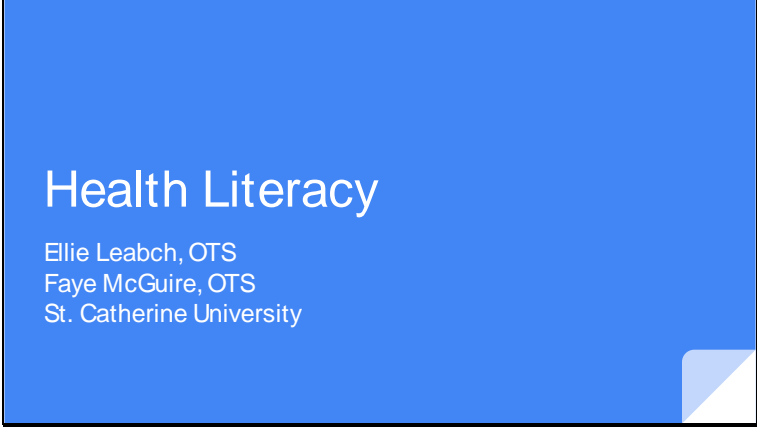- o This was previously created by Master's students. Faye McGuire used the PEMAT-A/V and PRISM checklist to evaluate and guide recommendations for changes:
  - ▪ Revisions include: slide formatting, spelling, and wording changes, content clarification on slides 4, 22 24-25, the addition of slide 29, reorder of slide 28, the addition of objectives to conclusion slide, voice narration revision on slides 1-29 with focus on clarity and plain language, adjust the font on slides for accessibility.
- o Participants and TE are identical (with exception of an additional section for TE to view)

12. SDSC Slides (TE only)
- o PDF version of the slideshow that the viewer can follow along with and take notes.

13. SDSC Summary page (Participants only)
- o 2-page summary in Q&A format and plain language that highlights key information that the participant needs to know about the SDSC. Located on the tutorials tab.
- o Faye McGuire used the PEMAT-P and PRISM checklist to verify quality.

14. CPCHILD Introduction Video
- o This is a narrated slideshow video on the home page. First, it provides a brief recap of the SDSC's main points. Then, it introduces the assessment called the **C**hild **H**ealth **I**ndex of **L**ife with **D**isabilities. It tells the viewer how to find the tutorial as well as a resource they will open in a different tab while watching the tutorial: CPCHILD blank copy of the assessment. Finally, it tells the viewer how to find the CPCHILD summary page (Participant only) or CPCHILD Slides (TE only), and how to find the video that will give them the next instruction.
- o Separate introduction videos for the Participants and TE

15. ==CPCHILD Tutorial==
- o 20 min VoiceThread tutorial on the purpose, administration, scoring, and interpretation of the CPCHILD assessment. Located on the tutorials tab.

- o This was previously created by Master's students. Faye McGuire used the PEMAT-A/V and PRISM checklist to evaluate and guide recommendations for changes:
  - ▪ Revisions include: slide formatting, spelling, and wording corrections, content clarification on slides 4, 10-13, 15-16, 18-19, reorder of slide 22, the addition of slide 23, request viewer to pull up assessment form, voice narration revision with focus on clarity and plain language, adjust the font on slides for accessibility.
- o Participants and TE tutorials are identical

16. CPCHILD Slides (TE only)
  - o PDF version of the slideshow that the viewer can follow along with and take notes.

17. CPCHILD Summary page (Participant only)
  - o 2-page summary in Q&A format and plain language that highlights key information that the participant needs to know about the CPCHILD. Located on the tutorials tab.
  - o Faye McGuire used the PEMAT-P and PRISM checklist to verify quality.

18. PPP Introduction Video
  - o This is a narrated slideshow video on the home page. First, it provides a brief recap of the CPCHILD main points. Then, it introduces the assessment called the **P**aediatric **P**ain **P**rofile. It tells the viewer how to find the tutorial as well as a resource they will open in a different tab while watching the tutorial: PPP blank copy of the assessment. Finally, it tells the viewer how to find the PPP summary page (Participant only) or PPP Slides (TE only), and how to find the video that will give them the next instruction.

19.   ==PPP Tutorial==
  - o 17 min VoiceThread tutorial on the purpose, administration, scoring, and interpretation of the CPCHILD assessment. Located on the tutorials tab.
  - o This was previously created by Master's students. Faye McGuire used the PEMAT-A/V and PRISM checklist to evaluate and guide recommendations for changes:
    - ▪ Revisions include: minor slide order and wording changes, content clarification on slides 4, 9, 12-13, 24, the addition of slide 25, reorder of slide 23, the addition of objectives to conclusion slide, voice narration revision with focus on clarity and plain language, adjust the font on slides for accessibility.
  - o Participants and TE tutorials are identical

20. PPP Slides (TE only)
  - o PDF version of the slideshow that the viewer can follow along with and take notes.

21. PPP Summary page (Participants only)
  - o 2-page summary in Q&A format and plain language that highlights key information that the participant needs to know about the CPCHILD. Located on the tutorial tab.

- o Faye McGuire used the PEMAT-P and PRISM checklist to verify quality

22. PPAS Introduction Video (TE only)
- o This is a narrated slideshow video on the home page. First, it provides a brief recap of the PPP's main points. Then, it introduces the assessment called the **P**osture and **P**ostural **A**bility **S**cale. It tells the viewer how to find the tutorial as well as a couple of resources they will open in a different tab while watching the tutorial: PPAS blank copy of the assessment, PPAS slides. Finally, it tells the viewer how to find the video that will give them the next instruction.

23. <mark>PPAS Tutorial (TE only)</mark>
- o 23 min VoiceThread tutorial on the purpose, administration, scoring, and interpretation of the PPAS assessment. Located on the tutorials tab. This is only for research team members, not participants.
- o This was previously created by Master's students. Faye McGuire used PEMAT-A/V to guide recommendations for changes:
    - ▪ Revisions include: slide formatting, spelling, and wording corrections, the addition of slides 4, 6, 9, 11-12, 15-17, 19-20, 23-26, 28-29 for visual learning aids and opportunities for practice, content clarification on slides 5, 7, 8, 10, 13-14, 18, and 21-22, 27, rearrange order and distribution of content on 4 slides, request viewer to pull up assessment form, the addition of objectives to conclusion slide, voice narration re-creation with a focus on clarity and plain language, adjust font on slides for accessibility.

24. PPAS Slides (TE only)
- o PDF version of the slideshow that the viewer can follow along with and take notes.

25. Post-Training Questionnaire Introduction Video
- o This is a narrated slideshow video on the home page. First, it provides a brief recap of the PPP's (Participant) or PPAS's (TE) main points. Then, it gives viewers instructions on how to fill out the post-training questionnaire and tells the participant how to find it on the website and what to do after they complete the questionnaire.

26. <mark>Post-Training Questionnaire</mark>
- o This is the Self-perceived competency survey (see Appendix E & F). For participants, it addresses the competency of both intervention and assessments after they complete any training. For TE, it addresses the competency of assessments after they complete the training.
- o Similar to the pre-training questionnaire the post-training questionnaires are distinct for the Participants and TE

27. Conclusion Video
- o This is a brief video narrated slideshow describing the next steps viewers will take once they have completed the training.
- o Participants and TE each have their own conclusion video

Additional Items in this package that are included in the training package, but Faye McGuire did not create and/or edit include: Multicultural Competency Tutorial and Slides (TE only), Introduction videos and training tutorials on "The Basics", COPM, and Sleep Diaries (Participants only), CPCHILD blank copy of the assessment (both), PPP blank copy of the assessment (both), and PPAS blank copy of the assessment (TE only).
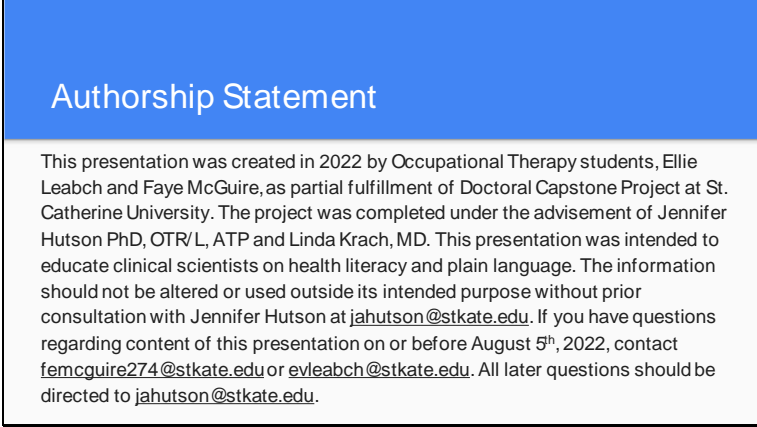
Appendix D: Health Literacy Education Session Slides

Slide 1

Health Literacy

Ellie Leabch, OTS
Faye McGuire, OTS
St. Catherine University
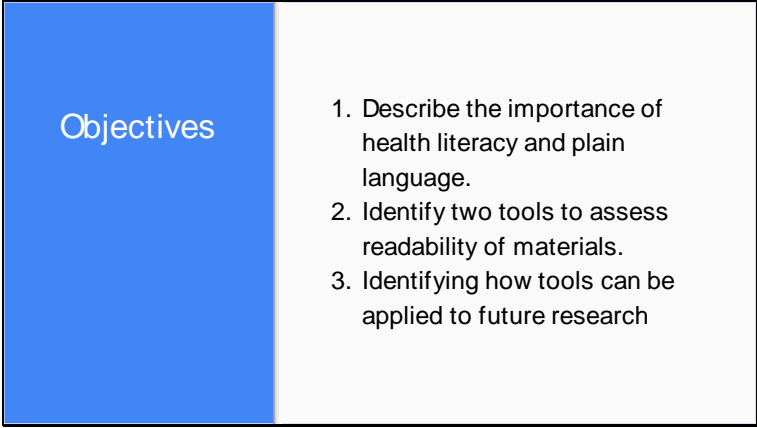
Slide 2

Authorship Statement

This presentation was created in 2022 by Occupational Therapy students, Ellie Leabch and Faye McGuire, as partial fulfillment of Doctoral Capstone Project at St. Catherine University. The project was completed under the advisement of Jennifer Hutson PhD, OTR/L, ATP and Linda Krach, MD. This presentation was intended to educate clinical scientists on health literacy and plain language. The information should not be altered or used outside its intended purpose without prior consultation with Jennifer Hutson at jahutson@stkate.edu. If you have questions regarding content of this presentation on or before August 5th, 2022, contact femcguire274@stkate.edu or evleabch@stkate.edu. All later questions should be directed to jahutson@stkate.edu.

Slide 3

Objectives

1. Describe the importance of health literacy and plain language.
2. Identify two tools to assess readability of materials.
3. Identifying how tools can be applied to future research

Slide 4

Definitions

Health Literacy: bidirectional communication between patients and the healthcare system

→ **Personal**

Organizational

(CDC, 2022)
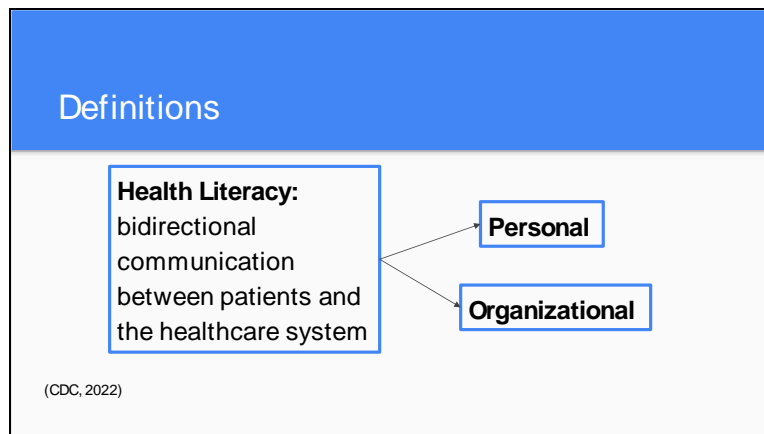
Slide 5

Problem/Importance

- Health materials should be at a 6-8th grade reading level (Stossel et al., 2012)
- Most materials are above a 12th grade reading level (Hutchinson, Baird, & Garg, 2016)
  - You can have high reading literacy, but low health literacy (Healthy People 2020, 2022)
- There is a misunderstanding of what health literacy is (Baumeister et al., 2021; Lambert et al., 2014)

Slide 6

Strategies/Solutions

Plain Language: Clear and simple communication that the intended audience can easily understand

Simple, patient-friendly information uses:

- **Wording**: Everyday language, active voice, first person
- **Structure**: Short sentences, logical order, relevant information
- **Design**: Clear formatting, ample white space, chunks information, headings, bolding

(Ridpath et al., 2007)

Slide 7

Tools

2 tools were used to assess health literacy and language use

- PEMAT-AV
- PRISM checklist

Slide 8

Patient Education Material Assessment Tool

AHRQ Agency for Healthcare Research and Quality

https://www.ahrq.gov/health-literacy/patient-education/pemat.html

Understandability & Actionability

Print & Audiovisual

(Shoemaker et al., 2020)

Slide 9

Program for Readability in Science and Medicine (PRISM)

PRISM Editing & Consultation

(Ridpath et al., 2007)

Phase 1: Primary Reviewer checks reading levels and revises to be under 8th grade

Phase 2: Others check reading level & give feedback

Phase 3: Confirm contact information for reviewers and team signs off on readability being appropriate

Slide 10

Slide 11

Slide 12

Slide 13

Example 2

Slide 14

Summary Points

- Health literacy is 2 way communication system
- Plain language is part of a possible solution to the health literacy problem
- PEMAT-AV is a good tool for videos
  - Addresses understandability and actionability of audiovisual communications
- PRISM is good for written materials and communication

Slide 15

Additional Resources

- PRISM Online Training and Toolkit
- AHRQ Health Literacy Measurement Tools (English and Spanish)
- SMOG Readability Formula
- AHRQ Communicate Clearly - Spoken communication
- TOOLKIT for Making Written Material Clear and Effective: U.S. DHHS, CMS
- Clear & Simple: NIH
- Guidelines on creating materials: Harvard
- CDC Clear Communication Index Score Sheet
- CDC Simply Put: A guide for creating easy-to-understand materials
- NYU Health Literacy and Patient Education Toolkit and Guides
- Clinical Research Glossary
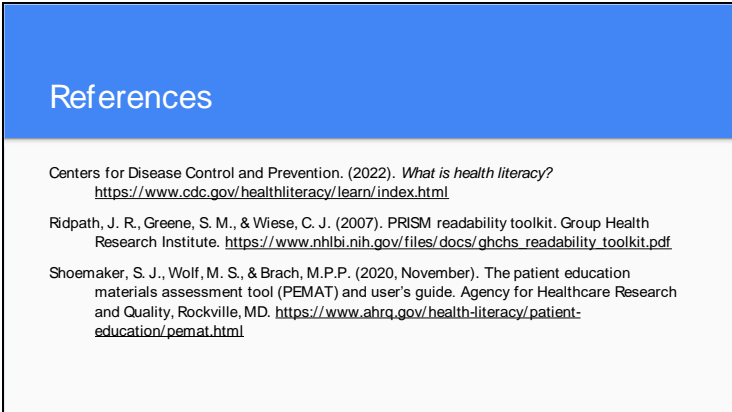
Slide 16

Thank you!

Q & A

Slide 17

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Shoemaker, S. J., Wolf, M. S., & Brach, M.P.P. (2020, November). The patient education
materials assessment tool (PEMAT) and user's guide. Agency for Healthcare Research
and Quality, Rockville, MD. https://www.ahrq.gov/health-literacy/patient-
education/pemat.html

Appendix E: Pre- and Post-Training Package Self-Perceived Competency Survey

and Informed Consent for Research Team

Pre-Training Informed Consent:

You are invited to participate in this research project because you will be completing training packages on nighttime postural care. This project is being conducted by Occupational Therapy Students, Faye McGuire and Eleanor Leabch, and Assistant Professor of Occupational Therapy, Dr. Jennifer Hutson, at St. Catherine University. By completing this survey, you will help us understand the usefulness of the training. The survey includes items about knowledge, ability, and confidence in administration, scoring, and interpretation of three assessments. The data that we collect from this survey will be used to improve the training program. It will take approximately 10 minutes to complete.

Your responses to this survey will be confidential and results will be presented in a way that no one will be identifiable. Confidentiality will be maintained to the degree permitted by the survey technology used, Google Forms. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties.

Your participation is voluntary and your decision whether or not to participate will not affect your relationships with the researchers, St. Catherine University, or The healthcare organization. If you decide to stop at any time you may do so. If you have any questions about this project, please contact Faye McGuire (femcguire274@stkate.edu) or Dr. Jennifer Hutson (jahutson@stkate.edu) or the Institutional Reviewer Board Chair: John Schmitt, PT, PhD, 651.690.7739; jsschmitt@stkate.edu. By responding to items on this survey you are giving us your consent to allow us to use your responses for research and educational purposes.

_____

The baseline self-perceived competency questionnaire will be filled out online by research team members who will be responsible for evaluating outcomes in a research study. They will complete this questionnaire before completing the Nighttime Postural Care Assessment Training Package. The training package aims to increase competence of the Sleep Disturbance Scale for Children, the Caregiver Priorities and Child Health Index of Life with Disabilities, the Pediatric Pain Profile, and the Posture and Postural Ability Scale, which will be used in the research study. The goal of the questionnaire is to assess the level of knowledge, ability, and confidence in administering, scoring, and interpreting the results of these assessments.

This questionnaire is a modified version of the "Baseline Sleep Care Positioning Questionnaire" created by Dr. Jennifer Hutson in 2018. "Baseline Sleep Care Positioning Questionnaire" and "Post-Training Questionnaire" were created by Dr. J.A.Hutson in 2018 and modified by Faye McGuire, OTS in 2022 for the purpose of a research pilot study. Modifications include: change question items (adapted the same type of question to fit training content - pre- and post-), removal of question on care role (pre- and post-) and sleep system experience (pre-), addition of questions on training delivery, change open-ended question wording (post-), and addition of 3 open-ended questions (post-).

Pre-Training Survey

Please answer the following questions to help us determine the usefulness of the Nighttime Postural Care Assessment Training Program.

This questionnaire asks you to rate your knowledge, skills, and confidence in four different assessments. Please click on the option that best matches your response.

How would you rate your knowledge of:

- The purpose of the Sleep Disturbance Scale for Children
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge
- The purpose of the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge
- The purpose of the Pediatric Pain Profile
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge
- The purpose of the Posture and Postural Ability Scale
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge

How would you rate your ability to:

- Fill out the Sleep Disturbance Scale for Children
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Sleep Disturbance Scale for Children
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the scores of the Sleep Disturbance Scale for Children
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No ability

- o 2 - A little ability
- o 3 - Some ability
- o 4 - A lot of ability
- Score the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the scores of the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Pediatric Pain Profile
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Pediatric Pain Profile
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the scores of the Pediatric Pain Profile
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Posture and Postural Ability Scale
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Posture and Postural Ability Scale
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the scores of the Posture and Postural Ability Scale
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability

How confident are you that you can:

- Describe the purpose of the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident

- o 4 - Very confident
- Fill out the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Score the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Interpret the scores of the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Describe the purpose of the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Fill out the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Score the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Interpret the scores of the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Describe the purpose of the Pediatric Pain Profile
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Fill out the Pediatric Pain Profile
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Score the Pediatric Pain Profile
  - o 1 - Not at all confident
  - o 2 - A little confident

- o   3 - Somewhat confident
- o   4 - Very confident
- Interpret the scores of the Pediatric Pain Profile
  - o   1 - Not at all confident
  - o   2 - A little confident
  - o   3 - Somewhat confident
  - o   4 - Very confident
- Describe the purpose of the Posture and Postural Ability Scale
  - o   1 - Not at all confident
  - o   2 - A little confident
  - o   3 - Somewhat confident
  - o   4 - Very confident
- Fill out the Posture and Postural Ability Scale
  - o   1 - Not at all confident
  - o   2 - A little confident
  - o   3 - Somewhat confident
  - o   4 - Very confident
- Score the Posture and Postural Ability Scale
  - o   1 - Not at all confident
  - o   2 - A little confident
  - o   3 - Somewhat confident
  - o   4 - Very confident
- Interpret the scores of the Posture and Postural Ability Scale
  - o   1 - Not at all confident
  - o   2 - A little confident
  - o   3 - Somewhat confident
  - o   4 - Very confident

Short Answer

Please answer the following question by typing your response.

Describe anything else about your knowledge and ability or previous training related to the Sleep Disturbance Scale for Children, Caregiver Priorities and Child Health Index of Life with Disabilities, and Pediatric Pain Profile and Posture and Postural Ability Scale.

_____
_____

Post-Training Informed Consent:

You are invited to participate in this research project because you completed training packages on nighttime postural care. This project is being conducted by Occupational Therapy Students, Faye McGuire and Eleanor Leabch, and Assistant Professor of Occupational Therapy, Dr. Jennifer Hutson, at St. Catherine University. By completing this survey, you will help us understand the usefulness of the training. The survey includes items about knowledge, ability, and confidence in administration, scoring, and interpretation of three assessments. The data that we collect from this survey will be used to improve the training program. It will take approximately 10 minutes to complete.

Your responses to this survey will be confidential and results will be presented in a way that no one will be identifiable. Confidentiality will be maintained to the degree permitted by the survey technology used, Google Forms. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties.

Your participation is voluntary and your decision whether or not to participate will not affect your relationships with the researchers, St. Catherine University, or The healthcare organization. If you decide to stop at any time you may do so. If you have any questions about this project, please contact Faye McGuire (femcguire274@stkate.edu) or Dr. Jennifer Hutson (jahutson@stkate.edu), or the Institutional Reviewer Board Chair: John Schmitt, PT, PhD, 651.690.7739; jsschmitt@stkate.edu. By responding to items on this survey you are giving us your consent to allow us to use your responses for research and educational purposes.

_____

The post-training self-perceived competency questionnaire will be filled out online by research team members who will be responsible for evaluating outcomes of the research study. They will complete this questionnaire after completing the Nighttime Postural Care Assessment Training Package. The training package aims to increase competence of the Sleep Disturbance Scale for Children, the Caregiver Priorities and Child Health Index of Life with Disabilities, the Pediatric Pain Profile, and the Posture and Postural Ability Scale, which will be used in the research study. The goal of the questionnaire is to assess the level of knowledge, ability, and confidence in administering, scoring, and interpreting the results of these assessments.

This questionnaire is a modified version of the "Baseline Sleep Care Positioning Questionnaire" created by Dr. Jennifer Hutson in 2018. "Baseline Sleep Care Positioning Questionnaire" and "Post-Training Questionnaire" were created by Dr. J.A.Hutson in 2018 and modified by Faye McGuire, OTS in 2022 for the purpose of a research pilot study. Modifications include: change question items (adapted the same type of question to fit training content - pre- and post-), removal of question on care role (pre- and post-) and sleep system experience (pre-), the addition of questions on training delivery, change open-ended question wording (post-), and addition of 3 open-ended questions (post-).

Post-Training Survey

Please answer the following questions to help us determine the usefulness of the Nighttime Postural Care Assessment Training Program.

This questionnaire asks you to rate your knowledge, skills, confidence, and interest in four different assessments. Please click on the option that best matches your response.

How would you rate your knowledge of:

- The purpose of the Sleep Disturbance Scale for Children
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge
- The purpose of the Caregiver Priorities and Child Health Index of Life with Disabilities
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge
- The purpose of the Pediatric Pain Profile
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge
- The purpose of the Posture and Postural Ability Scale
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge

How would you rate your ability to:

- Fill out the Sleep Disturbance Scale for Children
    - 1 - No ability
    - 2 - A little ability
    - 3 - Some ability
    - 4 - A lot of ability
- Score the Sleep Disturbance Scale for Children
    - 1 - No ability
    - 2 - A little ability
    - 3 - Some ability
    - 4 - A lot of ability
- Interpret the scores of the Sleep Disturbance Scale for Children
    - 1 - No ability
    - 2 - A little ability
    - 3 - Some ability
    - 4 - A lot of ability
- Fill out the Caregiver Priorities and Child Health Index of Life with Disabilities
    - 1 - No ability
    - 2 - A little ability
    - 3 - Some ability
    - 4 - A lot of ability
- Score the Caregiver Priorities and Child Health Index of Life with Disabilities
    - 1 - No ability

- o 2 - A little ability
- o 3 - Some ability
- o 4 - A lot of ability
- Interpret the scores of the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Pediatric Pain Profile
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Pediatric Pain Profile
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the scores of the Pediatric Pain Profile
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Posture and Postural Ability Scale
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Posture and Postural Ability Scale
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the scores of the Posture and Postural Ability Scale
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability

How confident are you that you can:

- Describe the purpose of the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Fill out the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident

- o 4 - Very confident
- Score the Sleep Disturbance Scale for Children
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Interpret the scores of the Sleep Disturbance Scale for Children
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Describe the purpose of the Caregiver Priorities and Child Health Index of Life with Disabilities
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Fill out the Caregiver Priorities and Child Health Index of Life with Disabilities
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Score the Caregiver Priorities and Child Health Index of Life with Disabilities
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Interpret the scores of the Caregiver Priorities and Child Health Index of Life with Disabilities
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Describe the purpose of the Pediatric Pain Profile
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Fill out the Pediatric Pain Profile
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Score the Pediatric Pain Profile
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Interpret the scores of the Pediatric Pain Profile
    - o 1 - Not at all confident
    - o 2 - A little confident

- o 3 - Somewhat confident
- o 4 - Very confident
- Describe the purpose of the Posture and Postural Ability Scale
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Fill out the Posture and Postural Ability Scale
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Score the Posture and Postural Ability Scale
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Interpret the scores of the Posture and Postural Ability Scale
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident

Please rate the following statements about the Sleep Disturbance Scale for Children, Caregiver Priorities and Child Health Index of Life with Disabilities, and Pediatric Pain Profile.

- Because of the training, I know more about the assessments.
  - o 1 - Strongly Disagree
  - o 2 - Disagree
  - o 3 - Agree
  - o 4 - Strongly Agree
- The training prepared me to use the assessments.
  - o 1 - Strongly Disagree
  - o 2 - Disagree
  - o 3 - Agree
  - o 4 - Strongly Agree
- After completing the training, I understand how to interpret the assessment results.
  - o 1 - Strongly Disagree
  - o 2 - Disagree
  - o 3 - Agree
  - o 4 - Strongly Agree

Training Delivery

Please answer the following questions by selecting one option.

- How long did it take you to complete the training?
  - o Less than 1 hour
  - o 1-2 hours

- o   2-3 hours
- o   More than 3 hours
- o   Other

Please answer the following question by typing your response.

Type the time that you 1) started the training program, 2) took a break (if applicable), 3) returned from a break (if applicable), and 4) finished the training program.

_____
_____

Please rate the following statements about the training delivery.

- The training was easy to follow.
  - o   1 - Strongly Disagree
  - o   2 - Disagree
  - o   3 - Agree
  - o   4 - Strongly Agree
- I could navigate the videos easily (e.g., play narration, go to the next slide, etc.).
  - o   1 - Strongly Disagree
  - o   2 - Disagree
  - o   3 - Agree
  - o   4 - Strongly Agree
- I got all of the information I needed.
  - o   1 - Strongly Disagree
  - o   2 - Disagree
  - o   3 - Agree
  - o   4 - Strongly Agree

Short Answer

Please answer the following questions by typing your response.

Describe what concerns you have about the assessments.

_____
_____

Describe what additional assistance, if any, you might need in order to feel competent in assessments.

_____
_____

Describe what was missing from the training program.

_____
_____

Describe how we could improve the training program.

_____
_____

Describe what you liked about the training program.

_____

_____

Describe what you would like to see more of in the training program.

_____

_____

Additional comments:

_____

_____

Appendix F: Pre-Post Training Package Self-Perceived Competency Survey and

Informed Consent for Participants

Pre-Training Informed Consent:

You are invited to participate in this research project because you will be completing training packages on nighttime postural care. This project is being conducted by Occupational Therapy Students, Faye McGuire and Eleanor Leabch, and Assistant Professor of Occupational Therapy, Dr. Jennifer Hutson, at St. Catherine University. By completing this survey, you will help us understand the usefulness of the training. The survey includes items about knowledge, ability, and confidence in sleep care positioning and administration, scoring, and interpretation of assessments. The data that we collect from this survey will be used to improve the training program. It will take approximately 10 minutes to complete.

Your responses to this survey will be confidential and results will be presented in a way that no one will be identifiable. Confidentiality will be maintained to the degree permitted by the survey technology used, Google Forms. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties.

Your participation is voluntary and your decision whether or not to participate will not affect your relationships with the researchers, St. Catherine University, or The healthcare organization. If you decide to stop at any time you may do so. If you have any questions about this project, please contact Faye McGuire (femcguire274@stkate.edu) or Dr. Jennifer Hutson (jahutson@stkate.edu), or the Institutional Reviewer Board Chair: John Schmitt, PT, PhD, 651.690.7739; jsschmitt@stkate.edu. By responding to items on this survey you are giving us your consent to allow us to use your responses for research and educational purposes.

_____

The baseline self-perceived competency questionnaire will be filled out online by research study participants who are caregivers of children with cerebral palsy. They will complete this questionnaire before completing the Nighttime Postural Care Intervention and Assessment Training Package. The training package aims to increase competence of sleep care positioning, the Canadian Occupational Performance Measure, Sleep Diaries, the Sleep Disturbance Scale for Children, the Caregiver Priorities and Child Health Index of Life with Disabilities, and the Pediatric Pain Profile, which will be used in the research study. The goal of the questionnaire is to assess the level of knowledge, ability, and confidence in sleep care positioning and administering, scoring, and interpreting the results of these assessments.

This questionnaire is a modified version of the "Baseline Sleep Care Positioning Questionnaire" created by Dr. Jennifer Hutson in 2018. "Baseline Sleep Care Positioning Questionnaire" and "Post-Training Questionnaire" were created by Dr. J.A.Hutson in 2018 and modified by Faye McGuire, OTS in 2022 for the purpose of a research pilot study. Modifications include: change question items (adapted the same type of question to fit training content - pre- and post-), removal of question on care role (pre- and post-) and sleep system experience (pre-), the addition of questions on training delivery, change open-ended question wording (post-), and addition of 3 open-ended questions (post-).

Pre-Training Survey

Please answer the following questions to help us determine the usefulness of the Nighttime Postural Care Intervention and Assessment Training Program.

This questionnaire asks you to rate your knowledge, skills, and confidence in sleep care positioning and specific assessments. Please click on the option that best matches your response.

How would you rate your knowledge of:

- The purpose of sleep care positioning
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge
- The purpose of the Canadian Occupational Performance Measure
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge
- The purpose of Sleep Diaries
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge
- The purpose of the Sleep Disturbance Scale for Children
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge
- The purpose of the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge
- The purpose of the Pediatric Pain Profile
  - o 1 - No knowledge
  - o 2 - A little knowledge
  - o 3 - Some knowledge
  - o 4 - A lot of knowledge

How would you rate your ability to:

- Check health risks for sleep care positioning
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Set up a sleep system in bed

- o 1 - No ability
- o 2 - A little ability
- o 3 - Some ability
- o 4 - A lot of ability
- Position a person in the sleep system
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Canadian Occupational Performance Measure
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Canadian Occupational Performance Measure
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the Canadian Occupational Performance Measure
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out Sleep Diaries
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Sleep Disturbance Scale for Children
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Sleep Disturbance Scale for Children
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the scores of the Sleep Disturbance Scale for Children
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No ability

- o 2 - A little ability
- o 3 - Some ability
- o 4 - A lot of ability
- Interpret the scores of the Caregiver Priorities and Child Health Index of Life with Disabilities
    - o 1 - No ability
    - o 2 - A little ability
    - o 3 - Some ability
    - o 4 - A lot of ability
- Fill out the Pediatric Pain Profile
    - o 1 - No ability
    - o 2 - A little ability
    - o 3 - Some ability
    - o 4 - A lot of ability
- Score the Pediatric Pain Profile
    - o 1 - No ability
    - o 2 - A little ability
    - o 3 - Some ability
    - o 4 - A lot of ability
- Interpret the scores of the Pediatric Pain Profile
    - o 1 - No ability
    - o 2 - A little ability
    - o 3 - Some ability
    - o 4 - A lot of ability

How confident are you that you can:

- Describe the purpose of sleep care positioning
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Check health risks for sleep care positioning
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Set up a sleep system in bed
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Position a person in the sleep system
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Describe the purpose of the Canadian Occupational Performance Measure
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident

- o 4 - Very confident
- Fill out the Canadian Occupational Performance Measure
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Score the Canadian Occupational Performance Measure
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Interpret the Canadian Occupational Performance Measure
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Describe the purpose of Sleep Diaries
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Fill out Sleep Diaries
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Describe the purpose of the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Fill out the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Score the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Interpret the scores of the Sleep Disturbance Scale for Children
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Describe the purpose of the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident

- o 4 - Very confident
- Fill out the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Score the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Interpret the scores of the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Describe the purpose of the Pediatric Pain Profile
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Fill out the Pediatric Pain Profile
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Score the Pediatric Pain Profile
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Interpret the scores of the Pediatric Pain Profile
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident

Short Answer

Please answer the following question by typing your response.

Describe anything else about your knowledge and ability or previous training related to sleep care positioning, the Canadian Occupational Performance Measure, Sleep Diaries, the Sleep Disturbance Scale for Children, Caregiver Priorities and Child Health Index of Life with Disabilities, and Pediatric Pain Profile.

_____
_____

Post-Training Informed Consent:

You are invited to participate in this research project because you completed training packages on nighttime postural care. This project is being conducted by Occupational Therapy Students, Faye McGuire and Eleanor Leabch, and Assistant Professor of Occupational Therapy, Dr. Jennifer Hutson, at St. Catherine University. By completing this survey, you will help us understand the usefulness of the training. The survey includes items about knowledge, ability, and confidence in sleep care positioning and administration, scoring, and interpretation of specific assessments. The data that we collect from this survey will be used to improve the training program. It will take approximately 10 minutes to complete.

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The post-training self-perceived competency questionnaire will be filled out online by research study participants who are caregivers of children with cerebral palsy. They will complete this questionnaire after completing the Nighttime Postural Care Intervention and Assessment Training Package. The training package aims to increase competence in sleep care positioning, the Canadian Occupational Performance Measure, Sleep Diaries, the Sleep Disturbance Scale for Children, the Caregiver Priorities and Child Health Index of Life with Disabilities, and the Pediatric Pain Profile, which will be used in the research study. The goal of the questionnaire is to assess the level of knowledge, ability, and confidence in sleep care positioning, and administering, scoring, and interpreting the results of these assessments.

This questionnaire is a modified version of the "Baseline Sleep Care Positioning Questionnaire" created by Dr. Jennifer Hutson in 2018. "Baseline Sleep Care Positioning Questionnaire" and "Post-Training Questionnaire" were created by Dr. J.A.Hutson in 2018 and modified by Faye McGuire, OTS in 2022 for the purpose of a research pilot study. Modifications include: change question items (adapted the same type of question to fit training content - pre- and post-), removal of question on care role (pre- and post-) and sleep system experience (pre-), the addition of questions on training delivery, change open-ended question wording (post-), and addition of 3 open-ended questions (post-).

Post-Training Survey

Please answer the following questions to help us determine the usefulness of the Nighttime Postural Care Intervention and Assessment Training Program.

This questionnaire asks you to rate your knowledge, skills, and confidence in sleep care positioning and specific assessments. Please click on the option that best matches your response.

How would you rate your knowledge of:

- The purpose of sleep care positioning
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge
- The purpose of the Canadian Occupational Performance Measure
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge
- The purpose of Sleep Diaries
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge
- The purpose of the Sleep Disturbance Scale for Children
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge
- The purpose of the Caregiver Priorities and Child Health Index of Life with Disabilities
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge
- The purpose of the Pediatric Pain Profile
    - 1 - No knowledge
    - 2 - A little knowledge
    - 3 - Some knowledge
    - 4 - A lot of knowledge

How would you rate your ability to:

- Check health risks for sleep care positioning
    - 1 - No ability
    - 2 - A little ability
    - 3 - Some ability
    - 4 - A lot of ability
- Set up a sleep system in bed

- - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Position a person in the sleep system
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Canadian Occupational Performance Measure
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Canadian Occupational Performance Measure
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the Canadian Occupational Performance Measure
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out Sleep Diaries
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Sleep Disturbance Scale for Children
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Sleep Disturbance Scale for Children
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the scores of the Sleep Disturbance Scale for Children
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No ability

- o 2 - A little ability
- o 3 - Some ability
- o 4 - A lot of ability
- Interpret the scores of the Caregiver Priorities and Child Health Index of Life with Disabilities
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Fill out the Pediatric Pain Profile
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Score the Pediatric Pain Profile
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability
- Interpret the scores of the Pediatric Pain Profile
  - o 1 - No ability
  - o 2 - A little ability
  - o 3 - Some ability
  - o 4 - A lot of ability

How confident are you that you can:

- Describe the purpose of sleep care positioning
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Check health risks for sleep care positioning
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Set up a sleep system in bed
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Position a person in the sleep system
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident
  - o 4 - Very confident
- Describe the purpose of the Canadian Occupational Performance Measure
  - o 1 - Not at all confident
  - o 2 - A little confident
  - o 3 - Somewhat confident

- - 4 - Very confident
- Fill out the Canadian Occupational Performance Measure
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Score the Canadian Occupational Performance Measure
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Interpret the Canadian Occupational Performance Measure
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Describe the purpose of Sleep Diaries
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Fill out Sleep Diaries
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Describe the purpose of the Sleep Disturbance Scale for Children
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Fill out the Sleep Disturbance Scale for Children
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Score the Sleep Disturbance Scale for Children
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Interpret the scores of the Sleep Disturbance Scale for Children
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Describe the purpose of the Caregiver Priorities and Child Health Index of Life with Disabilities
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident

- o 4 - Very confident
- Fill out the Caregiver Priorities and Child Health Index of Life with Disabilities
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Score the Caregiver Priorities and Child Health Index of Life with Disabilities
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Interpret the scores of the Caregiver Priorities and Child Health Index of Life with Disabilities
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Describe the purpose of the Pediatric Pain Profile
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Fill out the Pediatric Pain Profile
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Score the Pediatric Pain Profile
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident
- Interpret the scores of the Pediatric Pain Profile
    - o 1 - Not at all confident
    - o 2 - A little confident
    - o 3 - Somewhat confident
    - o 4 - Very confident

Please rate the following statements about the nighttime postural care intervention.

- Because of the training, I know more about the sleep care positioning.
    - o 1 - Strongly Disagree
    - o 2 - Disagree
    - o 3 - Agree
    - o 4 - Strongly Agree
- The training prepared me to use this intervention with my child.
    - o 1 - Strongly Disagree
    - o 2 - Disagree
    - o 3 - Agree
    - o 4 - Strongly Agree
- Because of this training, I can readily use the intervention with my child.

- o 1 - Strongly Disagree
- o 2 - Disagree
- o 3 - Agree
- o 4 - Strongly Agree

Please rate the following statements about the Canadian Occupational Performance Measure, Sleep Diary, Sleep Disturbance Scale for Children, Caregiver Priorities and Child Health Index of Life with Disabilities, and Pediatric Pain Profile.

- Because of the training, I know more about the assessments.
  - o 1 - Strongly Disagree
  - o 2 - Disagree
  - o 3 - Agree
  - o 4 - Strongly Agree
- The training prepared me to fill out the assessments for my child.
  - o 1 - Strongly Disagree
  - o 2 - Disagree
  - o 3 - Agree
  - o 4 - Strongly Agree
- After completing the training, I understand what the results from each assessment mean.
  - o 1 - Strongly Disagree
  - o 2 - Disagree
  - o 3 - Agree
  - o 4 - Strongly Agree

Training Delivery

Please answer the following questions by selecting one option.

- How long did it take you to complete the training?
  - o Less than 1 hour
  - o 1-2 hours
  - o 2-3 hours
  - o More than 3 hours
  - o Other

Please answer the following question by typing your response.

Type the time that you 1) started the training program, 2) took a break (if applicable), 3) returned from a break (if applicable), and 4) finished the training program.
_____
_____

Please rate the following statements about the training delivery.
- The training was easy to follow.
  - o 1 - Strongly Disagree
  - o 2 - Disagree
  - o 3 - Agree
  - o 4 - Strongly Agree
- I could navigate the videos easily (e.g., play narration, go to the next slide, etc.).

- o   1 - Strongly Disagree
        - o   2 - Disagree
        - o   3 - Agree
        - o   4 - Strongly Agree
    - • I got all of the information I needed.
        - o   1 - Strongly Disagree
        - o   2 - Disagree
        - o   3 - Agree
        - o   4 - Strongly Agree

Short Answer

Please answer the following questions by typing your response.

Describe what concerns you have about sleep care positioning or the assessments?
_____
_____

Describe what additional assistance, if any, might you need in order to feel competent in sleep care positioning or the assessments?
_____
_____

Describe what was missing from the training program?
_____
_____

Describe how we could improve the training program?
_____
_____

Describe what you like about the training program?
_____
_____

Describe what you would like to see more of in the training program?
_____
_____

Additional comments:
_____
_____

Appendix G: Pre-Post Health Literacy Education Session Survey and Informed

Consent

Pre-Presentation Informed Consent:

You are invited to complete this survey because you will be receiving a presentation on plain language tools. By completing this pre-survey you will help us understand whether or not our presentation was useful. This survey will take approximately 5-10 minutes to complete.

Your responses to this survey will be confidential and results will be presented in a way that no one will be identifiable. Only the Occupational Therapy Doctoral Students (presenters), Faye McGuire and Eleanor Leabch, Dr. Jennifer Hutson, and our capstone faculty mentor from St. Catherine University will see individual survey responses. Confidentiality will be maintained to the degree permitted by the survey technology used, Google Forms.

Your participation in this survey is voluntary. You may also skip any item that you do not want to answer. If you have any questions about this survey, please contact Faye McGuire (femcguire274@stkate.edu) or Ellie Leabch (evleabch@stkate.edu), Jennifer Hutson (jahutson@stkat.edu), Institutional Reviewer Board Chair: John Schmitt, PT, PhD, 651.690.7739; jsschmitt@stkate.edu. By responding to items on this survey you are giving us your consent to allow us to use your responses for research and educational purposes.

This survey will be filled out online by clinical scientists at The healthcare organization who will be the audience of a presentation on plain language tools. They will complete this survey before attending the presentation. The presentation will aim to increase their awareness and knowledge pertaining to what plain language is, its importance, and how to incorporate it into practice. The goal of this survey is to gather information about the current understanding and utilization of plain language tools among clinical scientists.

Pre-Presentation Survey

Please answer the following questions by selecting one option.

1. Are you familiar with the Patient Education Materials Assessment Tool (PEMAT)?
    a. Yes
    b. No
    c. Other
2. Are you familiar with the Program for Readability in Science and Medicine (PRISM)?
    a. Yes
    b. No
    c. Other
3. On a scale of 1-4, please rate the following:
    a. How knowledgeable are you about plain language?
        i. 1 = Not at all
        ii. 2 = A little
        iii. 3 = Somewhat
        iv. 4 = Very

b. How well do you implement plain language in your practice as a clinical scientist?
  i. 1 = Not at all
  ii. 2 = A little
  iii. 3 = Somewhat
  iv. 4 = Very
c. How confident are you in utilizing plain language in your practice as a clinical scientist?
  i. 1 = Not at all
  ii. 2 = A little
  iii. 3 = Somewhat
  iv. 4 = Very

Please answer the following question by typing your response.

4. Using your own words, describe what you think the term "plain language" means?

5. What does plain language mean for your practice as a clinical scientist?

6. What strategies or tools do you use to implement plain language into your practice?

7. The presentation will aim to increase your awareness and knowledge pertaining to what plain language is, its importance, and how to incorporate it into practice. What questions do you have that you would like to be answered in this presentation?

Please answer the following question by selecting one option.

8. How many years of experience in the healthcare field do you have?
  i) 0-5 years
  ii) 6-10 years
  iii) 11-15 years
  iv) 16+ years

Post-Presentation Informed Consent:

You are invited to complete this survey because you received a presentation on plain language tools. By completing this post-survey you will help us understand whether or not our presentation was useful. This survey will take approximately 5-10 minutes to complete.

Your responses to this survey will be confidential and results will be presented in a way that no one will be identifiable. Only the Occupational Therapy Doctoral Students (presenters), Faye McGuire and Eleanor Leabch, Dr. Jennifer Hutson, and our capstone faculty mentor from St. Catherine University will see individual survey responses. Confidentiality will be maintained to the degree permitted by the survey technology used, Google Forms.

Your participation in this survey is voluntary. You may also skip any item that you do not want to answer. If you have any questions about this survey, please contact Faye McGuire (femcguire274@stkate.edu) or Ellie Leabch (evleabch@stkate.edu), Jennifer Hutson

(jahutson@stkat.edu), Institutional Reviewer Board Chair: John Schmitt, PT, PhD, 651.690.7739; jsschmitt@stkate.edu. By responding to items on this survey you are giving us your consent to allow us to use your responses for research and educational purposes.

This survey will be filled out online by clinical scientists at The healthcare organization who received a presentation on plain language tools. They will complete this survey immediately after attending the presentation. The presentation will aim to increase their awareness and knowledge pertaining to what plain language is, its importance, and how to incorporate it into practice. The goal of this survey is to gather information about the effectiveness of the content, design, and purpose of the presentation.

Post-Survey Questions

Following the presentation on plain language, please answer the following questions by selecting one option.

1. On a scale of 1-4, please rate the following:
a) How knowledgeable are you about plain language?
   i) 1 = Not at all
   ii) 2 = A little
   iii) 3 = Somewhat
   iv) 4 = Very
b) How well do you implement plain language in your practice as a clinical scientist?
   i) 1 = Not at all
   ii) 2 = A little
   iii) 3 = Somewhat
   iv) 4 = Very
c) How confident are you in utilizing plain language in your practice as a clinical scientist?
   i) 1 = Not at all
   ii) 2 = A little
   iii) 3 = Somewhat
   iv) 4 = Very

Following the presentation on plain language, please answer the following questions by selecting one number option. We'd appreciate it if you also select "other" and type your comments as the response. In this section, you will be asked to rate items for the individual presenters (Ellie and Faye).

2. On a scale of 1-4, please rate how well did Ellie:
a) Explain material in a clear manner?
   i) 1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent
b) Speak clearly enough to understand?
   i) 1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

c) Maintain your interest throughout the presentation?
   i)   1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

d) Explain the tools for plain language in a way that was easy to understand?
   i)   1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

3. On a scale of 1-4, please rate how well did Faye:

a) Explain material in a clear manner?
   i)   1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

b) Speak clearly enough to understand?
   i)   1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

c) Maintain your interest throughout the presentation?
   i)   1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

d) Explain the tools for plain language in a way that was easy to understand?
   i)   1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

Following the presentation on plain language, please answer the following questions by selecting one number option.

4. Overall, please rate the following

a) How practical were the examples?
   i)   1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

b) How effective were the visual aids?
   i)   1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

c) How useful was the presentation content?
   i)   1 = Poor
   ii) 2 = Fair
   iii) 3 = Good
   iv) 4 = Excellent

Please answer the following questions by typing your response.

5. Please describe reasons why you (or others you work with) might use the PEMAT.

6. Please describe reasons why you (or others you work with) might use the PRISM checklist.

7. How will you implement plain language into your practice?

Appendix H: Poster

Educating Using Plain Language: Nighttime Postural Care Assessment Training Package

Faye McGuire, OTD Student

Faculty Advisor: Dr. Stephanie de Sam Lazaro, OTD, MA, OTR/L , Capstone Mentor: Dr. Jennifer Hutson, PhD, OTR/L, ATP
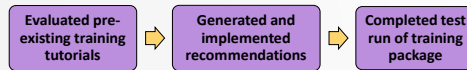
St. Catherine University

BACKGROUND

- Cerebral palsy (CP) is a movement disorder that may lead to changes in body shape and health complications.[1-3]
- Nighttime postural care (NTPC) is an emerging intervention that is recommended for children with severe CP to promote comfort and body alignment.[4]
- Evidence is mixed and low quality in part due to inappropriate methods to measure outcomes.[5]
- The literature suggests a lack of training opportunities for healthcare professionals and caregivers on NTPC.[6]
- To increase research quality, training on NTPC assessments is needed.

PURPOSE

This project aimed to **1)** develop a training package on NTPC assessments to educate caregivers of children with CP and the research team in preparation for a pilot study, and **2)** educate clinical scientists on plain language.

APPROACH

Evaluated pre-existing training tutorials	Generated and implemented recommendations	Completed test run of training package

Tools: Patient Education Materials Assessment Tool (PEMAT) & Program for Research Institute of Medicine and Science (PRISM) Editing Checklist

1. Revisions to pre-existing tutorials
2. Development of additional materials

- Research team members, therapists, caregiver volunteers
- Pre- and post-training competency surveys

Delivered health literacy education session

- Shared process and tools with clinical scientists at a healthcare organization
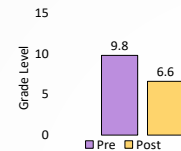- Pre-and post- competency surveys
- Exempt IRB approval was received

OUTCOMES

Training Packages

Figure 1.

Mean Flesch-Kincaid Grade Level Pre- and Post-Revisions

Pre 9.8 Post 6.6 (Grade Level)

Note. Mean Flesch-Kincaid Grade Level across all materials. For pre-revisions, n = 4 items. For post-revisions, n = 10 items.

Figure 2.

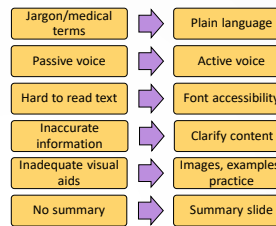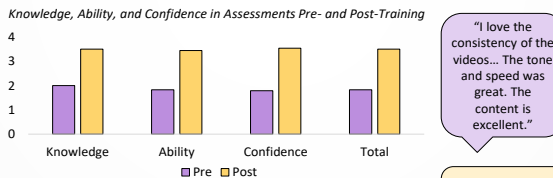*Types of Problems with Training Materials and Associated Revisions*

Jargon/medical terms	→	Plain language
Passive voice	→	Active voice
Hard to read text	→	Font accessibility
Inaccurate information	→	Clarify content
Inadequate visual aids	→	Images, examples, practice
No summary	→	Summary slide

Figure 3.

Knowledge, Ability, and Confidence in Assessments Pre- and Post-Training

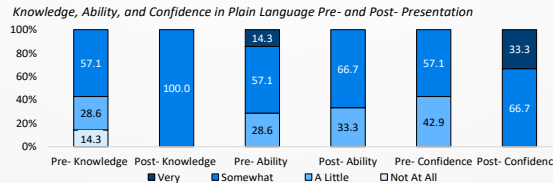(Categories: Knowledge, Ability, Confidence, Total; Pre/Post)

Note. Mean of all ratings for each subcategory and total competence were calculated for each reviewer and then averaged across the 3 reviewers for analysis and reporting. The rating scale for all items was a 4-point Likert scale score ("1" is the lowest, "4" is the highest). The survey contained 4 items for knowledge, 12 items for ability, and 16 items for confidence. n = 3.

"I love the consistency of the videos… The tone and speed was great. The content is excellent."

"I wasn't able to complete this in one sitting."

Health Literacy Education Session

Figure 4.

Knowledge, Ability, and Confidence in Plain Language Pre- and Post- Presentation

	Pre- Knowledge	Post- Knowledge	Pre- Ability	Post- Ability	Pre- Confidence	Post- Confidence
Very	57.1	100.0		57.1	57.1	66.7
Somewhat	28.6		14.3			
A Little	14.3		57.1	33.3	42.9	33.3
Not At All			28.6			

Note. Information presented in the figure is presented as a percentage of professional's responses. For pre- items, n = 7. For post- items, n = 6.

IMPLICATIONS

NTPC pilot study training:

- Training materials are ready for a pilot study and language translation. They meet recommended health literacy level.
- After completing the training, individuals perceive themselves to be competent in NTPC assessments.
- High-quality training materials will promote effective data collection and enhance research integrity.

Health literacy in practice and research:

- An education session on health literacy was effective in increasing perceived knowledge and confidence.
- Decreased ability may be due to overconfidence in the ability to use plain language. Plain language is complex.
- Researchers need tools to evaluate the plain language of caregiver education materials and participant-interfacing materials for research.

RECOMMENDATIONS

Pilot Study Training

- Split training into 2-3 sessions.
- Continue to review incoming survey data.
- Assess newly developed participant-interfacing materials.

Health Literacy

- Educate healthcare professionals on tools to evaluate plain language.
- Focus on plain language when developing education.

ACKNOWLEDGEMENT

Thank you to Dr. Jennifer Hutson, Dr. Linda Krach, and Dr. Stephanie de Sam Lazaro who provided ongoing project guidance, and to the volunteers and clinical scientists who completed surveys.

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A full reference list of all articles used in the scoping review and assessment of organizational priorities that informed the project is available upon request.

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