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Screening for Post-Stroke Visual Impairment: Implications for Occupational Therapy Practice

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**Screening for Post-Stroke Visual Impairment:
Implications for Occupational Therapy Practice**

Deanna Lensing

A doctoral project submitted in partial fulfillment of the requirements for

The Doctor of Occupational Therapy,

St. Catherine University, St. Paul Minnesota

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Abstract

The prevalence of post-stroke visual impairment is alarmingly high, with estimates of up to two-thirds of stroke survivors experiencing deficits (Rowe, Hepworth, Howard et al., 2019). However, research indicates that greater than 60% of visual acuity deficits and visual-spatial neglect in patients with stroke are undetected by standard clinical practice (Edwards et al., 2006). Thus, many patients with stroke have clinically significant visual impairments that are not being detected, and therefore, are not being adequately addressed. Visual impairments can substantially influence an individual's everyday functioning, safety, social interaction, and quality of life. Without skilled intervention and support, individuals experiencing these deficits may develop reduced self-efficacy, social isolation, and occupational deprivation (Perea et al., 2018).

The aim of this thesis is to spread awareness of the high prevalence and underdiagnosis of post-stroke visual impairment, educate current and future occupational therapy practitioners on recommendations to reduce heterogeneity in assessment practices, and advocate for the role of occupational therapy in improving detection of post-stroke visual impairment to optimize the functional recovery and quality of life of stroke survivors. This knowledge was disseminated in three ways. The first method was to educate occupational therapy practitioners and students via a Minnesota Occupational Therapy Association virtual continuing education session. The second method was to inform readers of the American Occupational Therapy Association's Rehabilitation and Disability Special Interest Section *Quarterly Practice Connection* through an article submitted for publication. The final method was to raise awareness and educate occupational therapy practitioners, students, and educators attending the 2021 Iowa Occupational Therapy Association annual conference by presenting a poster.

Completion of these three knowledge translation projects generated awareness and greater understanding of the factors resulting in the underdiagnosis of post-stroke visual impairment and affirmed occupational therapy's role in screening for visual impairments post-stroke. However, there is need for continued education aimed at improving knowledge and awareness of the visual problems that can occur after stroke amongst occupational therapists, other members of the stroke care team, and the general public. Furthermore, now that core outcome sets for vision screening and full vision assessment have been developed to assist in reducing the heterogeneity in assessment practices, efforts to disseminate this information to clinicians and researchers involved in screening and assessment of post-stroke visual impairment should be prioritized. Future research should evaluate the use of these outcome sets and attempt to achieve consensus on how the outcomes should be measured.

Contents

Acknowledgements.....	2
Abstract.....	3
Chapter 1. Introduction and Background.....	8
Background.....	8
Review of Evidence.....	12
Significance and Innovation.....	18
Aims.....	21
Chapter 2. Screening for Post-Stroke Visual Impairment: A Knowledge Translation Project Via a Virtual Continuing Education Session.....	23
Aim.....	23
Description.....	23
Approach.....	24
Audience and Venue.....	24
Learning Objectives.....	25
Evidence of Approach Used.....	25
Evaluation Method.....	25
Chapter 3. Evidence-Based Practice for Post-Stroke Visual Impairment: A Knowledge Translation Project Proposed for the AOTA Rehabilitation and Disability SIS Quarterly.....	27
Aim.....	27

Description.....	27
Approach.....	28
Audience and Venue.....	28
Learning Objectives.....	28
Evidence of Approach Used.....	28
Evaluation Method.....	29
Chapter 4. Screening for Post-Stroke Visual Impairment: A Knowledge Translation Project Proposed for the Iowa Occupational Therapy Association Annual Conference.....	30
Aim.....	30
Description.....	30
Approach.....	30
Audience and Venue.....	31
Learning Objectives.....	31
Evidence of Approach Used.....	31
Evaluation Method.....	31
Chapter 5. Evaluation Outcomes and Analysis.....	33
Evaluation Outcomes.....	33
Evaluation Analysis.....	38
Chapter 6. Reflections and Recommendations.....	42
Reflection.....	42

POST-STROKE VISUAL IMPAIRMENT: IMPLICATIONS FOR PRACTICE	7
Recommendations.....	48
Reflection on COVID-19 During the Doctoral Program.....	51
References.....	53
Appendix A.1. MOTA Continuing Education Session Narrated Slide Presentation.....	57
Appendix A.2. MOTA Continuing Education Session Proposal.....	83
Appendix A.3. MOTA Continuing Education Session Survey.....	85
Appendix A.4. MOTA Continuing Education Session Survey Results.....	87
Appendix B.1. Special Interest Section Article.....	90
Appendix C.1. Poster Proposed for the 2021 IOTA Annual Conference.....	97
Appendix C.2. Poster References.....	98
Appendix C.3. IOTA Conference Proposal.....	100
Appendix C.4. IOTA Poster Presentation Survey.....	102
Appendix D.1. MOTA Advertisement of Doctoral Project Presentations.....	104
Appendix D.2. Doctoral Project Narrated Slide Presentation.....	106

Chapter 1. Introduction and Background

Background

My interest in occupational therapy began when I was in the fourth grade. My father suffered a minor stroke and experienced hemiparesis of his dominant right upper extremity. I observed him working with the occupational therapist in the hospital, creating sculptures out of theraputty for my sister and I. Years later, I chose to pursue a career in occupational therapy with the desire to help individuals with stroke regain full function of their upper extremity, just like my dad did.

As an occupational therapist in a stroke specialty certified acute rehabilitation unit, I have had the opportunity to work with hundreds of individuals with stroke. Shortly after beginning work in inpatient rehabilitation, I came to realize what was expected of occupational therapists in this setting. Specifically, occupational therapists were supposed to address basic activities of daily living (ADLs), instrumental activities of daily living (IADLs) such as meal preparation and cleanup, and upper extremity function. When evaluating my patients with stroke, I would routinely inquire about their visual function, whether they had noticed any changes in their vision since their stroke and if they had any blurry or double vision. Frequently, my patients would deny any changes. If the patient's family members were present, I would ask if they had noticed any changes in the individual's vision. Once again, most families denied noticing any changes. That was the extent of my vision screening. Of course, through observation of my patient's function, I would at times detect a clear visual field cut or spatial inattention and address this in therapy.

My educational background and professional experiences have made me aware that one of the potential consequences of stroke is visual impairment. However, like many occupational therapists, my attention was primarily focused on addressing hemiparesis and independence with ADLs to promote a safe discharge home. Over time, I recognized that visual function was not addressed by any member of the patient care team. Individuals with visual concerns were routinely told to simply follow-up with their eye care provider in six months. It became clear that I needed to intervene. I began investigating how other occupational therapists on my team, particularly those with years of experience, evaluated vision. I found that even the most experienced therapists were simply utilizing functional observation and general screening tools.

Shortly after I began this investigation, the Commission on Accreditation of Rehabilitation Facilities (CARF) surveyed our unit. The surveyors recommended that we, as a stroke specialty certified unit, do more to identify and address the vision needs of our patients with stroke. This further galvanized my pursuit to address this critical gap in my personal practice and that of my organization.

As I began searching the literature, I found many barriers related to providing care for post-stroke visual impairment (PSVI). I realized that PSVI is an under-researched and often neglected area of practice. Many occupational therapists, like myself, feel ill-prepared to address neurological vision loss. A further barrier to addressing PSVI is the absence of protocols for assessing and managing visual problems. One survey of occupational therapists in stroke inpatient settings found that only 9% of respondents reported that their stroke inpatient setting utilized a protocol for the management of visual problems (Pollock et al., 2011). The paucity of protocols for the assessment and management of visual problems reflects the low priority visual deficits receive in rehabilitative care compared to other deficits such as hemiparesis and

dysphagia. The lack of protocols and management plans also likely contribute to inconsistencies in care both within and between stroke inpatient settings (Pollock et al., 2011). For example, one individual with stroke may be screened for PSVI leading to a referral to an eye care specialist for early visual rehabilitation while another individual with stroke may receive no formal visual screening or intervention.

As I spent more time immersed in the literature, I learned of a significant discrepancy between self-report of visual impairment and systematic neuropsychological evaluation of visual impairment. One study based on self-reports found that 20.5% of stroke survivors with suspected visual difficulty had visual perceptual deficits (Rowe et al., 2009, as cited in Vancleef et al., 2020). In contrast, systematic screening with the Rivermead Perceptual Assessment Battery identified visual perception problems in 76% of stroke patients (Edmans & Lincoln, 1987, as cited in Vancleef et al., 2020). These studies suggest that not all visual perceptual problems are identified through self-report, resulting in many patients being discharged home without appropriate rehabilitation or education on their visual deficits. These studies highlighted the need for change in my current practice.

Awareness of my own inadequacies and abilities motivated me to reach out to mentors who have expertise in brain injury and neurological vision loss. I conducted informational interviews with an occupational therapist who specializes in neurological vision loss, an orthoptist, and a physical medicine and rehabilitation physiatrist who specializes in traumatic brain injuries. Each interview helped me gain insight into the perceived roles of members of the interdisciplinary team in addressing PSVI. Through my interactions with the occupational therapist, I learned of key textbooks on screening for neurological vision loss written by occupational therapists and as a collaboration between occupational therapists and optometrists.

In my interview with the orthoptist, I gained valuable insight into the distinct roles of ophthalmologists, optometrists, and orthoptists. Additionally, I learned what aspects of vision loss are imperative to screen for and how to differentiate between potential etiologies such as stroke versus diabetic sixth nerve palsy. Finally, my interview with the physiatrist confirmed my previous realization that visual function was not addressed by any member of the patient care team. The physiatrist reported that he did not routinely address visual impairments after stroke as he felt addressing vision did not impact his patients' functional progress as much as addressing weakness and mobility. Therefore, he would make note of obvious signs of visual impairment such as head positioning but would not conduct further assessments or make any referrals to an eye care specialist. His statements confirmed that I needed to consider vision screening and initiation of appropriate referrals as a core aspect of my role as an occupational therapist.

In addition to reaching out to mentors, I completed many relevant continuing education activities. These included earning the American Occupational Therapy Association's Low Vision-Level I badge by taking a four-module course and passing the corresponding tests. I also completed courses by Mary Warren, PhD, OTR/L, SCLV, FAOTA and Melissa Gerber, OTD, OTR/L focusing on the evaluation and intervention of visual processing impairments in adults with acquired brain injuries. Additionally, I completed the self-study option to become a certified brain injury specialist through the Brain Injury Association of America (BIAA). To earn this credential, I studied the BIAA's Essential Brain Injury Guide 5th edition for several months before passing the credentialing examination. Becoming a certified brain injury specialist allowed me to gain a greater understanding of the complexities of acquired brain injuries. This professional development journey also led me to complete a systematic literature review of screening methods for PSVI.

Review of Evidence

The prevalence of visual problems in adults with acute stroke is alarmingly high, with estimates of up to two-thirds of stroke survivors experiencing deficits (Rowe, Hepworth, Howard, et al., 2019). However, research indicates that greater than 60% of visual acuity deficits and visual-spatial neglect in patients with stroke are undetected by standard clinical practice (Edwards et al., 2006). Thus, many patients with stroke have clinically significant visual impairments that are not being detected, and therefore, are not being adequately addressed. Visual and visual-perceptual deficits can substantially influence an individual's everyday functioning, safety, social interaction, and quality of life. Without skilled intervention and support, individuals experiencing these deficits may develop reduced self-efficacy, social isolation, and occupational deprivation (Perea et al., 2018). Immediate assessment and intervention may help to prevent these secondary impairments.

A review of the current literature revealed four themes concerning this topic: (1) the prevalence and under-diagnosis of PSVI; (2) heterogeneity in assessment practices and recommendations to improve consistency; (3) visual and visual-perceptual screening tools; and (4) the role of occupational therapy in screening for PSVI. An understanding of these themes is necessary to improve current practice and guide future research in this area.

Prevalence and Under-Diagnosis of Post-Stroke Visual Impairment

Post-stroke visual impairment is highly prevalent. In a multi-center acute stroke unit, prospective epidemiology study ($N=1033$), 60% of stroke survivors were found to have new incidence of visual deficits (Rowe, Hepworth, Howard, et al., 2019). The specific type of visual problem with the highest incidence was impaired central vision (56%), followed by eye movement abnormalities (40%), visual field loss (28%), visual inattention (27%), and visual

perceptual disorders (5%). Only 27% of the participants did not have any visual deficits identified (Rowe, Hepworth, Howard, et al., 2019).

Despite the high rates of PSVI, these deficits are often under-diagnosed by rehabilitation clinicians. A study by Edwards et al. (2006) found that systematic screening using standardized measures identified significantly more impairments than standard clinical practice. For example, 62% of visual acuity deficits and 61% of visual inattention were undetected clinically but were identified through systematic screening within ten days of acute stroke (Edwards et al., 2006). In a cross-sectional postal survey study (N=55), occupational therapists working in UK stroke inpatient settings were asked how often they deliver treatment to patients with various visual problems (Pollock et al., 2011). Over 82% of occupational therapists reported treating patients with visual neglect, 69% for visual field problems, and only 11% reported treating eye movement problems. This contrasts with the previous findings estimating the prevalence of eye movement problems in 40-54% of stroke survivors (Hepworth et al., 2016; Rowe, Hepworth, Howard, et al., 2019).

Many stroke survivors and their caregivers have echoed concerns regarding the under-diagnosis of PSVI. Qualitative studies have reported a frustration amongst stroke survivors and their caregivers that clinicians overlook their visual impairment and focus attention on other disabilities first, such as hemiparesis, aphasia, and dysphagia (Rowe, 2017; Smith et al., 2018). Stroke survivors have reported being unaware that their vision could be affected by stroke and reported that clinicians were inattentive to the possible presence of visual impairment (Rowe, 2017). Stroke survivors and their caregivers have described visual impairment as a hidden disability, and many feel they would have been treated differently if clinicians could *see* their visual impairment (Rowe, 2017).

Heterogeneity in Assessment Practices and Recommendations to Improve Consistency

There is inconsistency across healthcare facilities in the use of protocols for the assessment of post-stroke visual functioning. This heterogeneity in practice is likely due to the absence of universally agreed-upon guidelines for visual assessment (Herron, 2016) and the fact that there is no standardized visual screening assessment for PSVI (Rowe, Hepworth, & Kirkham, 2019). In a cross-sectional postal survey of 55 occupational therapists working in UK stroke inpatient units, 60% of occupational therapists reported the lack of a visual care protocol or management plan as the largest barrier to managing PSVI (Pollock et al., 2011). This survey found that only 7% of stroke units reported having a policy relating to vision assessment and management (Pollock et al., 2011).

Core outcome sets for vision screening aim to reduce heterogeneity in clinical practice by improving the standardization and accuracy of vision assessment, facilitating future research synthesis, and facilitating comparison across studies (Rowe, Hepworth, & Kirkham, 2019). A Delphi study was undertaken to develop core outcome sets for vision screening and assessment in stroke (Rowe, Hepworth, & Kirkham, 2019). Results of this study determined that vision screening should be performed by healthcare professionals who are on the stroke team (but not eye professionals) and include the following nine domains: case history, observations, visual acuity, visual fields, ocular alignment, ocular motility, visual inattention/neglect, reading, and functional vision (Rowe, Hepworth, & Kirkham, 2019).

Screening Tools

The Vision Impairment Screening Assessment (VISA) tool was developed to screen for visual impairments post-stroke. The VISA tool's development came in response to the systematic review by Hanna et al. (2016), which concluded that there was no standardized visual screening

tool that could accurately assess all potential PSVI and that the efficacy of various screening tools was significantly reduced when administered by non-eye care professionals. The VISA tool was designed to include screening for all domains identified in the new core outcome set for vision screening (Rowe et al., 2020). The VISA tool is available in print and as a software application. Both formats contain five sections. Section one consists of a case history with questions and observations. If the patient is unable to provide a case history, family members/caregivers are consulted. Observations are taken of eyelids, pupils, head position, and other visual signs. Section two consists of LogMAR visual acuity at near and distance. Two other options are available for use depending on the patient's cognitive/communication abilities, including using a matching card to allow for pointing or grating cards that use a preferential looking technique (Rowe et al., 2020). Section three screens for eye alignment and movement using corneal reflections and observations of smooth pursuits. Section four is an assessment of visual fields, which is the only section that differs between the print and electronic versions of the VISA. The print version utilizes a standardized method of confrontation testing, whereas the electronic version uses a kinetic visual field assessment that allows for assessment of the 40° visual field. Section five assesses visual inattention using line bisection, clock drawing, and a cancellation task.

Measurement characteristics of the VISA tool were established in a psychometric study. Researchers conducted a prospective case-cohort comparative study to validate the VISA tool against the gold standard of a specialist vision assessment conducted by experienced orthoptists (Rowe et al., 2020). Results of the study showed that referral to specialist eye services based on the results of the VISA tool had overall sensitivity and specificity of >88% and >60%

respectively and positive and negative predictive values of >93% and >68%, respectively (Rowe et al., 2020).

Role of Occupational Therapy in Screening for Post-Stroke Visual Impairment

Vision screening for all individuals post-stroke, even if visual deficits are not immediately apparent, is necessary to optimize the rehabilitation process (Edwards et al., 2006; Herron, 2016; Pollock et al., 2011; Rowe et al., 2020; Rowe, Hepworth, Howard, et al., 2019; Rowe, Hepworth, & Kirkham, 2019; Vancleef et al., 2020). Occupational therapists are in a unique position to identify potential visual problems early-on, initiate appropriate referrals, and educate the patient, their caregiver, and the stroke team on how the patient's visual impairments may impact their functional recovery and discharge needs (Herron, 2016). It has been acknowledged that all multidisciplinary team members should consider the impact and presence of PSVI (Pollock et al., 2011). However, eye care professionals are rarely core members of the inpatient stroke care team (Pollock et al., 2011). While other stroke team members, such as doctors, nurses, and physical therapists may consider and assess aspects of vision, occupational therapists consider the initial assessment of vision, subsequent treatment, and appropriate referrals to be a core part of their role (Pollock et al., 2011). Visual and visual-perceptual deficits can significantly impact an individual's everyday functioning, safety, social interaction, and quality of life (Perea et al., 2018). Without skilled intervention and support, individuals experiencing these deficits may develop reduced self-efficacy, social isolation, and occupational deprivation (Perea et al., 2018).

Various studies have been conducted that support occupational therapy's role in screening for PSVI. In the study by Edwards et al. (2006), occupational therapy students screened persons admitted to a stroke service for the presence of undetected visual acuity and visual inattention

deficits and then compared the results of the testing with the patient's chart. These students were able to screen patients within 10 days of stroke onset and identify clinically relevant visual impairments that would have otherwise gone unnoticed, indicating a role for occupational therapists in screening all patients with stroke. A retrospective study (N=131) supported occupational therapists' validity in accurately screening for visual deficits and making appropriate referrals for further visual assessments (Herron, 2016). Occupational therapy's role in vision assessment was supported by the correlation between the number of functional symptoms observed by occupational therapists and the number of visual diagnoses made by the optometrist (Herron, 2016). For example, the number of visual symptoms identified by occupational therapists during vision screening had a statistically significant positive correlation with the number of diagnoses later made by the optometrist (Herron, 2016). This suggests that through functional observations and vision screening, occupational therapists can effectively identify patients with visual impairments in inpatient rehabilitation (Herron, 2016). A role for occupational therapy in screening was supported by findings in a case-cohort comparative study; this study showed that screening by stroke clinicians using the VISA tool accurately detected vision problems confirmed in formal eye examinations (Rowe, Hepworth, Howard et al., 2020). The role of occupational therapists in vision screening has also been acknowledged by expert consensus. Specific domains of the core outcome set for vision screening such as functional vision and visual inattention assessments are key areas occupational therapists can assess (Rowe, Hepworth, & Kirkham, 2019).

In conclusion, visual and visual-perceptual deficits can influence an individual's everyday functioning, safety, social interaction, and quality of life. Without skilled intervention and support, individuals experiencing these deficits may develop reduced self-efficacy, social

isolation, and occupational deprivation (Perea et al., 2018). Immediate assessment and intervention may help to prevent these secondary impairments. It is recommended that visual screenings be performed on all individuals with stroke (Rowe, Hepworth, Howard et al., 2019). If vision screening detects impairment, a referral to an eye care professional should be made. Results and interpretation of screening and assessment measures must emphasize how the results may affect occupational performance and not merely how much the results deviate from the norm (Gutman & Schonfeld, 2009). Occupational therapists are well-positioned to address this critical need for stroke survivors and provide necessary information to stroke survivors, their caregivers, and the stroke care team on the impact the patient's visual impairment may have on their functioning and discharge needs. Occupational therapy practitioners and researchers should measure and report on the domains identified in the core outcome set for vision screening. It is imperative that occupational therapists utilize standardized and validated screening measures such as the VISA tool to improve PSVI detection and optimize rehabilitation outcomes for all patients with stroke.

Significance and Innovation

There is a well-recognized association between visual impairment and impaired activities of daily living and vision-related quality of life (Jarvis et al., 2012). Vision affects all aspects of an individual's rehabilitation, including their ability to safely mobilize, perform self-care tasks, read, and socialize (Herron, 2016). Individuals with visual impairment perform best in static environments and have greater difficulty in more dynamic, community environments. Therefore, without skilled intervention and support, these individuals tend to stay home, avoid their usual hobbies, and develop reduced self-efficacy, social isolation, and occupational deprivation (Perea et al., 2018). Furthermore, the underdiagnosis of visual impairments can severely impact a stroke

survivor's safety (Vancleef et al., 2020). For instance, an individual may continue driving if they are not aware of their visual impairment and be at an increased risk for falls, trips, collisions, and burns (Vancleef et al., 2020). Stroke patients who do not appear to have apparent visual impairments may have perceptual deficits that prevent them from taking medication correctly, driving, or participating in other activities necessary to successfully return to community and family life (Edwards et al., 2006). Failure to identify and address these issues may lead to premature nursing home placement when untrained family members cannot provide the supervision or environmental modifications required for independent living (Edwards et al., 2006).

Stroke survivors have described the emotional impact visual impairment has had on their life. Stroke survivors have reported feeling vulnerable due to partial sight, feeling like a burden to their families and others, and feeling guilt, anger, and frustration (Rowe, 2017). Additionally, many stroke survivors have reported experiencing a grieving process due to the loss of who they used to be before they come to accept their new visual impairment (Rowe, 2017).

Studies reveal a lack of formal visual assessment for stroke patients (Edwards et al., 2006; Vancleef et al., 2020). One survey of ophthalmic and stroke professionals found that only 22% of the 548 professionals surveyed utilized screening tools to detect visual impairments (Rowe et al., 2013). This is despite the fact that systematic screening for cognitive and sensory impairment is recommended by the Agency for Healthcare Research and Quality (AHRQ) in its Clinical Practice Guidelines for Post-Stroke Rehabilitation (Edwards et al., 2006; Jarvis et al., 2012). Fact sheets and pamphlets on PSVI are widely available on the internet; however, only 33.5% of survey respondents reported providing these to patients or caregivers (Rowe et al., 2013). This finding was reinforced with a qualitative study in which stroke survivors and their

caregivers reported not receiving specific information on their visual impairment or information on available resources and supports (Rowe, 2017).

Research on the barriers and enablers to implementing stroke guideline recommendations has shown that gaps in knowledge and skill are common and that many therapists did not know what to do after reading a guideline recommendation (McCluskey et al., 2013). This is likely because few clinical practice guidelines provide clinicians with information on how to implement clinical practice guidelines into rehabilitation (Jolliffe et al., 2018). When asked about the existing evidence base, up to 40% of survey respondents did not feel, or only slightly felt, this influenced their assessment or management of visual problems (Rowe et al., 2013). This survey also found that 20% of respondents reported their knowledge of visual problems as fairly poor or very poor (Rowe et al., 2013). Stroke survivors, their caregivers, and clinicians have reported the need for improved education to promote increased knowledge and awareness of PSVI (Rowe et al., 2013).

Heterogeneity in screening and assessment practices for PSVI has resulted in inequality of care provision for stroke survivors with visual impairments (Rowe et al., 2013). There are discrepancies in how stroke survivors are screened for visual impairment, when they are screened, what screening tools are used, how patients are referred to eye care services, and what vision information and resources are provided to stroke survivors and their caregivers (Rowe et al., 2013). Increased education and awareness of PSVI and how to screen for and manage these deficits is imperative to providing equitable care for individuals with stroke.

Occupational therapists can and should evaluate an individual's visual function during their analysis of the person's occupational performance. When an occupational therapist conducts an analysis of occupational performance, "the client's assets and problems or potential

problems are more specifically identified through assessment tools designed to observe, measure, and inquire about factors that support or hinder occupational performance” (AOTA, 2014, p. S14). During this process, occupational therapists evaluate an individual’s client factors which includes visual functions (AOTA, 2014). Visual functions encompass “quality of vision, visual acuity, visual stability, and visual field functions to promote visual awareness of environment at various distances for functioning” (AOTA, 2014, p. S23). Occupational therapists should utilize standardized, valid, and reliable assessments that justify the need for occupational therapy and provide objective information about factors influencing the person’s engagement and performance in meaningful occupations (AOTA, 2014).

There is a largely unmet need for stroke survivors in relation to PSVI. Occupational therapy has an opportunity to fill this critical gap in practice. The long-term objective of this work is for all stroke survivors with visual impairment to be accurately identified using evidence-based, systematic screening methods to allow for the provision of targeted intervention to maximize recovery and quality of life.

Aims

The aim of the first knowledge translation project was to inform occupational therapy practitioners and occupational therapy students of the evidence-based practice process, the literature regarding screening methods for PSVI, and best practice recommendations derived from the best currently available evidence through a 30-minute virtual continuing education session via the Minnesota Occupational Therapy Association (MOTA).

The aim of the second knowledge translation project was to increase awareness of stroke-related visual impairments and applicable screening methods and protocols for adults with stroke among occupational therapy practitioners and occupational therapy students through an article

submitted for publication in the American Occupational Therapy Association's (AOTA) Rehabilitation and Disability Special Interest Section (SIS) *Quarterly Practice Connection*.

The aim of the third knowledge translation project is to raise awareness among current and future occupational therapy practitioners concerning the underdiagnosis of PSVI and provide best practice recommendations derived from a review of the literature by presenting a poster at the 2021 Iowa Occupational Therapy Association (IOTA) annual conference.

Chapter 2. Screening for Post-Stroke Visual Impairment: A Knowledge Translation Project Via a Virtual Continuing Education Session

Aim

The aim of this knowledge translation project was to inform current and future occupational therapy practitioners of the evidence-based practice process, the literature regarding screening methods for PSVI, and best practice recommendations derived from the best currently available evidence through a 30-minute virtual continuing education session via the Minnesota Occupational Therapy Association (MOTA).

Description

For this knowledge translation project, I presented a 30-minute virtual continuing education session via Zoom as part of a collaboration between St. Catherine University and MOTA. I presented this continuing education session alongside my two classmates, who presented their respective knowledge translation projects. The title of the event was "Evidence-Based Practice Across the Lifespan: Three Knowledge Translation Projects." The title of my individual session was "Screening for Post-Stroke Visual Impairment: Implications for Occupational Therapy Practice." The virtual continuing education webinar was held on Tuesday, February 23, 2021, from 6:15-8:40 PM. Each session was 30 minutes long, followed by ten minutes for questions and discussions and a five-minute break. Each presenter moderated the question-and-answer portion for another classmate.

My presentation focused on my evidence-based literature review of screening for visual impairment in adults post-stroke. The presentation highlighted the steps of the evidence-based

practice process, including the formation of a clinical question, database searches, critical appraisals, use of a literature matrix, identification of four themes derived from the evidence, and implications for practice and research.

Approach

The approach for this knowledge translation was a virtual continuing education session via Zoom. I created a 24-slide PowerPoint presentation with a corresponding script. These narrated PowerPoint slides can be seen in Appendix A.1. I shared this PowerPoint presentation using the advanced sharing option in Zoom to share only a portion of my screen. This allowed my audience to only view the PowerPoint slides while I could still see my script. Participants were made aware that the event was recorded. This recording was for student-use and not intended to be distributed to public audiences. Participants were provided with my St. Catherine University email address in the Zoom chat box and my Google Forms survey for any further questions or comments.

Audience and Venue

The audience for my continuing education session was occupational therapy practitioners, occupational therapy students, and occupational therapy educators. St. Catherine University and MOTA hosted this continuing education event via Zoom. A virtual video conferencing platform was necessary for this event to follow safe social distancing practices, as this occurred during the COVID-19 pandemic. This event was available to MOTA members and non-members. The fee for MOTA members was \$5 and \$40 for non-members. Twenty-eight attendees registered through MOTA and 15 attendees did not. Participants registered for the

event through MOTA were sent a brief quiz to verify attendance and were able to earn two continuing education units.

Learning Objectives

At the conclusion of this session, participants will:

1. Discuss the common visual consequences of stroke and their relative prevalence
2. Apply the core outcome set for vision screening to reduce inconsistencies in practice
3. Articulate the role of occupational therapy in screening for post-stroke visual impairment.

Evidence of Approach Used

My classmates and I each prepared a one-paragraph description of our sessions, three learning objectives, and a short biography. We also collaborated on a proposed timeline for the event. Dr. Julie Bass used this information to create a combined proposal for our continuing education event and sent this proposal to MOTA. After this proposal was reviewed, we received word that MOTA was interested in our presentations and worked to coordinate a date and time for these to be held. I created the PowerPoint presentation for this event during the fall of 2020 under the guidance of Dr. Julie Bass. A copy of my individual proposal can be found in Appendix A.2.

Evaluation Method

To evaluate the effectiveness of my knowledge translation project, I created a 6-question survey via Google Forms. The first five questions utilized a five-point Likert scale. The first three questions had participants rate how well the presentation met the three learning objectives. The next two questions had participants rate how well the presentation's content was organized

and how well the presenter was able to communicate the information. The final question was optional and asked participants to provide any further comments or suggestions. A link to this Google Forms survey was provided to participants in the Zoom chat box during and after my presentation. Completion of this survey was optional, but feedback was requested. Nineteen participants completed the survey. The survey can be found in Appendix A.3 and results in Appendix A.4.

Chapter 3. Evidence-Based Practice for Post-Stroke Visual Impairment: A Knowledge Translation Project Proposed for the AOTA Rehabilitation and Disability SIS Quarterly

Aim

The aim of this knowledge translation project was to increase awareness of stroke-related visual impairments and applicable screening methods and protocols for adults with stroke among occupational therapy practitioners and occupational therapy students through an article submitted for publication in the AOTA's Rehabilitation and Disability SIS *Quarterly Practice Connection*.

Description

An article was written following the guidance of the Editor of the Rehabilitation and Disability SIS. The article was framed around how occupational therapists can and should implement evidence in practice. The article included information regarding the prevalence of PSVI and occupational needs of clients with PSVI, an evidence-based screening tool occupational therapists should use, evidence-based interventions for common visual impairments experienced post-stroke, and a case example. A portion of this information was derived from a literature review completed in earlier coursework. Additional information related to evidence-based interventions for this client population was explored. This article focused on the role and application of research and evidence to support practice. Furthermore, the audience was provided with information regarding an evidence-based screening tool and evidence-based interventions to address the occupational needs of individuals with PSVI. The initial draft of this manuscript that was submitted to the Editor can be found in Appendix B.1.

Approach

The approach for this knowledge translation project was following the Rehabilitation and Disability SIS *Quarterly Practice Connection* guidelines and author guidelines to submit an article for publication on evidence-based practice in the screening and treatment of PSVI.

Audience and Venue

The audience for this article will be the readers of the Rehabilitation and Disability SIS *Quarterly Practice Connection*. The intended audience is primarily occupational therapy practitioners and occupational therapy students who are members of AOTA and work in or are interested in practice areas focused on rehabilitation, disability, and participation. This venue provides for wide-spread knowledge dissemination as the Rehabilitation and Disability SIS *Quarterly* is a national publication.

Learning Objectives

As a result of reading this article, readers will:

1. Define occupational therapy's role in screening for PSVI at an early time-point post-stroke
2. Identify evidence-based screening tools to improve accurate detection of PSVI
3. Describe evidence-based interventions for PSVI to improve functional recovery.

Evidence of Approach Used

In preparation for writing this article, I utilized the AOTA SIS author guidelines to understand the mission and purpose of the Rehabilitation and Disability SIS. I then found the contact information for the Editor of the Rehabilitation and Disability SIS. I emailed her my idea

for a future article to inquire about whether this topic would be a good fit for the publication.

After a follow-up email, the Editor responded with guidance on framing the article and specific sections to include in the paper. This information was used to develop an initial draft of a manuscript that was then emailed to the Editor for review.

Evaluation Method

The primary method of evaluating this aim is the editorial review process required of this publication venue. At this time, the Editor has responded that this proposed topic could be appropriate for the SIS and has received a completed draft of the manuscript to review. Once she has reviewed this manuscript, she will either share it with her committee or return it to me for clarification. The article will also be reviewed by staff in AOTA's Professional Affairs Division, where it will either be accepted, provisionally accepted with edits, or rejected. If accepted, the article will be further edited by AOTA's Communications staff.

Chapter 4. Screening for Post-Stroke Visual Impairment: A Knowledge Translation Project Proposed for the Iowa Occupational Therapy Association Annual Conference

Aim

The aim of this knowledge translation project is to raise awareness among current and future occupational therapy practitioners concerning the underdiagnosis of PSVI and provide best practice recommendations derived from a review of the literature by presenting a poster at the 2021 IOTA annual conference.

Description

For this knowledge translation project, I aim to present a professional poster at the 2021 IOTA annual conference. This poster presents the findings of my evidence-based literature review of screening for PSVI. The title of the poster is *"Exploring the Evidence to Improve Detection of Post-Stroke Visual Impairment."* This poster highlights the four primary themes that emerged from a review of the literature and their implications for practice and research. A copy of my poster can be found in Appendix C.1 and poster references in Appendix C.2.

Approach

The approach for this knowledge translation project will be an in-person professional poster presentation. The poster was developed using a single slide presentation template. The poster sections include an introduction, clinical question, methods, four identified themes, implications for practice and research, and references available upon request.

Audience and Venue

The audience for my poster presentation will be occupational therapy practitioners, occupational therapy students, and occupational therapy educators attending the 2021 IOTA annual conference. Currently, the IOTA conference is planned to occur in-person; however, this could change depending on the state of the coronavirus pandemic.

Learning Objectives

As a result of viewing my poster presentation, participants will:

1. Describe the role of occupational therapy in screening for post-stroke visual impairment.
2. Identify an evidence-based screening tool to improve detection of post-stroke visual impairment.

Evidence of Approach Used

I created the professional poster with guidance and feedback from Dr. Darla Coss during the spring of 2021. Dr. Susan Hoey informed me of IOTA's call for proposals for the 2021 IOTA conference, and Dr. Jayna Fischbach provided information on how to submit the proposal. After I finished developing the poster, I submitted an online proposal to present a poster at IOTA's 2021 annual fall conference. This proposal consisted of a title, learning objectives, and a one-paragraph abstract of my poster. Information contained in the proposal can be found in Appendix C.3.

Evaluation Method

The evaluation method for this knowledge translation project will be two-fold. The first evaluation of this poster presentation will consist of the initial review of my poster description

for acceptance as a poster presentation for the 2021 IOTA annual conference. For the second portion of the evaluation, I plan to have viewers of my poster complete a brief, five-question survey. This survey will consist of four, Likert-style questions evaluating my knowledge translation project in terms of content and presentation and one question asking for any additional comments or suggestions. A copy of this survey can be found in Appendix C.4.

Chapter 5. Evaluation Outcomes and Analysis

The Knowledge Translation Planning Template (Barwick, 2008, 2013, 2019) was used to evaluate the three knowledge translation projects. The evaluation outcomes and analysis are presented using the language and structure laid out in the template and include the knowledge users, main messages, knowledge translation goals, knowledge translation strategies, and knowledge translation evaluation.

Evaluation Outcomes

Knowledge Translation Project 1: A Knowledge Translation Project Via a Virtual Continuing Education Session

Knowledge Users. The knowledge users for this project were the occupational therapy practitioners, students, and educators who attended the virtual continuing education session hosted by the MOTA and St. Catherine University on February 23, 2021.

Main Messages. The following were the bottom-line actionable messages (BLAM) (Barwick, 2008, 2013, 2019) from this presentation:

- 1) Vision screening should be performed on all stroke survivors at an early time-point post-stroke, even if visual deficits are not immediately apparent
- 2) If vision screening detects a potential visual impairment, a referral to an eye care professional should be made
- 3) Occupational therapy practitioners and researchers should measure and report on the domains identified in the core outcome set for vision screening
- 4) Occupational therapy practitioners should utilize standardized and validated screening instruments such as the VISA tool

Knowledge Translation Goals. The intended goals of this project were to:

- 1) Generate awareness of how prevalent yet underdiagnosed PSVI is and how visual impairment negatively influences a person's everyday functioning and quality of life
- 2) Share knowledge regarding current research and strategies aimed at improving detection of PSVI
- 3) Facilitate practice change by educating current and future practitioners on a free-to-access, evidence-based vision screening tool

Knowledge Translation Strategies. This knowledge translation project generated awareness, interest, and understanding of this topic with a 30-minute narrated slide presentation. Audience members were provided with statistics and qualitative information from stroke survivors and their caregivers regarding their concerns about PSVI. Stroke survivors and caregivers' concerns of clinicians overlooking their visual impairments and feeling like they would have been treated differently if clinicians could "see" their visual impairment was presented. These strategies helped increase empathy and the importance of paying attention to these more "hidden" disabilities.

Knowledge Translation Evaluation. To evaluate the effectiveness of my knowledge translation project, I created a 6-question survey via Google Forms. The first five questions utilized a five-point Likert scale. The first three questions asked participants to rate how well the presentation met the three learning objectives (1. Discuss the common visual consequences of stroke and their relative prevalence, 2. Apply the core outcome set for vision screening to reduce inconsistencies in practice, 3. Articulate the role of occupational therapy in screening for post-stroke visual impairment at an early time-point post-stroke). The following two questions asked participants to rate how well the presentation's content was organized and how well the presenter

communicated the information. The final question was optional and asked participants to provide any further comments or suggestions. A link to this Google Forms survey was provided to participants in the Zoom chat box during and after my presentation. Completion of this survey was optional, but feedback was requested. Nineteen participants completed the survey. The survey and its results can be found in Appendix A.4.

Knowledge Translation Project 2: A Knowledge Translation Project Proposed for the AOTA Rehabilitation and Disability SIS Quarterly

Knowledge Users. The knowledge users for this project will be the readers of the *Rehabilitation and Disability SIS Quarterly Practice Connection*. These readers are primarily occupational therapy practitioners and occupational therapy students who are members of AOTA and work in or are interested in practice areas focused on rehabilitation, disability, and participation.

Main Messages. The main messages conveyed through the manuscript I submitted for publication were that by accurately identifying PSVI and initiating appropriate, evidence-based compensatory interventions, occupational therapists can enable stroke survivors to adapt to their visual impairment and continue participating in meaningful and desired occupations.

Knowledge Translation Goals. The intended goal of this project was to develop a manuscript that aligned with the mission of the *SIS Quarterly Practice Connections* by emphasizing the role and application of evidence to occupation-centered practice. The intended knowledge translation goals were to:

- 1) Build awareness around the underdiagnosis of PSVI
- 2) Share knowledge relating to a free-to-access evidence-based vision screening tool and two visual scanning training programs that are freely available online.

Knowledge Translation Strategies. Multiple strategies were employed to achieve this goal. The first strategy was to connect with the Editor before drafting a manuscript to ensure delivery of a product that met her expectations. Additionally, I utilized the 2021 Quarterly Author Guidelines and checklist to ensure I followed all necessary steps and requirements. I reviewed other Rehabilitation and Disability SIS articles to gather ideas for general structure and content. Other strategies used included focusing on the evidence I acquired through literature reviews and providing specific examples of how this information could be applied to practice. Specifically, the case example demonstrated how to use the evidence to support occupation-centered practice.

Knowledge Translation Evaluation. The primary method of evaluating this knowledge translation project is the editorial review process required of this publication venue. At this time, the Editor has responded that this proposed topic could be appropriate for the SIS and has received a completed draft of the manuscript to review. Once she has reviewed this manuscript, she will either share it with her committee or return it to me for clarification. The article will also be reviewed by staff in AOTA's Professional Affairs Division, where it will either be accepted, provisionally accepted with edits, or rejected. If accepted, the article will be further edited by AOTA's Communications staff.

Knowledge Translation Project 3: A Knowledge Translation Project Proposed for the 2021 IOTA Annual Conference

Knowledge Users. The knowledge users for this project will be occupational therapy practitioners, occupational therapy students, and occupational therapy educators attending the 2021 IOTA annual conference.

Main Messages. The BLAM (Barwick, 2008, 2013, 2019) for this poster presentation is that occupational therapy practitioners should utilize standardized and validated vision screening tools with all stroke survivors to decrease inconsistency in practice, thereby increasing equity of care provision and improving detection of PSVI.

Knowledge Translation Goals. The intended knowledge translation goals for this project are to:

- 1) Generate awareness of the prevalence and underdiagnosis of PSVI
- 2) Share knowledge concerning the factors that may be contributing to the underdiagnosis of PSVI and recent research aimed at reducing inconsistencies in practice
- 3) Facilitate practice change by informing current and future practitioners of an evidence-based vision screening tool that practitioners can use immediately.

Knowledge Translation Strategies. The strategy for this knowledge translation project will be to present this poster in person at a state-wide conference for current and future occupational therapy practitioners. The information will be delivered verbally and visually to capture attention, generate interest, inform the viewers, and answer questions leading to more in-depth discussions.

Knowledge Translation Evaluation. The evaluation method for this knowledge translation project will be two-fold. The first evaluation of this poster presentation will consist of the initial review of my poster description for acceptance as a poster presentation for the 2021 IOTA annual conference. For the second portion of the evaluation, I plan to have viewers of my poster complete a brief, five-question survey. This survey will consist of four, Likert-style questions evaluating my knowledge translation project in terms of content and presentation and

one question asking for any additional comments or suggestions. A copy of this survey can be found in Appendix C.4.

Evaluation Analysis

Comprehensiveness

When analyzing this doctoral project as a whole, there are noticeable strengths and weaknesses concerning its comprehensiveness. A key strength of this doctoral project is that three separate venues and modes of knowledge translation were used. Knowledge translation was either completed or proposed to two different state associations and submitted to a national publication. A variety of methods for knowledge translation were used, allowing for the information to be presented in formats including a poster presentation, narrated slide presentation, and a scholarly article. An additional strength of this doctoral project is that each knowledge translation project had defined measurable learning outcomes.

Weaknesses regarding the comprehensiveness of this doctoral project include the primary target audience. In all projects, the audience is limited to occupational therapy professionals. Information about PSVI would also be highly relevant to other disciplines working in stroke care as well as stroke survivors and their caregivers. Identifying venues for disseminating information to stroke survivors, caregivers, and the general public that requires a scholarly or peer-review process is challenging. Therefore, knowledge translation to these audiences was not undertaken during this doctoral project. Future knowledge translation of this information should aim to reach these audiences in the form of client education materials.

Alignment

The alignment of the three knowledge translation projects to the intended goals and learning objectives is variable and partially unknown at this time. The first project, a continuing

education session, has been completed in its entirety. Nineteen participants completed a survey that allowed for evaluation of how well participants felt the presentation met the stated learning objectives. Presenting in front of a live audience allowed for questions and discussion to follow the initial presentation of material. This format increased audience engagement and facilitated increased understanding and opportunity for clarification to ensure alignment with the intended learning objectives.

The second project, a manuscript submitted for publication, appeared to have fair alignment to knowledge translation goals and intended learning objectives. This is due to having the opportunity to review the 2021 Quarterly Author Guidelines and have input from the Editor before drafting the manuscript. Additionally, there was the opportunity to receive feedback from Dr. Coss prior to submitting the completed manuscript to the Editor.

The third project, a professional poster, appears to have fair alignment to the stated learning objectives. By agreeing to present a poster at the IOTA conference, the presenter commits to a presentation time of 13-15 minutes. Due to this brief timeframe, the presentation cannot go into significant detail. Therefore, the goal of the poster is to capture the viewer's interest and elicit questions and requests for further information. If accepted for presentation at the IOTA conference, the survey used to evaluate the poster presentation does not ask participants to rate how well each learning objective was met. Instead, the survey focuses on having viewers rate how well the content was presented, if it was easy to understand, and if the conclusions were stated clearly with evidence to support them.

Feasibility

The feasibility of the three knowledge translation projects could be rated as good to excellent. The first knowledge translation project (presentation to MOTA) was completed as part

of a course assignment. Even though this was an individual project, it was completed alongside two peers with guidance and feedback from multiple occupational therapy faculty. By completing this continuing education session as a series of all three student's knowledge translation projects, more interest could be generated, likely contributing to greater turnout. Furthermore, as this occurred during the coronavirus pandemic, this presentation occurred virtually, contributing to its feasibility. Each presenter, faculty member, and audience member could attend the presentations from their own homes without any travel expenses or additional time commitments.

The second project, a scholarly article, was highly feasible to accomplish. This was an entirely individual project that could be completed within a reasonable timeframe and with resources readily available online. For example, the 2021 Quarterly Author Guidelines were available online, as well as the contact information for the Editor of the Rehabilitation and Disability SIS. Furthermore, the research needed to complete this article was freely available from the St. Catherine University library. This project was made even more feasible because I had already gained background knowledge on the topic and written a scoping review on screening for PSVI. No expenses were required to complete this project, yet the potential benefit of this as a knowledge translation project is high as it was submitted to a national publication.

The third project, a poster presentation, is also highly feasible. The poster was also an entirely individual project that was able to be completed within a reasonable timeframe. A resource person from St. Catherine University was able to provide a single slide template appropriate for the poster dimensions typically used at the IOTA conference. This poster was created during the spring of 2021 with ample opportunity for feedback from Dr. Coss before submitting a proposal to the IOTA. The submission process was quickly completed entirely

online. If accepted, this presentation will occur in the fall of 2021. This conference will be held in person, so there will be a small expense required to print the poster. Additionally, I will be living in Ohio at the time of the conference, so there will be further time commitments and travel expenses required to attend the conference in person. However, this is still feasible as it is simply returning to my home state.

Chapter 6. Reflections and Recommendations

Reflection

Reflection on Mission and Vision Statements

AOTA's Vision 2025. My doctoral project aligns well with AOTA's Vision 2025 in that the project corresponds with the five pillars that convey the core tenets of the vision to stakeholders. The AOTA's Vision 2025 states that:

As an inclusive profession, occupational therapy maximizes health, well-being, and quality of life for all people, populations, and communities through effective solutions that facilitate participation in everyday living.

Pillars:

- **Effective:** Occupational therapy is evidence based, client centered, and cost-effective.
- **Leaders:** Occupational therapy is influential in changing policies, environments, and complex systems.
- **Collaborative:** Occupational therapy excels in working with clients and within systems to produce effective outcomes.
- **Accessible:** Occupational therapy provides culturally responsive and customized services.
- **Equity, Inclusion, and Diversity:** We are intentionally inclusive and equitable and embrace diversity in all its forms (AOTA, 2021, para 1).

Undertaking the work to acquire the current best available evidence regarding my topic and translating this knowledge to current and future occupational therapy practitioners has helped promote occupational therapy as an evidence-based profession. Additionally, this work

has identified and disseminated information regarding cost-effective screening and intervention resources for immediate use by practitioners. The aim of this doctoral project was to educate occupational therapy practitioners on the critical gap in standard practice that leads to many stroke survivors with visual impairment being unidentified and untreated. This project sought to generate understanding and empathy and encouraged occupational therapy practitioners to make screening for PSVI a standard practice in stroke care.

The importance of collaboration with clients and other disciplines has also emerged from this doctoral project. Occupational therapists must collaborate with clients, their caregivers, family members, and other care staff to identify potential visual impairments, especially if the client is unaware of the visual deficit or unable to communicate these deficits. Furthermore, this doctoral project highlights the necessary partnership between occupational therapists and eye care professionals to screen, diagnose, and effectively treat PSVI.

The final two pillars of the AOTA's Vision 2025 are accessible and equity, inclusion, and diversity. My doctoral project's bottom-line actionable message (BLAM) is that all stroke survivors should be screened for visual impairment at an early time-point post-stroke, even if visual deficits are not immediately apparent (Barwick, 2008, 2013, 2019). The realization of this aim would contribute significantly to more equitable and accessible stroke and vision care services. The current heterogeneity in screening and assessment practices has contributed to disparities among stroke survivors, with some individuals receiving vision care services while others are left without any services at all.

St. Catherine University Henrietta Schmoll School of Health. My doctoral project aligns with the St. Catherine University Henrietta Schmoll School of Health's vision and mission statement. Their statement is as follows:

The Henrietta Schmoll School of Health educates diverse learners and engages clinical and community partners to influence health, health systems, and health policy. The School is distinguished by an emphasis on relationship-centered care, socially responsible leadership and interdisciplinary initiatives (St. Catherine University, 2019, p. 7).

My doctoral project encourages interdisciplinary initiatives and partnerships, especially between stroke care and eye care teams. Furthermore, my doctoral project highlights research showing that 60% of OTs reported the lack of a visual care protocol or management plan as the largest barrier to the management of PSVI (Pollock et al., 2011). This doctoral project seeks to equip occupational therapy practitioners with the information and resources to engage with clinical partners to develop visual care protocols and management plans to ensure equitable care for all stroke survivors.

St. Catherine University Department of Occupational Therapy. The vision and mission statement is as follows:

The Department of Occupational Therapy provides an excellent education in occupational therapy to students from diverse backgrounds, conducts scholarly inquiry on human occupation, and serves the broader community by promoting occupational health and well-being. We prepare students to respect the dignity of every individual, value humans as occupational beings, understand the development of occupational competence, apply ethical, spiritual and social justice principles, engage in a healthy balance of life occupations, and lead and influence the advancement of occupational therapy (St. Catherine University, 2019, p. 7).

A key philosophical tenet of occupational therapy is that humans are occupational beings, that engagement in occupation has the power to contribute to health and well-being. My doctoral project aligns with this belief as it considers how PSVI negatively influences an individual's ability to participate in meaningful and desired occupations. Only through accurate identification of visual impairments can occupational therapists begin to assist individuals in adapting or compensating to their visual deficits and facilitate the person's resumption of life roles.

Reflection on Knowledge Translation as a Focus for Advanced Practice

A concept frequently discussed throughout the doctoral program at St. Catherine University has been the fact that there is approximately a 17-year gap between best practices discussed in the literature and standard practice. This is an alarming statistic that reinforces the need for education and training on not just knowledge generation but knowledge translation. Before starting this doctoral program, I had heard the term knowledge translation but never knew what that meant exactly. This program and the three knowledge translation projects completed as part of the doctoral project helped solidify my understanding of knowledge translation as the process of moving what was learned through research to the actual application of that knowledge in practice.

To be an effective advanced practice practitioner, one must lead and influence the advancement of occupational therapy. Conducting three separate knowledge translation projects with the guidance and feedback from multiple faculty members has given me the confidence I need to continue pursuing knowledge translation avenues in the future. Without any experience or exposure to scholarly routes for knowledge translation, these activities seem impossible to pursue. This program has made scholarly activities feel approachable and attainable. Similarly, I have learned to be brave in reaching out to people who I ordinarily would have thought to be too

big or important to reach out to. I have been pleasantly surprised by the willingness of academicians, researchers, and others for mentorship and answers. The skills I have learned in this program, such as formatting a poster presentation, looking for and submitting proposals for calls for papers, and working with an editor, have facilitated my journey towards becoming an advanced practice practitioner capable of influencing change within the field of occupational therapy.

I believe these three knowledge translation projects have contributed to the advancement of occupational therapy in general and in relation to PSVI. Recent literature has urged occupational therapy researchers and practitioners to add to the evidence base for occupational therapy and use this evidence to advocate for our services and demonstrate the unique value we bring to our clients and care teams. Many currently practicing occupational therapists did not receive as much training on evidence-based practice as practitioners graduating today. Therefore, the task of conducting evidence-based practice may seem unattainable. A focus of my doctoral project, specifically my first knowledge translation project, was to educate practitioners on the process of evidence-based practice. During my continuing education session, I was able to break down the steps of EBP and take participants through a real-life example of how to answer a clinical question or practice dilemma.

Each of the three knowledge translation projects, I believe, have contributed to the advancement of occupational therapy in the assessment and management of PSVI. Each project demonstrated how surprisingly prevalent PSVI is and how heterogeneity and the lack of care protocols, management plans, or clinical practice guidelines on best practices or which assessments to use have contributed to the underdiagnosis of PSVI and disparities in care provision. Furthermore, I feel I have been able to translate recommendations from the literature

to practitioners. Educating practitioners on the nine domains of the core outcome set for vision screening lays out precisely what aspects of vision practitioners and researchers should measure and report. An additional goal of these knowledge translation projects was to provide practitioners with tools and information they could use immediately in their practice. I am overjoyed that I could inform clinicians of a free-to-access, standardized, and validated screening tool developed specifically for use with individuals post-stroke. Additionally, the manuscript submitted for national publication includes information on two training programs freely available online to help clients compensate for visual field loss. Providing practitioners with free tools and training programs that they can begin to use with clients immediately will significantly contribute to occupational therapy practice concerning PSVI.

This doctoral project, in its entirety, was presented via a live Zoom continuing education session as a collaboration between St. Catherine University and MOTA. This doctoral project was presented alongside my two classmates who also presented their doctoral projects. The title of this event was called *Knowledge Translation: Advancing Occupational Therapy Practice Across the Lifespan*. The advertisement for this continuing education session that was displayed on the MOTA website can be found in Appendix D.1. The narrated PowerPoint slides can be found in Appendix D.2.

Reflection on Professional Development

St. Catherine University is a pioneer of educating women to lead and influence. Choosing to pursue a post-professional doctorate from St. Catherine University has opened doors for me professionally, even before graduation. Courses from this program, such as Essential Knowledge and Competencies for Leadership, prepared me to pursue and obtain leadership roles within my company. Since starting the doctoral program, I have been promoted to the clinical coordinator

role of the acute rehabilitation unit. This role also grants me a spot in the hospital's Leadership Institute. I now attend quarterly leadership institutes where I can learn from all the leaders within the hospital and am provided with resources, training, book clubs, and inspirational speakers that aim to develop me further as a leader.

My reason for choosing PSVI as the topic for my doctoral project originated from a critical gap in my practice and a gap in care for stroke patients on our rehabilitation unit. Completing this doctoral project has equipped me with the knowledge, resources, and expertise to address this critical need. I have begun working with the clinical application systems team to edit our electronic medical records to be more efficient and conducive to documenting vision screenings and interventions. I am in the process of creating a specific flowsheet for our occupational therapists to easily document the results of the VISA and the nine domains of the core outcome set for vision screening. I will also be presenting an in-service to the entire rehabilitation team on the findings and recommendations of my doctoral project. This presentation will be recorded and uploaded on our unit's SharePoint page for all current and future staff to view. Perhaps even more exciting than the professional development I have achieved and utilized in my recent work is the newfound confidence in my scholarly identity and belief in my ability to undertake knowledge translation projects independently in the future.

Recommendations

Summary of Needs for Future Knowledge Translation

A weakness I identified in my doctoral project was that the knowledge users of my projects were limited to the field of occupational therapy. As discussed in my projects, the assessment and management of PSVI necessitate interdisciplinary collaboration and partnership between occupational therapy practitioners, other members of the stroke care team, eye care

professionals, and the client, their family, and caregivers. There is a need for improved education on PSVI for stroke survivors and clinicians on the stroke care team. It is crucial that future knowledge translation be aimed at these stakeholders and disseminated in a way that takes the knowledge user's health literacy into account.

Several important messages to communicate to primary stakeholders were identified during the research phase of this project. There is a need for education to improve knowledge and awareness of the visual problems that can occur after stroke amongst occupational therapists, other members of the stroke care team, and the general public. Stroke survivors have reported being unaware that their vision could be affected by stroke and that clinicians were inattentive to the possible presence of visual impairment. Similarly, some individuals who experience vision changes do not realize that this is a sign of a potential stroke and do not seek medical attention, especially younger people who mistake these changes for a migraine. Therefore, generating increased awareness and knowledge on the types of visual impairments that can occur due to stroke is crucial. Additionally, now that core outcome sets for vision screening and full vision assessment have been developed, efforts to disseminate this information to clinicians and researchers involved in screening and assessing PSVI should be prioritized. Increasing the use of these core outcome sets will decrease heterogeneity in practice and research studies, improving detection of PSVI and synthesis of research results.

One Proposed Future Knowledge Translation Project: Stroke-Related Vision Impairment:

Client Education Materials

Knowledge Users. The primary knowledge users of this project will be stroke survivors and their family members and caregivers. Secondary knowledge users will be the rehabilitation

staff who provide these materials to the clients (i.e., occupational therapy practitioners, nurses, social workers, case managers, and others).

Main Messages. Stroke survivors who received information specific to their type of visual impairment praised it as having a substantial effect on their understanding of what was happening with their vision (Rowe, 2017). On the other hand, stroke survivors who received generic information on vision impairment described it as unhelpful (Rowe, 2017). When asked what information would be helpful to receive, stroke survivors reported help with reading, honesty about the prognosis for their visual impairment, and available resources (Rowe, 2017). Taking this information into account, the main messages to be communicated via this project will be defining and describing the most common types of PSVI and how these visual deficits may impact the performance of functional activities. Additional information included in the materials will be information on the typical recovery rate and degree for each type of visual impairment, information to help with reading, and post-discharge information about local support services.

Knowledge Translation Goals. The goals of this project would be to provide stroke survivors and their caregivers with the information that has been identified via qualitative research as being the most vital information to receive. The goal would be to have these materials available to be provided to stroke survivors or their families immediately so that even if the stroke survivor was unable to process the information, the family members could still access it.

Knowledge Translation Strategies. The strategy used for this project will be educational materials such as fact sheets or pamphlets. These materials will be written using principles of health literacy.

Knowledge Translation Evaluation. To determine if the goals of this project are achieved, a combination of reach and usefulness indicators would be used (Barwick, 2008, 2013, 2019). A primary goal of this project would be to reach as many stroke survivors and caregivers as possible, so evaluation would focus on how many materials were distributed or downloaded. When distributing this information to patients within my unit, I would request feedback from the patients and their family members to gauge their level of satisfaction and how useful they perceived the information to be. The feedback received would be used to modify and improve the educational materials.

Reflection on COVID-19 During the Doctoral Program

When COVID-19 first began impacting my community back in March of 2020, I was relieved that my doctoral program was already entirely online. I was fortunate that my daily routine was not affected too greatly by the pandemic because I was still going to work in the hospital every day and able to do my schoolwork online every night. However, as I progressed through the program, I soon realized that the pandemic would alter the way in which I am able to complete my three required knowledge translation projects. Surprisingly, the pandemic actually resulted in my first project (MOTA presentation) being more feasible to complete. Because social distancing requirements necessitated that the MOTA continuing education series be presented virtually, I was able to remain in Iowa while collaborating with my two classmates to deliver the series of presentations to practitioners, educators, and students in Minnesota. My second project (SIS article) was not affected by COVID-19 as all communications with the Editor and the submission process occurred via email as it would have ordinarily. My third project (poster presentation) appears as if it will escape the pandemic unscathed. The IOTA's annual conference occurs in the fall every year, and the 2021 conference is currently slated to

occur in person. Reflecting on how I have been able to complete this doctoral program during the COVID-19 pandemic has gently reminded me that there is always light at the end of the tunnel and positives to be found in even the darkest of circumstances.

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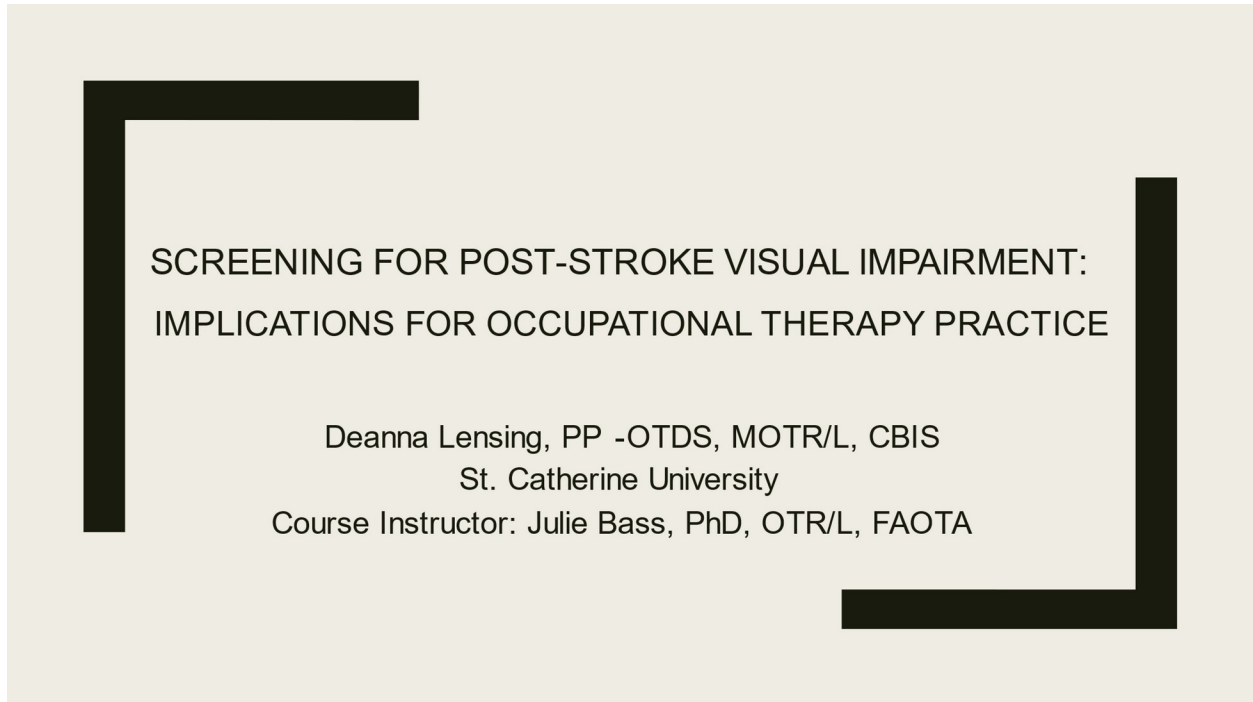
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Appendix A.1. MOTA Continuing Education Session Narrated Slide Presentation**Slide 1**

SCREENING FOR POST-STROKE VISUAL IMPAIRMENT:
IMPLICATIONS FOR OCCUPATIONAL THERAPY PRACTICE

Deanna Lensing, PP -OTDS, MOTR/L, CBIS
St. Catherine University
Course Instructor: Julie Bass, PhD, OTR/L, FAOTA

Narration.

Hello. My name is Deanna Lensing, and I am an occupational therapist and certified brain injury specialist. I am currently the clinical coordinator of a stroke-specialty acute rehabilitation unit in Iowa. This presentation will focus on my evidence-based literature review of screening for visual impairment in adults post-stroke.

Slide 2

Learning Objectives

- At the conclusion of this session, participants will be able to:
 - Discuss the common visual consequences of stroke and their relative prevalence
 - Apply the core outcome set for vision screening to reduce inconsistencies in practice
 - Articulate the role of occupational therapy in screening for post-stroke visual impairment (PSVI)

Narration.

The learning objectives for this presentation are that by the end of the session, participants will be able to discuss the common visual consequences of stroke and their relative prevalence, apply the core outcome set for vision screening to reduce inconsistencies in practice, and articulate the role of occupational therapy in screening for post-stroke visual impairment, hereinafter referred to as PSVI.

Slide 3

Brief Background on Practice Dilemma

- Up to two-thirds of stroke survivors have stroke-related visual impairment (Rowe et al., 2019)
- Reduced visual function can have a significant negative effect on an individual's quality of life, general stroke rehabilitation, and can lead to social isolation, occupational deprivation, and depression (Gutman & Schonfeld, 2009)
- Stroke-related visual impairment is significantly under-diagnosed (Edwards et al., 2006)
- Stroke services frequently do not include a formal vision assessment
- There is considerable inconsistency in how vision screening is conducted and which assessments are used (Hanna et al., 2016; Herron, 2016)

Narration.

The prevalence of visual problems in adults with acute stroke is alarmingly high, with up to two-thirds of stroke survivors experiencing deficits (Rowe, Hepworth, Howard et al., 2019). Reduced visual function can have a significant negative effect on an individual's quality of life, general stroke rehabilitation, and because individuals with visual deficits typically perform better in static environments as opposed to dynamic community environments, these individuals typically stay home, leading to social isolation, occupational deprivation, and depression (Gutman & Schonfeld, 2009). Stroke-related visual impairment is significantly under-diagnosed. This is due to many variables that will be discussed later in this presentation. There is also considerable inconsistency in how vision screening is conducted and which assessments are used (Hanna et al., 2016). This inconsistency in practice has been hypothesized to be due in part to the absence of universally agreed-upon detailed guidelines for visual assessment and no best practice recommendations for specific assessments (Herron, 2016).

Slide 4

Evidence-Based Practice (EBP) Question

- What vision screening tools have the best validity for predicting occupational performance and informing treatment planning for adults post-stroke?

P: Patient/Population	I: Intervention	C: Comparison	O: Outcome
Adults post-stroke	Visual/visual-perceptual screening	Control/none	<ul style="list-style-type: none"> • Accurate identification of deficits • Appropriate referrals • Quality of Life • Occupational Participation

Narration.

The first step of any evidence-based practice process is to ask a clinical question. My original EBP question continued to evolve as I searched through databases and became more immersed in the available data. The result of this iterative process was my final EBP question: What vision screening tools have the best validity for predicting occupational performance and informing treatment planning for adults post-stroke?

Slide 5

Search Process for Reviews of Research

- Level One Search: Reviews of Research
 - **Databases**
 - Google Scholar
 - OT Seeker
 - **Keywords**
 - Stroke
 - Vision
 - Visual screening
 - Occupational therapy

Narration.

The second step of the EBP process is to conduct a thorough review of the literature using electronic databases. I began this process by searching for reviews of research. I used the advanced search option within Google Scholar and OT Seeker to explore a variety of keywords related to stroke, vision, visual screening, and occupational therapy. I then reviewed all abstracts of my search results to identify relevant articles.

Slide 6

Search Process for Primary Research Studies

- Level Two Search: Primary Research Studies
 - **Databases:**
 - PubMed
 - Cinahl
 - PsycInfo
 - **Keywords:**
 - Stroke
 - Vision screening
 - Occupational therapy
- **Alternative Search Strategy**
Use of the *Cited by* feature in PubMed

Narration.

After I conducted a search of level one evidence, I searched for primary research studies. For this search, I used three electronic databases: PubMed, Cinahl, and PsycInfo. I searched using a variety of MeSH terms and other database-specific vocabulary related to stroke, vision screening, and occupational therapy. I also used an alternative search strategy by reviewing the article Screening methods for post-stroke visual impairment: A systematic review by Hanna and colleagues (2017) and clicking on Cited by in PubMed, which revealed an additional six articles, all of which were relevant.

Slide 7**Results of Searches: Quality & Quantity of Evidence**

- Level 1 search
 - *Google Scholar*
 - 1 systematic review of screening methods for post-stroke visual impairment
 - *OT Seeker*
 - 3 systematic reviews on interventions for post-stroke visual impairment
- Level 2 search
 - *PubMed*
 - 40 relevant results
 - *Cinahl*
 - 22 relevant results
 - *PsycInfo*
 - 16 relevant results

Narration.

This slide demonstrates the quality and quantity of evidence I acquired from my level one and two searches. My level one search resulted in one systematic review of screening methods for PSVI from Google Scholar and three systematic reviews from OT Seeker. However, these three systematic reviews were focused on interventions for PSVI and not screening measures. My level 2 search of the databases PubMed, Cinahl, and PsycInfo resulted in 40, 22, and 16 relevant results, respectively.

Slide 8**Critical Appraisal: Screening methods for post-stroke visual impairment: A systematic review****■ Purpose:**

- “To provide a systematic overview of the various tools available to screen for poststroke visual impairment” (Hanna et al., 2016, p. 1)

■ Conclusions:

- There is no single tool available that can accurately screen for post-stroke visual impairment when a patient’s cognitive or communication disabilities are considered.
- Visual impairment after stroke is not always immediately apparent and is harder to recognize when a person is unaware or unable to report their symptoms. Therefore, standardized screening protocols are necessary to assist in identifying these deficits.
- The efficacy of various screening tools is significantly reduced when used by non-eyecare professionals.

Narration.

The third step of the EBP process is to critically appraise the evidence for its validity and usefulness. I chose to appraise the four articles that were most relevant to my EBP question. The first article I decided to appraise was the systematic review by Hanna and colleagues (2016) on screening methods for PSVI. The purpose of this systematic review was to provide an overview of the available screening methods and vision assessments used for identifying PSVI. The authors concluded that there was no single tool available that could accurately screen for PSVI, especially for individuals with cognitive deficits or aphasia, which are common consequences of stroke. Because visual impairment after stroke is often not immediately apparent and is more challenging to identify when an individual is unaware of or unable to report these deficits, standardized screening protocols are necessary to identify deficits. The authors also concluded that various screening tools had reduced efficacy when administered by non-eye care professionals. Therefore, the authors recommended that future research develop a tool that can be used by healthcare professionals without formal eye care training to identify all potential PSVI in the acute phase of stroke recovery.

Slide 9

Critical Appraisal: Vision Screening Assessment (VISA) tool: diagnostic accuracy validation of a novel screening tool in detecting visual impairment among stroke survivors

■ **Purpose:**

- To validate the Vision Impairment Screening Assessment (VISA) tool (Rowe et al., 2020)

■ **Conclusions:**

- Sensitivity: >88%
- Specificity: >60%
- Positive predictive value: >93%
- Negative predictive value: >68%
- Inter-rater agreement: substantial agreement of about kappa 0.7

Narration.

The second article I appraised was a prospective case-cohort comparative study conducted by Rowe and colleagues between September 2016 and February 2019. Researchers aimed to validate the Vision Impairment Screening Assessment (VISA) tool, which uses simple, established visual function assessments. Researchers tested the VISA tool against a specialist vision assessment to determine sensitivity, specificity, positive and negative predictive values, and inter-rater agreement of results between the VISA and specialist vision assessments. Researchers also conducted a process evaluation by eliciting feedback from clinicians and patients to determine the feasibility of using the VISA in the real-world setting of a busy acute care stroke unit. The VISA tool demonstrated improved detection accuracy of PSVI by healthcare professionals involved in stroke care without formal eye training. Overall, referral sensitivity of >88% and specificity of >60% were found for the VISA tool with substantial agreement between VISA screening and comprehensive orthoptic assessment of about kappa 0.7. Positive and negative predictive values were >93% and >68%, respectively.

Slide 10

Critical Appraisal: Development of core outcome sets for vision screening and assessment in stroke: A Delphi and consensus study

- **Purpose:**

- “to achieve consensus on the content of vision screening and full vision assessment for stroke survivors in order to better identify visual impairment” (Rowe, Hepworth, & Kirkham, 2019, p. 2)

- **Conclusions:**

- Vision screening should consist of nine domains:

1) Case history (ocular history & glasses use)	2) Observations	3) Visual acuity
4) Visual fields	5) Visual inattention/neglect	6) Ocular alignment
7) Ocular motility	8) Reading ability	9) Functional Vision

Narration.

The third article I appraised utilized a Delphi process to achieve expert consensus on the content of vision screening and full vision assessment for stroke survivors to better identify visual impairment. This study aimed to address the lack of standardization in vision screening to improve evidence-based practice and reduce the heterogeneity of outcomes in future studies. Researchers achieved this by developing two core outcome sets, one for vision screening and one for full vision assessment. For reference, vision screening is defined as screening using basic screens of vision functions utilized by stroke specialists without formal eye care training. In contrast, full vision assessment was defined as assessments performed by eye care specialists. This research study consisted of three phases. The first stage consisted of a literature review to identify a comprehensive list of outcomes and assessment domains. The second stage consisted of a three-round Delphi survey with key stakeholders. After the third round, a consensus meeting was held to finalize the voting on which assessment domains were important to include in the core outcome set and which to exclude. Because this presentation focuses on vision screening and not full vision assessment, I will discuss only the vision screening core outcome set. The final consensus was that vision screening should consist of nine domains. These domains include a case history (ocular history and glasses use), observations, visual acuity, visual fields, visual inattention/neglect, ocular alignment, ocular motility, reading ability, and functional vision. These core outcome sets represent the minimum set of measures that should be reported, both in clinical practice and in research studies. Reporting a minimum set of measures reduces the heterogeneity of outcomes across studies, which, in turn, supports future evidence synthesis. Future research should evaluate the use of these outcome sets and attempt to achieve consensus on how the outcomes should be measured.

Slide 11

Critical Appraisal: Screening of visual perceptual disorders following acquired brain injury: A Delphi study

- **Purpose:**

- To explore and achieve expert consensus on what measures are considered reasonable to be part of a test battery with an administration time of about 30 minutes for the screening of a broad range of mid-level and higher-order visual perceptual disorders in individuals with acquired brain injury (de Vries et al., 2018)

- **Conclusions:**

- 94% consensus was reached on a test battery consisting of 11 visual perceptual tests:

- | | |
|--|---|
| 1. Bells Test | 6. Silhouettes (VOSP) |
| 2. Dot Counting Task | 7. Crowding Task |
| 3. Complex Picture: Complex Picture Description Task | 8. Corsi Block-Tapping Task |
| 4. Trail Making Test | 9. Taylor Complex Figure |
| 5. Figure Ground Segmentation (L-Post) | 10. Global Motion Detection (L-Post) |
| | 11. Shape Ratio Discrimination (L-Post) |

Narration.

For my fourth critical appraisal, I chose the Delphi study by de Vries and colleagues (2018). This study aimed to achieve consensus of an expert panel about a test battery for screening for mid-level and higher-order visual perceptual deficits in individuals with acquired brain injury. Researchers conducted a three-round Delphi study with international experts in visual perception. Seventeen experts completed the third and final round of the study. Ninety-four percent consensus was reached on a test battery consisting of 11 visual perceptual tests, each assessing a distinct visual perceptual domain, with an estimated administration time of 30 minutes. The test battery is composed of tests that are already available, which makes it easy for clinicians and researchers to use this battery. Furthermore, this test battery can be administered digitally, which has the benefits of providing more objective scoring, more accurate reaction time measurements, and the ability to present dynamic stimuli to assess motion perception. The implications of this study are that use of this test battery may result in improved clinical assessment and facilitate comparison across studies of visual perception.

Slide 12

Literature Matrix

- **Rowe, 2017**
 - There is a need for improved education and awareness of post-stroke visual impairment
 - Participants felt there needed to be more specific information provided early on about their visual impairment and honesty about their prognosis
- **Smith et al., 2018**
 - Post-stroke visual impairment leads to a decrease in occupational performance
 - Stroke rehab programs may not address vision issues unless an individual reports difficulty
- **Hepworth et al., 2015**
 - The Activity Inventory, Daily Living Tasks Dependent on Vision, Veteran Affairs Low Visual Function Questionnaire, and Impact of Vision Impairment instruments are not suitable for use with a stroke population

Narration.

After completing critical appraisals of the four most relevant articles, I utilized a literature matrix to summarize an additional six articles. The first article I included was a qualitative study conducted by Rowe (2017) in which she sought to examine the lived experiences and views of stroke survivors concerning PSVI. Participants felt there was a need for improved education and awareness of PSVI and that clinicians needed to be more aware and mindful of their visual impairments. Participants felt there needed to be more specific information on their visual impairment and honesty about their prognosis. Participants indicated that this information should be provided early on in their rehabilitation process.

Smith and colleagues (2018) conducted a similar qualitative study in which they sought to identify stroke survivors' vision concerns and the consequences of visual impairment. Results indicated that PSVI leads to decreased occupational performance secondary to impaired eye-hand coordination, difficulty with reading, difficulty maintaining balance, increased falls, and difficulty/inability to drive and return to work. Stroke survivors and caregivers want to learn how to treat post-stroke visual problems and are frustrated when they cannot access vision care providers or have their visual concerns overlooked. Clinicians often overlook visual concerns when their attention is directed at other problems such as hemiparesis, aphasia, and dysphagia. Stroke rehabilitation programs may not address vision issues unless a stroke survivor reports difficulty. Therefore, many stroke survivors go without specific intervention.

Hepworth and colleagues (2015) conducted a systematic review to evaluate patient-reported outcome measures (PROMs) available for use in research and clinical practice for individuals with PSVI. Four PROMs were identified as being inappropriate for use with a stroke population. These included the Activity Inventory, Daily Living Tasks Dependent on Vision,

Veteran Affairs Low Visual Function Questionnaire, and Impact of Vision Impairment. These instruments should not be used to assess vision-specific quality of life with stroke populations due to problems with question phrasing and response burden.

Slide 13

Literature Matrix

- **Rowe, Hepworth, Howard et al., 2019**
 - The prevalence of visual problems for all stroke survivors is up to 73%, and the incidence of new onset visual sequelae is up to 60%
 - Vision screening is possible within 72 hours of stroke onset
- **Herron, 2016**
 - All stroke patients should undergo standardized vision screening within 3-5 working days of admission to inpatient rehabilitation
 - This study validated the role of occupational therapists in inpatient rehabilitation in vision screening
- **Pollock et al., 2011**
 - Protocols for visual problems should be introduced to all stroke inpatient settings
 - Occupational therapists should be given clear guidance on appropriate assessments and screening measures for post-stroke visual impairments
 - The assessment and management of eye movement problems may be neglected

Narration.

Rowe and colleagues (2019) conducted an epidemiology study to explore how soon after acute stroke a vision evaluation is appropriate. This study demonstrated that early visual screening and assessment is achievable and feasible within 72 hours of stroke onset. For those patients who are initially unable to complete visual assessments, most can complete assessment within one week. It is important to complete visual screening and assessment at an early time-point poststroke and communicate these findings to patients, their caregivers, and the stroke team to optimize rehabilitation outcomes.

Herron (2016) conducted a quantitative study to examine the correlation between the number of visual deficits identified by occupational therapists and the number of visual diagnoses made by optometrists and explore the role of OTs in assessing and managing stroke-related visual impairments in inpatient rehabilitation. The results of this study support the need for all stroke patients to undergo standardized vision screening and assessment within 3-5 working days of admission to inpatient rehabilitation. This study validated the role of OTs in vision assessment. All patients identified by an OT as having a symptom on the functional checklist were also diagnosed by an optometrist as having at least one visual deficit.

Pollock and colleagues (2011) conducted a questionnaire study to examine the current practice of OTs working in stroke inpatient settings regarding the assessment and management of PSVI. Results indicated the need for protocols and management plans for visual problems to be introduced to all stroke inpatient settings with clear referral pathways. This study found that OTs would benefit from improved education on PSVI and identified that the assessment and management of eye movement problems might be especially neglected. Special attention should be paid to ensure OTs recognize and understand common ocular motility defects post-stroke.

Slide 14

Prevalence & Underdiagnosis of Post-Stroke Visual Impairment

- Incidence:
 - *60% of stroke survivors were found to have new incidence of visual deficits (Rowe, Hepworth, Howard, et al., 2019)*
- Prevalence:
 - *73% of participants had visual problems*
 - Impaired central vision: 56%
 - Eye movement abnormalities: 40%
 - Visual field loss: 28%
 - Visual inattention: 27%
 - Visual perceptual disorders: 5%

Narration.

A review of the current literature in relation to my EBP question revealed four themes. The first of these themes is the prevalence and underdiagnosis of PSVI. In a multi-center acute stroke unit, prospective, epidemiology study, the authors found that 60% of stroke survivors had new-onset visual sequelae (Rowe et al., 2019). Researchers also analyzed the prevalence of specific visual deficits. Nearly three quarters of participants had visual problems: 56% had impaired central vision, 40% had eye movement abnormalities, 28% had visual field loss, 27% had visual inattention, and 5% had other visual perceptual disorders. Only 27% of the participants were not found to have visual deficits.

Slide 15**Prevalence & Underdiagnosis of Post-Stroke Visual Impairment**

- Stroke-related visual impairment is often overlooked & neglected (Edwards et al., 2006)
- 62% of visual acuity deficits & 61% of visual inattention were undetected clinically but were identified through systematic screening within ten days of acute stroke (Edwards et al., 2006)
- Stroke survivors and their caregivers have voiced concerns regarding the under-diagnosis and neglect of post-stroke visual impairment (Rowe, 2017; Smith et al., 2018)
- Stroke survivors have reported being unaware that their vision could be affected by stroke and reported that clinicians were inattentive to the possible presence of visual impairment (Rowe, 2017)

Narration.

Despite the high rates of PSVI, deficits are often overlooked and neglected by rehabilitation clinicians, leading to visual and visual-perceptual impairments being significantly under-diagnosed in this population. A study by Edwards et al. (2006) found that systematic screening using standardized measures, identified significantly more impairments than standard clinical practice. For example, 62% of visual acuity deficits and 61% of visual inattention were undetected through routine clinical practice but were identified through systematic screening within ten days of acute stroke (Edwards et al., 2006).

Many stroke survivors and their caregivers have echoed concerns regarding the under-diagnosis and neglect of PSVI. Qualitative studies have reported frustration among stroke survivors and their caregivers that clinicians overlook their visual impairment and focus their attention on other disabilities first (Rowe, 2017; Smith et al., 2018). Stroke survivors have reported being unaware that their vision could be affected by stroke and said that clinicians were inattentive to the possible presence of visual impairment (Rowe, 2017). Visual impairment has been described by many as a hidden disability, and many stroke survivors feel they would have been treated differently if clinicians could see their visual impairment (Rowe, 2017).

Slide 16

Heterogeneity in Assessment Practices and Recommendations to Improve Consistency

- There is inconsistency across healthcare facilities in the use of protocols for the assessment of post-stroke visual functioning
- In a cross-sectional postal survey of 55 occupational therapists working in UK stroke inpatient units, 60% of OTs reported the lack of a visual care protocol or management plan as the largest barrier to the management of post-stroke visual impairment (Pollock et al., 2011)
- Only 7% of stroke units reported having a policy relating to vision assessment and management (Pollock et al., 2011)

Narration.

The second theme identified through a review of the literature was heterogeneity in assessment practices and recommendations to improve consistency. There is inconsistency across healthcare facilities in the use of protocols for the assessment of post-stroke visual functioning. In a cross-sectional postal survey of 55 OTs working in UK stroke inpatient units, 60% of OTs reported the lack of a visual care protocol or management plan as the largest barrier to the management of PSVI (Pollock et al., 2011). This survey found that only seven percent of stroke units reported having a policy relating to vision assessment and management (Pollock et al., 2011).

Slide 17

Heterogeneity in Assessment Practices and Recommendations to Improve Consistency

- Core outcome sets for vision screening aim to reduce heterogeneity in clinical practice by improving the standardization and accuracy of vision assessment, facilitating future research synthesis, and facilitating comparison across studies (Rowe, Hepworth, & Kirkham, 2019)
- Results of a Delphi study determined that vision screening is performed by healthcare professionals who are on the stroke team but who lack formal eye care training (Rowe, Hepworth, & Kirkham, 2019)
- Vision screening should include the following nine areas: case history, observations, visual acuity, visual fields, ocular alignment, ocular motility, visual inattention/neglect, reading, and functional vision (Rowe, Hepworth, & Kirkham, 2019)

Narration.

Core outcome sets for vision screening aim to reduce heterogeneity in clinical practice by improving the standardization and accuracy of vision assessment (Rowe, Hepworth, & Kirkham, 2019). A Delphi study was undertaken to develop core outcome sets for vision screening and full vision assessment in stroke (Rowe, Hepworth, & Kirkham, 2019). Results of the Delphi study determined that vision screening should include the following nine areas: case history, observations, visual acuity, visual fields, ocular alignment, ocular motility, visual inattention/neglect, reading, and functional vision (Rowe, Hepworth, & Kirkham, 2019).

The Delphi method was similarly used with an international expert panel of experienced researchers and clinicians in fields related to visual perception to reach a consensus on a test battery to screen patients with acquired brain injury for visual perceptual disorders (de Vries et al., 2018). The results of this Delphi survey will be discussed later in this presentation.

Slide 18

Vision Screening

- The Vision Impairment Screening Assessment (VISA) tool was developed to screen for visual impairments post-stroke (Rowe, Hepworth, Howard et al., 2019)
- VISA tool consists of five sections:
 1. Case history
 2. LogMAR visual acuity at near and distance
 3. Eye alignment and movement
 4. Visual fields
 5. Visual inattention

Narration.

The third theme, Screening Tools, comprises two sub-themes: vision screening tools and visual-perception screening tools. The Vision Impairment Screening Assessment (VISA) tool was developed to screen for visual impairments post-stroke. The VISA tool's development fills a gap identified by the systematic review by Hanna and colleagues (2016), which concluded that there was no standardized visual screening tool that could accurately assess all potential PSVI and that the efficacy of various screening tools was significantly reduced when administered by non-eye care professionals. The VISA tool is available in print and as a software app. Both formats consist of five sections (Rowe et al., 2020). Section one consists of a case history with questions and observations. If the patient is unable to provide a case history, family members/caregivers are consulted. Observations are taken of eyelids, pupils, head position, and other visual signs. Section two consists of LogMAR visual acuity at near and distance. Two other options are available for use depending on the patient's cognitive/communication abilities, including using a matching card to allow for pointing or grating cards that use a preferential looking technique (Rowe et al., 2020). Section three screens for eye alignment and movement using corneal reflections and observations of smooth pursuits. Section four is an assessment of visual fields, which is the only section that differs between the print and app versions of the VISA. The print version utilizes a standardized method of confrontation testing, whereas the app version uses a kinetic visual field assessment that allows for assessment of the 40° visual field. Section five assesses visual inattention using line bisection, clock drawing, and a cancellation task.

Slide 19

Visual -Perceptual Screening

- The Occupational Therapy Adult Perceptual Screening Test (OT -APST) was found to be an ecologically valid tool with sound psychometric properties (Cooke et al., 2006)
- Despite the merits of the OT -APST, there was no general consensus on the best way to screen for visual -perceptual deficits after acquired brain injuries (de Vries et al., 2018)
- The Delphi method was used to reach expert consensus (94%) on a test battery consisting of 11 short visual -perceptual tests
 1. Bells Test
 2. Dot Counting Task
 3. Complex Picture Description Task
 4. Trail Making Test
 5. Figure Ground Segmentation (L - Post)
 6. Silhouettes (VOSP)
 7. Crowding Task
 8. Corsi Block -Tapping Task
 9. Taylor Complex Figure
 10. Global Motion Detection (L -Post)
 11. Shape Ratio Discrimination (L -Post)

Narration.

Cooke and colleagues (2006) examined the Occupational Therapy Adult Perceptual Screening Test (OT-APST). This study confirmed the construct validity of the OT-APST as a measure of visual perception and determined the OT-APST to be an ecologically valid tool with sound psychometric properties.

Despite the merits of the OT-APST, there was no consensus on the best way to screen for visual-perceptual deficits after acquired brain injuries. Therefore, the Delphi method was used with a panel of international experts to reach consensus on a test battery to screen for mid-level and higher-order visual-perceptual disorders in people with acquired brain injuries (de Vries et al., 2018). A total of 17 experts participated in the third and final round of the study. Sixteen experts (94%) agreed with the proposed test battery, consisting of 11 short visual-perceptual tests, each assessing a distinct visual perception domain (de Vries et al., 2018).

Slide 20**Role of Occupational Therapy in Screening for PSVI**

- Occupational therapists are in a unique position to identify potential visual problems early -on, initiate appropriate referrals, and educate the patient, their caregiver, and the stroke team on how the patient's visual impairments may impact their functional recovery and discharge needs (Herron, 2016)
- Occupational therapists consider the initial assessment of vision, subsequent treatment, and appropriate referrals to be a core part of their role (Pollock et al., 2011)
- Various studies have been conducted that support occupational therapy's role in screening for post -stroke visual impairment (Edwards et al., 2006; Herron, 2016)
- Functional vision and visual inattention assessments are key areas where occupational therapists can assess (Rowe, Hepworth, & Kirkham, 2019)

Narration.

The fourth and final theme I identified was the role of occupational therapy in screening for PSVI. Occupational therapists are in a unique position to identify potential visual problems early-on, initiate appropriate referrals, and educate the patient, their caregiver, and the stroke team on how the patient's visual impairments may impact their functional recovery and discharge needs (Herron, 2016). It is widely acknowledged that all multidisciplinary team members should consider the impact and presence of PSVI (Pollock et al., 2011). However, eye care professionals are rarely core members of the inpatient stroke care team. While other stroke team members, such as doctors, nurses, and physical therapists may consider and assess aspects of vision, occupational therapists consider the initial assessment of vision, subsequent treatment, and appropriate referrals to be a core part of their role (Pollock et al., 2011).

Multiple studies have been conducted that support occupational therapy's role in screening for PSVI. In the study by Edwards et al. (2006), all screening measures were performed by occupational therapy students. These students were able to screen patients with stroke and identify clinically relevant visual impairments that would have otherwise gone unnoticed, indicating a role for OTs in screening all patients with stroke. A retrospective study supported occupational therapists' validity in accurately screening for visual deficits and making appropriate referrals (Herron, 2016). Occupational therapy's role in vision assessment was also supported by the correlation between the number of functional symptoms observed by occupational therapists and the number of visual diagnoses made by the optometrist, suggesting that through functional observations and vision screening, occupational therapists can effectively identify patients with visual impairments in inpatient rehabilitation (Herron, 2016). The role of occupational therapists in vision screening has also been acknowledged by expert consensus that

specific domains of the core outcome set for vision screening, such as functional vision and visual inattention assessments, are key areas where occupational therapists can assess (Rowe, Hepworth, & Kirkham, 2019). A role for occupational therapy in screening was further supported by findings in a case-cohort comparative study; this study showed that screening by stroke clinicians using the VISA tool accurately detected vision problems that were confirmed in formal eye examinations (Rowe et al., 2020).

Slide 21

Implications for Practice & Research

- There is need for education aimed at improving knowledge and awareness of the visual problems that can occur after stroke amongst occupational therapists, other members of the stroke care team, and the general public
- Now that core outcome sets for vision screening and full vision assessment has been developed, efforts to disseminate this information to clinicians and researchers involved in screening and assessment of post-stroke visual impairment should be prioritized
- Occupational therapists would benefit from education on the VISA tool and the test battery for the screening of mid-level and higher-order visual-perceptual disorders following acquired brain injury so that these screening tools may be utilized routinely
 - VISA tool is free to access at www.vision-research.co.uk
- Future studies should focus on the test battery's application, validation, and generation of normative data of different populations

Narration.

The reported incidence and prevalence of PSVI are alarmingly high, with approximately two-thirds of stroke survivors experiencing visual problems (Rowe, Hepworth, Howard et al., 2019). Yet, these deficits are often missed without systematic screening of all individuals post-stroke. The rates of under-diagnosis, coupled with reports from stroke survivors and caregivers that clinicians often overlook the possibility of visual impairment, indicate a need for education. This education should improve knowledge and awareness of the visual problems that can occur after stroke among occupational therapists, other members of the stroke care team, and the general public. The under-diagnosis of PSVI is likely due in part to the lack of consensus on how to adequately screen for visual impairment after brain injury (Herron, 2016). Luckily, a core outcome set for vision screening and full vision assessment has been developed (Rowe, Hepworth, & Kirkham, 2019). A core outcome set indicates the minimum that should be measured and reported in all studies on a given condition. Therefore, now that these core outcome sets have been developed, efforts to disseminate the results to clinicians and researchers involved in screening and assessing PSVI should be prioritized. The VISA tool is a standardized and validated method to screen for visual problems following stroke and considers the nine domains in the core outcome set for vision screening. The VISA tool is a free-to-access tool that can be downloaded from the research website (www.vision-research.co.uk). A clinician who wishes to download the tool for use in their practice will need to fill out a form on that website to download the materials. Additionally, a test battery for the screening of mid-level and higher-order visual-perceptual disorders following acquired brain injury has been developed (de Vries et al., 2018). OTs would benefit from education on these screening measures so that they may be utilized routinely. While the VISA tool has been validated, the test battery for visual-perceptual

disorders has not. Future studies should focus on its application, validation, and generation of normative data.

Slide 22

Implications for Practice & Research

- Consistent implementation of a standardized approach to vision screening/assessment is highly recommended
- Visual screenings should be performed on all individuals with stroke at an early-time -point post -stroke
- If vision screening detects impairment, a referral to an eye care professional should be made
- Results and interpretation of screening and assessment measures should emphasize how the results may affect occupational performance and not merely how much the results deviate from the norm (Gutman & Schonfeld, 2009)
- Occupational therapy practitioners and researchers should measure and report on the domains identified in the core outcome set for vision screening
- Occupational therapists should utilize standardized and validated screening measures such as the VISA tool

Narration.

In conclusion, visual impairments can influence an individual's everyday functioning, safety, social interaction, and quality of life. Without skilled intervention and support, individuals experiencing these deficits may develop reduced self-efficacy, social isolation, and occupational deprivation (Gutman & Schonfeld, 2009). Immediate assessment and intervention may help to prevent these secondary impairments. Visual screenings should be performed on all individuals with stroke. If vision screening detects impairment, a referral to an eye care professional should be made. Results and interpretation of screening and assessment measures should emphasize how the results may affect occupational performance and not merely how much the results deviate from the norm (Gutman & Schonfeld, 2009). Occupational therapists are well-positioned to address this critical need for stroke survivors and provide necessary information to stroke survivors, their caregivers, and the stroke care team on the impact the patient's visual impairment may have on their functioning and discharge needs. Occupational therapy practitioners and researchers should measure and report on the domains identified in the core outcome set for vision screening. Occupational therapists should utilize standardized and validated screening measures such as the VISA tool to improve PSVI detection and optimize rehabilitation outcomes for all patients with stroke.

Slide 23

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Slide 24

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Appendix A.2. MOTA Continuing Education Session Proposal

Event Name:

Evidence-Based Practice Across the Lifespan: Three Knowledge Translation Projects

Date of Event: TBD

Start Time: TBD

End Time: TBD

Agenda:

15 minutes	Registration and Technology Check-In
30 minutes	Adolescent Mental Health Promotion and Prevention through Multi-Tiered Systems of Support (Sarah S. Greene, MS, OTR/L)
10 minutes	Questions and Discussion
5 minutes	Break
30 minutes	Screening for Post-Stroke Visual Impairment: Implications for Occupational Therapy Practice (Deanna Lensing, MOT, OTR/L, CBIS)
10 minutes	Questions and Discussion
5 minutes	Break
30 minutes	Caregiver Burden and Dementia: A Community-Based Education Approach (Katherine Turner, OTR/L)
10 minutes	Questions and Discussion
TBD	Adjourn

Members only? No

Event Location St. Catherine University Virtual Online Continuing Education Session

Session Description:

This session will provide an overview of current evidence in relation to screening for post-stroke visual impairment. The presentation will discuss the following four themes derived from the evidence: (1) the prevalence and under-diagnosis of post-stroke visual impairment, (2) heterogeneity in assessment practices and recommendations to improve consistency, (3) visual and visual-perceptual screening tools; and (4) the role of occupational therapy in screening for post-stroke visual impairment.

Speaker Bio:

Deanna Lensing, MOT, OTR/L, CBIS is a current student in the post-professional Doctor of Occupational Therapy program at St. Catherine University. Deanna graduated with her master's degree in occupational therapy from St. Ambrose University and has spent the last three years working in a stroke specialty inpatient rehabilitation facility. This project has been guided by Dr. Julie Bass this semester as part of an Advanced Evidence-Based Practice course. Contact for more information:

dmlensing722@stkate.edu

Learning Objectives:

At the conclusion of this session, participants will be able to:

1. Discuss the common visual consequences of stroke and their relative prevalence
2. Apply the core outcome set for vision screening to reduce inconsistencies in practice
3. Articulate the role of occupational therapy in screening for post-stroke visual impairment at an early time-point post-stroke

Target Audience: All

Educational Level: Introductory/Intermediate

Appendix A.3. MOTA Continuing Education Session Survey

Screening for Post-Stroke Visual Impairment: Implications for Occupational Therapy Practice

Deanna Lensing, PP-OTDS, MOTR/L, CBIS

dmlensing722@stkate.edu

* Required

1. Please indicate how well the presentation met the stated learning objective *

1. Discuss the common visual consequences of stroke and their relative prevalence

1 2 3 4 5

Not at all Very well

2. Please indicate how well the presentation met the stated learning objective *

1. Apply the core outcome set for vision screening to reduce inconsistencies in practice

1 2 3 4 5

Not at all Very well

3. Please indicate how well the presentation met the stated learning objective *

1. Articulate the role of occupational therapy in screening for post-stroke visual impairment at an early time-point post-stroke

1 2 3 4 5

Not at all Very well

4. Please indicate how well the content of the presentation was organized *

1 2 3 4 5

Poor Excellent

5. Please indicate your overall impression of the presenter's ability to communicate this material *

1 2 3 4 5

Poor Excellent

6. Please add any additional comments or suggestions

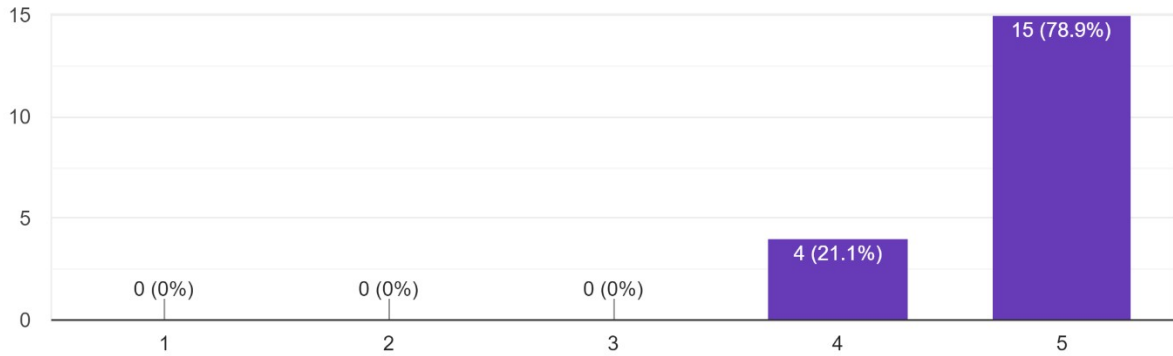
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Appendix A.4. MOTA Continuing Education Session Survey Results

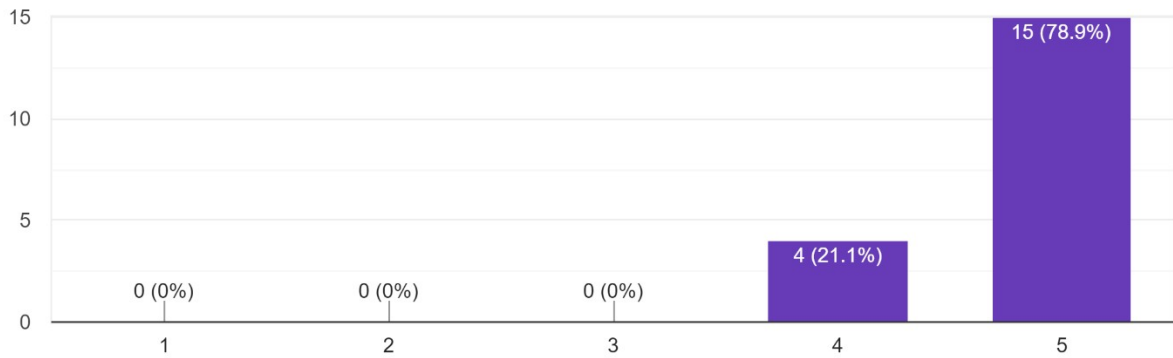
Please indicate how well the presentation met the stated learning objective

19 responses



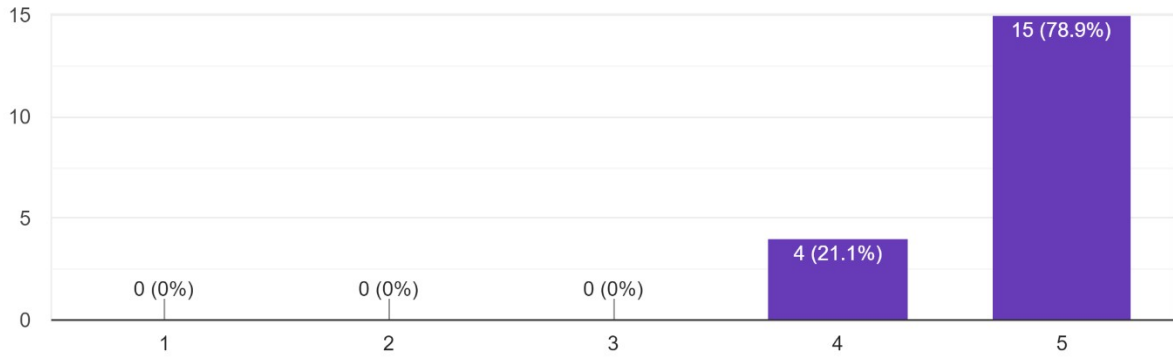
Please indicate how well the presentation met the stated learning objective

19 responses



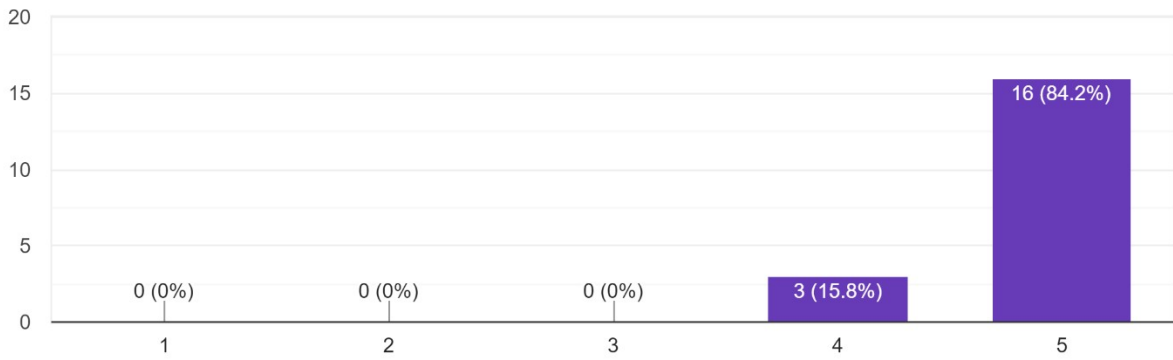
Please indicate how well the presentation met the stated learning objective

19 responses



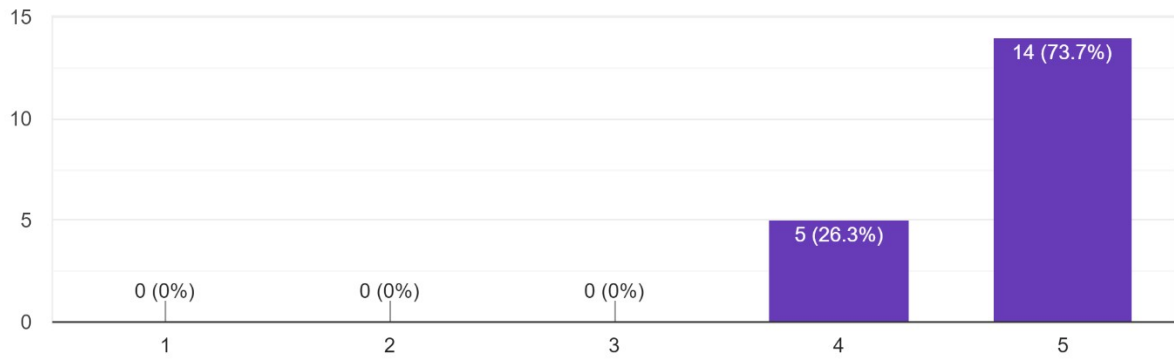
Please indicate how well the content of the presentation was organized

19 responses



Please indicate your overall impression of the presenter's ability to communicate this material

19 responses



Please add any additional comments or suggestions (5 responses)

- Excellent work! Very important topic
- This is an area that really affects occupation; thank you for addressing it
- Thank you for doing more research in this needed area. Your presentation was great!
- Thank you! I'm glad you did this research and that hopefully more visual deficits will be identified moving forward!
- Great presentation! You should be proud!

Appendix B.1. Special Interest Section Article

Evidence-Based Assessment and Management of Post-Stroke Visual Impairment

Deanna Lensing, PP-OTDS, MOTR/L, CBIS, is the clinical coordinator of the acute rehabilitation unit at Mary Greeley Medical Center in Ames, IA.

Evidence-Based Assessment and Management of Post-Stroke Visual Impairment

The prevalence of post-stroke visual impairment (PSVI) is alarmingly high, with estimates of up to two-thirds of stroke survivors experiencing deficits (Rowe et al., 2019). However, research indicates that greater than 60% of visual acuity deficits and visual-spatial neglect in patients with stroke are undetected by standard clinical practice (Edwards et al., 2006). Thus, many patients with stroke have clinically significant visual impairments that are not being detected, and therefore, are not being adequately addressed. Visual impairments can substantially influence an individual's everyday functioning, safety, social interaction, and quality of life. Without skilled intervention and support, individuals experiencing these deficits may develop

reduced self-efficacy, social isolation, and occupational deprivation (Perea et al., 2018).

Immediate assessment and intervention may help to prevent these secondary impairments.

Prevalence of PSVI and Occupational Needs of Clients with PSVI

In a prospective epidemiology study (N=1033), 60% of stroke survivors were found to have new incidence of visual deficits (Rowe et al., 2019). The type of visual problem with the highest incidence was impaired central vision (56%), followed by eye movement abnormalities (40%), visual field loss (28%), visual inattention (27%), and visual perceptual disorders (5%). Only 27% of the participants did not have any visual deficits identified (Rowe et al., 2019).

Visual deficits can significantly impact a person's everyday functioning. Visual acuity deficits may cause difficulty with near tasks such as buttoning or reading nutrition and medication labels. Visual field deficits result in problems with visual scanning, reading, writing, mobility, and all aspects of ADLs. Functional mobility is severely affected by visual field deficits. When an individual's inferior visual field is affected, they will have increased difficulty navigating stairs. On the other hand, deficiencies in a person's superior visual field can cause difficulty identifying traffic lights when driving, navigating from wheelchair level, and scanning the top shelves in their kitchen (Gutman & Schonfeld, 2009). People with left or right visual field cuts may have increased collisions and risk of falls. Individuals with visual field deficits will generally perform better in static environments compared to dynamic environments. Therefore, they typically stay home, resulting in them becoming socially isolated (Gutman & Schonfeld, 2009). Deficits to cranial nerves III, IV, or VI cause eye movement disorders which often result in diplopia. Diplopia can make it difficult for people to make eye contact, read, perform near tasks, and judge distances. Each of these types of visual impairment can limit a client's participation and progress in rehabilitation.

Stroke survivors have discussed the emotional impact visual impairments have had on their life. They have reported experiencing a loss of confidence, feeling like a burden to others, and feeling guilt, frustration, and anger (Rowe, 2017). Stroke survivors have described their visual impairment as a hidden disability and feel clinicians may have treated them differently if they could *see* their visual impairment (Rowe, 2017). They have reported frustration that clinicians overlook their visual impairment, focusing their attention on other physical and more obvious disabilities first (Rowe, 2017).

Stroke survivors have reported being unaware that their vision could be affected by stroke. Without a diagnosis and interventions for the deficit, they sometimes continued driving after their stroke, unaware of the extent of their visual deficit (Rowe, 2017). Due to the structured environment in hospitals and rehabilitation facilities, many visual deficits are not immediately apparent. However, when individuals are discharged and return to more dynamic community environments, vision impairments become much more pronounced. When these deficits are not identified and addressed during rehabilitation, it can leave stroke survivors and their caregivers ill-prepared and uninformed on how to handle community mobility, driving, medication management, and return to work activities.

Evidence-Based Screening

The Vision Impairment Screening Assessment (VISA) tool was developed to screen for visual impairments post-stroke. The VISA tool is available in print and as a software application. Both formats contain five sections. Section one consists of a case history with questions and observations. If the patient is unable to provide a case history, family members/caregivers are consulted. Observations are taken of eyelids, pupils, head position, and other visual signs. Section two consists of LogMAR visual acuity at near and distance. Two other options are

available for use depending on the patient's cognitive/communication abilities, including using a matching card to allow for pointing or grating cards that use a preferential looking technique (Rowe et al., 2020). Section three screens for eye alignment and movement using corneal reflections and observations of smooth pursuits. Section four is an assessment of visual fields. The print version utilizes a standardized method of confrontation testing, whereas the electronic version uses a kinetic visual field assessment that allows for assessment of the 40° visual field. Section five assesses visual inattention using line bisection, clock drawing, and a cancellation task.

Measurement characteristics of the VISA tool were established in a psychometric study. Researchers conducted a prospective case-cohort comparative study in four centers to validate the VISA tool against the gold standard of a specialist vision assessment conducted by experienced orthoptists (Rowe et al., 2020). Results of the study showed that referral to specialist eye services based on the results of the VISA tool had overall sensitivity and specificity of >88% and >60%, respectively (Rowe et al., 2020). The VISA tool is free to access at www.vision-research.co.uk/.

Evidence-Based Interventions

There are three main approaches to rehabilitation of visual impairment: restoring the visual function (restitution or remediation), compensating for the deficit by changing behavior or activity (compensation), and substituting for the deficit by using a device or external modification (substitution) (Hanna et al., 2017).

Visual Field Loss

Common interventions for visual field loss include the provision of typoscopes, prisms, reading aids, and scanning therapy. However, the most frequently reported visual field loss

interventions include advice on reading strategies, compensatory head postures, scanning eye and head movements, use of lighting, registration for visual impairment, and raising awareness of the field loss (Hanna et al., 2017). Although various treatment options exist for the treatment of visual field loss, not enough high-quality research is available to make generalized conclusions on treatment effectiveness. Current recommendations are to use compensatory strategies to treat post-stroke visual field loss. Compensatory strategies include visual scanning and search training methods that can be computer-based or paper-based and include word search games (Hanna et al., 2017). These approaches aim to improve the individual's speed and accuracy of eye movements into the affected visual field. Some training programs are freely available online at Eye-Search (www.eyesearch.ucl.ac.uk) and Read-Right (www.readright.ucl.ac.uk) (Hanna et al., 2017).

Eye Movement Disorders

Eye movement disorders include strabismus (misalignment of the eyes) and ocular motility abnormalities such as cranial nerve palsies, gaze palsies, nystagmus, and convergence insufficiency (Hanna et al., 2017). The interventions that are the most effective at relieving symptoms of diplopia caused by these disorders include the use of prisms and occlusion/patching (Hanna et al., 2017).

Impaired Central Vision

Impaired central vision includes reduced visual acuity and decreased contrast sensitivity. It is imperative that OTs ensure patients have access to their eyeglasses or receive a retest for glasses after their stroke (Hanna et al., 2017). If an individual's central vision is still reduced even with glasses correction, low visual aids such as magnifiers may be helpful (Hanna et al., 2017). Additional interventions include advising clients on making the most of their functional

vision through environmental modifications such as task lighting, avoiding clutter and bold patterns, enhancing contrast, and using accessible appliances (Hanna et al., 2017).

Visual Inattention/Neglect

Common interventions for visual inattention/neglect utilized by OTs include non-computerized scanning training, ADL training, and provision of visual aids and environmental/task modifications (Pollock et al., 2011, as cited in Hanna et al., 2017). Currently, the most promising treatment approach includes compensatory scanning therapies.

Case Example

Mabel was a 72-year-old female who sustained a right posterior cerebral artery stroke. Upon initial evaluation, Mabel reported that her goal was to rejoin her mall walking group. She enjoys the physical exercise and camaraderie she receives by walking with friends. The OT determined that Mabel wore glasses before her stroke but did not have her glasses present in the hospital. The OT had her family bring these in for their next session. The next day, the OT utilized the VISA tool to screen for potential visual impairments and identified a potential left homonymous hemianopia. After discussing this finding with Mabel's neurologist, a diagnosis of left homonymous hemianopia was confirmed.

The OT employed various visual scanning and visual search training methods with Mabel using free computer-based programs from Eye-Search and Read-Right. Rehabilitation staff and Mabel's family were educated on these programs to allow Mabel to practice outside of therapy sessions. The OT also provided visual scanning training during functional mobility and ADLs, encouraging Mabel to look to her left and right sides systematically.

Another meaningful occupation of Mabel's is reading her bible. The OT provided her with a typoscope (an inexpensive piece of durable black plastic with a cutout opening) and

educated her on its use. This typoscope enabled Mabel to keep her place on the line and track back to the beginning of the next line. It also provided excellent contrast and reduced the glare reflecting off the page to enable easier reading. Mabel was also educated on using an adjustable lamp with an incandescent bulb placed near to the page, ensuring the light did not shine directly into her eyes or reflect off the page into her eyes. To check for this, the OT educated Mabel on placing a mirror on the page being read and looking to see if the light (preferably turned off) was visible in the mirror. If Mabel could see the light, she would know it was in the wrong spot.

After three weeks of rehabilitation, Mabel was discharged home. She had learned to adapt to her visual field loss by using visual scanning techniques enabling her to safely rejoin her mall walking friends. She was also able to independently set up appropriate lighting to allow her to engage in meaningful occupations. Despite having no recovery of visual field loss, the OT was able to support Mabel in adapting to her visual field loss within weeks of her stroke.

Conclusion

Visual impairment is highly prevalent post-stroke yet is often undiagnosed. OTs play a crucial role in identifying visual deficits, making appropriate referrals, and providing effective interventions. The goal of occupational therapy in treating PSVI is to support clients to compensate and adapt to visual impairments following stroke and enable stroke survivors to continue to engage in meaningful and desired occupations.

Appendix C.1. Poster Proposed for the 2021 IOTA Annual Conference

Exploring the Evidence to Improve Detection of Post-Stroke Visual Impairment



ST. CATHERINE
UNIVERSITY
stkate.edu

Deanna Lensing, MOT, OTR/L, CBIS
St. Catherine University Doctoral Candidate

Introduction

The prevalence of poststroke visual impairment (PSVI) is alarmingly high, with estimates of up to two-thirds of stroke survivors experiencing deficits. However, research indicates that greater than 60% of visual acuity deficits and visuospatial neglect in patients with stroke are undetected by standard clinical practice¹. Thus, many patients with stroke have clinically significant visual impairments that are not being detected, and therefore, are not being adequately addressed. Visual impairments can substantially influence an individual's everyday functioning, safety, social interaction, and quality of life. Without skilled intervention and support, individuals experiencing these deficits may develop reduced self-efficacy, social isolation, and occupational deprivation¹. Immediate assessment and intervention may help to prevent these secondary impairments.

Clinical Question

What visual screening tools have the best validity for predicting occupational performance and informing treatment planning for adults post-stroke?

Methods

- Conducted a level one search for reviews of research **Databases:** Google Scholar and OT Seeker
- Conducted a level two search for primary research studies **Databases:** PubMed, CINAHL, and PsycInfo
- Keywords:** stroke, vision, vision screening, occupational therapy

Themes

Prevalence & Underdiagnosis of PSVI

- Incidence: 60%²
- Prevalence of any type of PSVI: 73%³
 - Visual Field Defects: 20%-57%⁷
 - Eye Movement Disorders: may affect over 70% of stroke patients⁶
 - Impaired Central Vision: 56%⁸
 - Visual Inattention: 27%⁹
- 62% of visual acuity deficits & 61% of visual inattention were undetected by standard clinical practice⁸

Heterogeneity in Assessment Practices

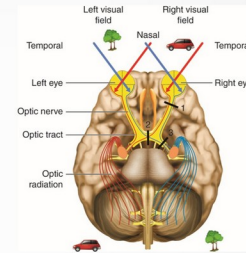
- There is considerable inconsistency in how vision screening is conducted and which assessments are used⁸
- 60% of OTs reported the lack of a visual care protocol/management plan as the largest barrier to the management of PSVI⁵
- The core outcome set for vision screening aims to reduce inconsistency
 - Case history, observations, visual acuity, visual fields, visual inattention/neglect, ocular alignment, ocular motility, reading ability, functional vision⁹

Visual Screening Tools

- The Vision Impairment Screening Assessment (VISA) tool was developed to screen for visual impairments after stroke⁸
 - Case history, visual acuity, eye alignment and movement, visual fields, visual inattention
 - Sensitivity of >88% and specificity of >60%

Role of Occupational Therapy

- Identify potential visual problems early on, initiate appropriate referrals, and educate the patient, caregiver, and stroke team on how the patient's visual impairments may impact their functional recovery and discharge need⁸



Implications for Practice & Research

- OTs should utilize standardized and validated screening measures such as the VISA tool
- The VISA tool is free to access at <http://www.vision-research.co.uk/>
- All stroke survivors should be screened for visual impairment, even if visual deficits are not immediately apparent
- OTs and researchers should measure and report on the domains identified in the core outcome set for vision screening
- If vision screening detects impairment, a referral to an eye care professional should be made
- Results and interpretation of screening and assessment measures should emphasize how the results may affect occupational performance

References

Available upon request

Appendix C.2. Poster References

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Appendix C.3. IOTA Conference Proposal

Title: Exploring the Evidence to Improve Detection of Post-Stroke Visual Impairment

Learning Objectives:

- 1) Describe the role of occupational therapy in screening for post-stroke visual impairment.
- 2) Identify an evidence-based screening tool to improve detection of post-stroke visual impairment.

Abstract:

The prevalence of post-stroke visual impairment (PSVI) is alarmingly high, with estimates of up to two-thirds of stroke survivors experiencing deficits (Rowe, Hepworth, Howard et al., 2019). However, research indicates that greater than 60% of visual acuity deficits and visual-spatial neglect in patients with stroke are undetected by standard clinical practice (Edwards et al., 2006). Thus, many patients with stroke have clinically significant visual impairments that are not being detected, and therefore, are not being adequately addressed. Visual impairments can substantially influence an individual's everyday functioning, safety, social interaction, and quality of life. Without skilled intervention and support, individuals experiencing these deficits may develop reduced self-efficacy, social isolation, and occupational deprivation (Perea et al., 2018). A review of the current literature revealed four themes in relation to the following question: what visual screening tools have the best validity for predicting occupational performance and informing treatment planning for adults post-stroke? This poster presentation will discuss the four themes derived from the literature: (1) the prevalence and underdiagnosis of PSVI; (2) heterogeneity in assessment practices and recommendations to improve consistency; (3) an evidence-based visual screening tool; and (4) the role of occupational therapy in screening for

PSVI. An understanding of these themes is necessary to improve current practice and guide future research in this area.

Appendix C.4. IOTA Poster Presentation Survey

Exploring the Evidence to Improve Detection of Post-Stroke Visual Impairment

Deanna Lensing, PP-OTDS, MOTR/L, CBIS

dmlensing722@stkate.edu*** Required**

1. Content is clear and easy to understand. *

Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

2. Conclusions are stated clearly and supported by research. *

Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree


3. Presenter's response to questions demonstrated knowledge of subject matter and project.

Mark only one oval.

Google Forms

Appendix D.1. MOTA Advertisement of Doctoral Project Presentations

5/10/2021 Knowledge Translation: Advancing Occupational Therapy Practice Across the Lifespan



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Knowledge Translation: Advancing Occupational Therapy Practice Across the Lifespan

Wednesday, May 19, 2021
6:30 PM - 8:30 PM CDT
Category: Events

**Note this topic was offered in February by St. Catherine University OTD students. This course expands on what was presented at that time. This course is appropriate for both those who attended this event in February and those who are new to the content.*

This course will be held live via Zoom.

Timed Agenda

- 6:15-6:30 Check in/tech troubleshooting
- 6:30-7:00 Presentation 1
- 7:00-7:10 Question Session
- 7:10-7:40 Presentation 2
- 7:40-7:50 Question Session
- 7:50-8:20 Presentation 3
- 8:20-8:30 Question Session and wrap up

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Tue May 11, 2021

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Wed May 19, 2021

[Knowledge Translation: Advancing Occupational Therapy Practice Across the Lifespan](#)

Category: Events

Tue May 25, 2021

[Tech for Healthy Aging](#)

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5/10/2021 Knowledge Translation: Advancing Occupational Therapy Practice Across the Lifespan

Event Description:

St. Catherine University is proud to present three doctoral projects. Students will share the work and learning they have acquired in pursuit of their post professional OTD degrees. Each student will share the evidence and best practices related to their topic, and the knowledge translation projects they have created in the process. The topics are:
Mental Health and Adolescents: Addressing Mental Health Promotion through Occupational Therapy Screening for Post-Stroke Visual Impairment: Implications for Occupational Therapy Practice
Caregiver Burden and Dementia: Three Knowledge Translation Projects Focusing on Caregiver Education in the Community

Speaker Biographies:

Sarah Greene is a practicing occupational therapist and current post-professional doctorate student at St. Catherine University. Most of her almost 20 years career in occupational therapy has been in pediatrics. Currently, she works within school-based services. Sarah graduated in 2001 with her BA in occupational therapy and psychology from the College of St. Catherine, and completed her Masters of Science in Occupational Therapy from Mount Mary University in 2019.

Deanna Lensing is a current student in the post-professional Doctor of Occupational Therapy program at St. Catherine University. Deanna graduated with her master's degree in occupational therapy from St. Ambrose University in 2017. Deanna is a certified brain injury specialist and has spent the last four years working in a stroke specialty certified acute rehabilitation unit.

Kate Turner is an OT working with older adults in TCU, skilled nursing and home health. Kate graduated from St. Catherine University with her masters in occupational therapy in 2015. In 2019, Kate returned to St. Catherine's to pursue her post-professional Doctor of Occupational Therapy degree. Kate's interest areas include aging adults, healthy aging, community access, and caregiver support.

Learning Objectives

Presentation 1: Mental Health and Adolescents: Addressing Mental Health Promotion through Occupational Therapy

- Investigate definitions, resources, research, policies, and implementation strategies to address mental health promotion through multi-tiered systems of support
- Identify and utilize research and resource to advocate for the role of occupational therapy in mental health

https://mota.memberclicks.net/index.php?option=com_events&task=calendarrepeat.detail&sevid=162&Itemid=115&year=2021&month=05&day=19&title=knowledge-translation-advancing-occupational-thera... 2/4

Website Suggestions

Welcome to MOTA's website! MOTA is continually working on updating information and would like to modify the website to include information members want as well and useful resources for the public. If you find any errors on the website or have website suggestions, please email them to:
UpdateMOTASite@gmail.com

Job Board

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5/10/2021

Knowledge Translation: Advancing Occupational Therapy Practice Across the Lifespan

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Presentation 2: Screening for Post-Stroke Visual Impairment: Implications for Occupational Therapy Practice

- Articulate the role of occupational therapy in screening for post-stroke visual impairment
- Identify an evidence-based vision screening tool for stroke survivors

Presentation 3: Caregiver Burden and Dementia: Three Knowledge Translation Projects Focusing on Caregiver Education in the Community

- Define the role of occupational therapy in caregiver education within the population of caregivers of people with dementia.
- Discuss some of the caregiver education programs currently in use that utilize occupational therapy.

Our Sponsors**Target Audience:** All**Educational Level:** Intermediate**AOTA Practice Area:** Evidence Based Practice and Research across Children and Youth/Mental Health, Rehabilitation and Disability, Productive Aging**CEUs:** 2**Fees:** \$5 MOTA members/\$40 non-members**[REGISTER HERE](#)****Contact:** info@motafunctionfirst.org[Download as iCal file](#)

Appendix D.2. Doctoral Project Narrated Slide Presentation**Slide 1**

Screening for Post-Stroke Visual Impairment: Implications for Occupational Therapy Practice

Deanna Lensing, OTDS, MOTR/L, CBIS

*Doctoral Committee Members:
Darla Coss, OTD, OTR/L, CHT
Susan Hoey, OTD, MS, OTR/L
Teresa Wickboldt, OTD, OTR/L*

ST. CATHERINE UNIVERSITY

Narration.

Good evening, my name is Deanna Lensing, and I am an occupational therapist and certified brain injury specialist. I am currently the clinical coordinator of a stroke specialty certified acute rehabilitation unit in Iowa. This presentation will discuss the evidence and best practices related to screening for post-stroke visual impairment (hereafter referred to as PSVI), the three knowledge translation projects I have created, and the learning I have acquired in pursuit of my post-professional OTD degree.

Slide 2

Background

- Personal practice problem
- Unit-wide practice problem
- Is there a need for knowledge translation?
- Knowledge Translation
 - “the synthesis, exchange, and application of knowledge by relevant stakeholders to accelerate the benefits of global and local innovation in strengthening health systems and improving people’s health” (WHO, 2021)

ST. CATHERINE UNIVERSITY

Narration.

I began working in an acute rehabilitation unit close to four years ago. After having worked there for nearly two years, I began to have more time to reflect on my practice as an occupational therapist and decipher areas of my practice in need of improvement. One area I identified as being an opportunity for growth was in my assessment and management of visual impairments, particularly in my patients with stroke.

Shortly after I identified this as a personal practice problem, the Commission on Accreditation of Rehabilitation Facilities (CARF) came to survey our unit. This was the first time our unit earned the designation of a stroke specialty certified rehabilitation facility. As such, the surveyors recommended that we do more to address the vision needs of our stroke patients. Therefore, this topic was no longer just a personal practice problem, but a unit-wide practice problem.

When considering this topic for a potential doctoral project, I first needed to determine if this topic was in need of knowledge translation or if knowledge translation activities would be beneficial. The World Health Organization defines knowledge translation as “the synthesis, exchange, and application of knowledge by relevant stakeholders to accelerate the benefits of global and local innovation in strengthening health systems and improving people’s health.” Health care providers recognize the importance of using research in their day-to-day practice and the overall impact this can have on the health of their clients. However, effectively using research knowledge in practice can be challenging, as there are many barriers to this process, often leading to a “gap” between knowledge and practice. Knowledge translation is important in bridging this gap so that patients can benefit optimally from advances in research evidence.

Slide 3

Need for Knowledge Translation

- Many therapists do not know what to do after reading guideline recommendations (Muskey et al., 2013)
- One survey of stroke and eye care professionals found that only 22% utilized screening tools (Rowe et al., 2013)
- Only 1/3 reported providing information on PSVI to patients/caregivers (Rowe et al., 2013)
- 40% did not feel, or only slightly felt, the existing evidence base influenced their assessment or management of visual problems (Rowe et al., 2013)
- Stroke survivors, caregivers, and clinicians have reported the need for improved education (Rowe, 2017)

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Narration.

To determine if this topic would benefit from knowledge translation activities, I began to investigate the barriers and enablers to implementing stroke guideline recommendations. Research showed that gaps in knowledge and skill are common and that many therapists did not know what to do after reading a guideline recommendation. This is likely because few clinical practice guidelines provide clinicians with information on how to implement clinical practice guidelines into rehabilitation. One survey of ophthalmic and stroke professionals found that only 22% of the 548 professionals surveyed utilized screening tools to detect visual impairments. Additionally, despite factsheets and pamphlets on PSVI being widely available on the internet, only 1/3 of survey respondents reported providing these to patients or caregivers. This finding was reinforced with a qualitative study in which stroke survivors and their caregivers reported not receiving specific information on their visual impairment or information on available resources and supports. When asked about the existing evidence base, up to 40% of survey respondents did not feel, or only slightly felt, this influenced their assessment or management of visual problems. Furthermore, stroke survivors, their caregivers, and clinicians have reported the need for improved education to promote increased knowledge and awareness of post-stroke visual impairment. Taking this information into consideration, I determined that there was a significant need for knowledge translation activities in relation to this topic.

Slide 4**Review of Evidence: Prevalence & Underdiagnosis of PSVI**

- Incidence: 60% (Rowe, Hepworth, Howard, et al., 2019)
- Prevalence: 73%
 - Impaired central vision: 56%
 - Eye movement abnormalities: 40%
 - Visual field loss: 28%
 - Visual inattention: 27%
 - Visual perceptual disorders: 5%

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Narration.

My next step was to conduct a systematic literature review of screening methods for PSVI. A review of the current literature revealed four themes. The first of these themes was the prevalence and underdiagnosis of PSVI. In a prospective, epidemiology study, the authors found that 60% of stroke survivors had new onset visual sequelae. Researchers also analyzed the prevalence of specific visual deficits. Nearly three quarters of participants had visual problems: 56% had impaired central vision (such as reduced visual acuity and decreased contrast sensitivity), 40% had eye movement abnormalities, 28% had visual field loss, 27% had visual inattention, and 5% had other visual perceptual disorders. Only 27% of the participants were not found to have visual deficits.

Slide 5**Review of Evidence: Prevalence & Underdiagnosis of PSVI**

- PSVI is often overlooked and neglected
- Greater than 60% of visual acuity deficits and visual - spatial neglect in patients with stroke are undetected by standard clinical practice (Edwards et al., 2006)
- Stroke survivors have reported being unaware that their vision could be affected by stroke (Rowe, 2017)

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Narration.

Despite the high rates of PSVI, deficits are often overlooked and neglected by rehabilitation clinicians, leading to visual impairments being significantly under-diagnosed. A study by Edwards et al. (2006) found that systematic screening using standardized measures, identified significantly more impairments than standard clinical practice. For example, 62% of visual acuity deficits and 61% of visual inattention were undetected through routine clinical practice but were identified through systematic screening within ten days of acute stroke.

Many stroke survivors and their caregivers have echoed concerns regarding the under-diagnosis of PSVI. Qualitative studies have reported frustration among stroke survivors and their caregivers that clinicians overlook their visual impairment and focus their attention on other disabilities first, such as hemiparesis, aphasia, and dysphagia. Stroke survivors have reported being unaware that their vision could be affected by stroke and said that clinicians were inattentive to the possible presence of visual impairment. Visual impairment has been described by many as a hidden disability, and many stroke survivors feel they would have been treated differently if clinicians could see their visual impairment.

Slide 6**Review of Evidence: Inconsistent Assessment Practices**

- Inconsistency in how vision screening is conducted and which assessments are used (Hanna et al., 2016)
- Core Outcome Set for Vision Screening
 - Aims to reduce heterogeneity in clinical practice
 - 9 domains
 - Case history, observations, visual acuity, visual fields, ocular alignment, ocular motility, visual inattention/neglect, reading, and functional vision (Rowe, Hepworth, & Kirkham, 2019)

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Narration.

The second theme identified through a review of the literature was heterogeneity in assessment practices and recommendations to improve consistency. There is considerable inconsistency in how vision screening is conducted and which assessments are used. This has been hypothesized to be due to the absence of universally agreed-upon detailed guidelines for visual assessment and no best practice recommendations for specific assessments.

Core outcome sets for vision screening aim to reduce heterogeneity in clinical practice by improving the standardization and accuracy of vision assessment, facilitating future research synthesis, and facilitating comparison across studies. Results of a Delphi study determined that vision screening should be performed by healthcare professionals who are on the stroke team (but not eye professionals, such as OTs) and include the following nine domains: case history, observations, visual acuity, visual fields, ocular alignment, ocular motility, visual inattention/neglect, reading, and functional vision.

Slide 7

Review of Evidence: Vision Screening Tools

- No standardized visual screening tool that could accurately assess all potential PSVI (Hanna et al., 2016)
- The efficacy of screening tools was reduced when administered by non-eye care professionals (Hanna et al., 2016)
- Development of the Vision Impairment Screening Assessment (VISA) tool (Rowe et al., 2020)

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Narration.

The third theme identified was vision screening tools. The systematic review by Hanna et al. (2016), concluded that there was no standardized visual screening tool that could accurately assess all potential PSVI and that the efficacy of various screening tools was significantly reduced when administered by non-eye care professionals. The Vision Impairment Screening Assessment (VISA) tool was subsequently developed to screen for visual impairments post-stroke to fill this gap and was designed to include screening for all domains identified in the new core outcome set for vision screening. The VISA tool is available in print and as a software application. Both formats consist of five sections. Section one consists of a case history with questions and observations. If the patient is unable to provide a case history, family members/caregivers are consulted. Observations are taken of eyelids, pupils, head position, and other visual signs. Section two assesses visual acuity at near and distance. Section three screens for eye alignment and movement using corneal reflections and observations of smooth pursuits. Section four assesses visual fields, and section five assesses visual inattention using line bisection, clock drawing, and a cancellation task.

Measurement characteristics of the VISA tool were established in a psychometric study. Researchers conducted a study to validate the VISA tool against the gold standard of vision assessment conducted by experienced orthoptists. Results of the study showed that referral to specialist eye services based on the results of the VISA tool had overall sensitivity and specificity of >88% and >60% respectively and positive and negative predictive values of >93% and >68%, respectively.

Slide 8

Review of Evidence: Role of Occupational Therapy

- Occupational therapists identify potential visual problems early-on, initiate referrals, & provide education (Herron, 2016)
- Studies support occupational therapy's role in screening for PSVI (Edwards et al., 2006; Herron, 2016; Rowe et al., 2020)
- Key areas where occupational therapists can assess are functional vision & visual inattention (Rowe, Hepworth, & Kirkham, 2019)

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Narration.

The fourth and final theme I identified was the role of OT in screening for PSVI. OTs are in a unique position to identify potential visual problems early-on, initiate appropriate referrals, and educate the patient, their caregiver, and the stroke team on how the patient's visual impairments may impact their functional recovery and discharge needs. Eye care professionals are rarely core members of the inpatient stroke care team, and while other stroke team members, such as doctors, nurses, and physical therapists may consider and assess aspects of vision, occupational therapists consider the initial assessment of vision, subsequent treatment, and appropriate referrals to be a core part of their role.

Multiple studies have been conducted that support OT's role in screening for PSVI. In the study by Edwards et al. (2006), OT students were able to screen patients with stroke and identify clinically relevant visual impairments that would have otherwise gone unnoticed, indicating a role for OTs in screening all patients with stroke. A retrospective study supported OT's validity in accurately screening for visual deficits and making appropriate referrals (Herron, 2016). There was a strong correlation between the number of functional symptoms observed by OTs and the number of visual diagnoses made by the optometrist, suggesting that through functional observations and vision screening, OTs can effectively identify patients with visual impairments. The role of OTs in vision screening has also been acknowledged by expert consensus that specific domains of the core outcome set for vision screening, such as functional vision and visual inattention assessments, are key areas where OTs can assess. A role for OT in screening was further supported by findings in a study that showed that screening by stroke clinicians using the VISA tool accurately detected vision problems that were later confirmed in formal eye examinations.

Slide 9

Aims for 3 Knowledge Translation Projects

- Long-term Objective:
 - For all stroke survivors with visual impairment to be identified using evidence-based, systematic screening methods to allow for the provision of targeted intervention to maximize recovery & QoL

- 1. Inform OTPs and OT students of the EBP process, the literature regarding screening methods for PSVI, and best practice recommendations through a 30 -minute virtual continuing education session via the MOTA

ST. CATHERINE UNIVERSITY

Narration.

As part of this doctoral project, I created three knowledge translation projects. The long-term objective of this work is for all stroke survivors with visual impairment to be accurately identified using evidence-based, systematic screening methods to allow for the provision of targeted intervention to maximize recovery and quality of life. The aim of my first knowledge translation project was to inform OT practitioners and OT students of the evidence-based practice process, the literature regarding screening methods for PSVI, and best practice recommendations derived from the best currently available evidence through a 30-minute virtual continuing education session via the Minnesota Occupational Therapy Association.

Slide 10

Aims for 3 Knowledge Translation Projects

2. Increase awareness of PSVI and applicable screening methods and protocols for adults with stroke among OTPs and OT students through an article submitted for publication in the AOTA's Rehabilitation and Disability Special Interest Section *Quarterly Practice Connection*

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Narration.

The aim of the second knowledge translation project was to increase awareness of stroke-related visual impairments and applicable screening methods and protocols for adults with stroke among OT practitioners and OT students through an article submitted for publication in the American Occupational Therapy Association's Rehabilitation and Disability Special Interest Section Quarterly Practice Connection.

Slide 11

Aims for 3 Knowledge Translation Projects

3. Raise awareness among current and future OTPs concerning the underdiagnosis of PSVI and provide best practice recommendations by presenting a poster at the 2021 IOTA annual conference

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Narration.

Finally, the aim of the third knowledge translation project is to raise awareness among current and future OT practitioners concerning the underdiagnosis of PSVI and provide best practice recommendations derived from a review of the literature by presenting a poster at the 2021 Iowa Occupational Therapy Association annual conference.

Slide 12

Summary of 1st Knowledge Translation Project

- Description
 - Virtual continuing education session via Zoom
- Audience
 - OTPs, OT students, & OT educators
 - 43 attendees
- Learning Objectives
 - Discuss the common visual consequences of stroke and their relative prevalence
 - Apply the core outcome set for vision screening to reduce inconsistencies in practice
 - Articulate the role of OT in screening for PSVI

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Narration.

For my first knowledge translation project, I presented a 30-minute virtual continuing education session followed by ten minutes for questions and discussion via Zoom as part of a collaboration between St. Catherine University and MOTA. I presented this continuing education session alongside my two classmates, who presented their respective knowledge translation projects. My presentation focused on my evidence-based literature review of screening for visual impairment in adults post-stroke. The presentation highlighted the steps of the EBP process, including the formation of a clinical question, database searches, critical appraisals, use of a literature matrix, identification of themes, and implications for practice and research.

The audience consisted of OT practitioners, students, and educators. A virtual video conferencing platform was necessary for this event to follow safe social distancing practices, as this occurred during the COVID-19 pandemic. This event was available to MOTA members and non-members. A total of 43 people attended the presentations. Participants registered for the event through MOTA were sent a brief quiz to verify attendance and were able to earn two continuing education units.

Slide 13

Summary of 2nd Knowledge Translation Project

- Description
 - Article submitted for publication in AOTA's Rehabilitation & Disability SIS *Quarterly Practice Connection*
- Audience
 - OTPs & OT students who are members of AOTA with interests in rehabilitation, disability, & participation
- Learning Objectives
 - Define OT's role in screening for PSVI at an early time -point post-stroke
 - Identify evidence -based screening tools to improve accurate detection of PSVI
 - Describe evidence -based interventions for PSVI to improve functional recovery

ST. CATHERINE UNIVERSITY

Narration.

For my second knowledge translation project, I submitted an article for publication in AOTA's Rehabilitation and Disability SIS Quarterly Practice Connection. In preparation for writing this article, I utilized the AOTA SIS author guidelines to understand the mission and purpose of the Rehabilitation and Disability SIS. I then found the contact information for the Editor of the SIS and emailed her my idea for an article to inquire about whether this topic would be a good fit for the publication. After a follow-up email, the Editor responded with guidance on framing the article and specific sections to include in the paper. I used this information to develop an initial draft of a manuscript that I then emailed to the Editor for review. The article was framed around how OTs can and should implement evidence in practice. The article included information regarding the prevalence of PSVI and occupational needs of clients with PSVI, an evidence-based screening tool OTs should use, evidence-based interventions for common visual impairments experienced post-stroke, and a case example. This article focused on the role and application of research and evidence to support practice.

The audience for this article will be the readers of the Rehabilitation and Disability SIS Quarterly Practice Connection. The intended audience is primarily OT practitioners and students who are members of AOTA and work in or are interested in practice areas focused on rehabilitation, disability, and participation. This venue was chosen as it provides for wide-spread knowledge dissemination as it is a national publication.

Slide 14

Summary of 3rd Knowledge Translation Project

- Description
 - Poster submitted for presentation at the 2021 IOTA annual conference
- Audience
 - OTPs, OT students, & OT educators attending the 2021 IOTA annual conference
- Learning Objectives
 - Describe the role of OT in screening for PSVI
 - Identify an evidence -based screening tool to improve detection of PSVI

ST. CATHERINE UNIVERSITY

Narration.

For my third knowledge translation project, I aim to complete an in-person professional poster presentation at the 2021 IOTA annual conference. This poster presents the findings of my evidence-based literature review of screening for PSVI and highlights the four primary themes that emerged and their implications for practice and research. After I finished developing the poster, I submitted an online proposal to present a poster at IOTA's 2021 annual fall conference. This proposal consisted of a title, learning objectives, and a one-paragraph abstract of my poster. The audience for my poster presentation will be OT practitioners, students, and educators attending the conference.

Slide 15

Evaluation and Outcomes: KT Project #1

- Virtual continuing education session
 - Six-question Google Forms survey using a five-point Likert scale
 - 19 responses
 - Comments
 - Excellent work! Very important topic
 - This is an area that really affects occupation; thank you for addressing it
 - Thank you for doing more research in this needed area. Your presentation was great!
 - Thank you! I'm glad you did this research and that hopefully more visual deficits will be identified moving forward!
 - Great presentation! You should be proud!

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Narration.

To evaluate the effectiveness of my first knowledge translation project, I created a six-question survey via Google Forms. The first five questions utilized a five-point Likert scale. The first three questions asked participants to rate how well the presentation met the three learning objectives, and the following two questions asked participants to rate how well the presentation's content was organized and how well the presenter communicated the information. The final question was optional and asked participants to provide any further comments or suggestions. A link to this Google Forms survey was provided to participants in the Zoom chat box during and after my presentation. Completion of the survey was optional, but feedback was requested. Nineteen participants completed the survey. I received a total of five comments, all of which were positive in nature.

Slide 16

Evaluation and Outcomes: KT Project #1

Please indicate how well the presentation met the following learning objectives:	
1. Discuss the common visual consequences of stroke and their relative prevalence	4: 4 (21.1%) 5: 15 (78.9%)
2. Apply the core outcome set for vision screening to reduce inconsistencies in practice	4: 4 (21.1%) 5: 15 (78.9%)
3. Articulate the role of OT in screening for PSVI at an early time-point post-stroke	4: 4 (21.1%) 5: 15 (78.9%)
How well was the content of the presentation was organized?	4: 3 (15.8%) 5: 16 (84.2%)
Overall impression of the presenter's ability to communicate this information.	4: 5 (26.3%) 5: 14 (73.7%)

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Narration.

This table showcases the remaining results from the Google Forms survey. When rating how well the presentation met each of the three learning objectives, four respondents selected 4 and 15 respondents selected 5. In response to how well the content of the presentation was organized, 3 people rated it as a 4 and 16 people rated it as a 5. When rating their overall impression of the presenter's ability to communicate the information, 5 people rated it as a 4 and 14 as a 5.

Slide 17

Evaluation and Outcomes: KT Projects 2 and 3

- KT Project #2: Article submitted to the *Quarterly*
 - Evaluation Method
 - Editorial review process
- KT Project #3: Poster submitted to IOTA
 - Evaluation Method
 - Initial review of poster description for acceptance as a poster presentation for the 2021 IOTA conference
 - 5-question Google Forms survey

ST. CATHERINE UNIVERSITY

Narration.

The primary method of evaluating my second knowledge translation project is the editorial review process required of the publication venue. At this time, the Editor has reviewed the initial draft of my manuscript. She reported that she does think it has potential but needs revision to be considered for publication. After completion of this doctoral program, I will revise the draft based on her feedback and re-submit it to her. If accepted, the article will be further edited by AOTA's Communications staff.

The evaluation method for my third knowledge translation project will be two-fold. The first evaluation will consist of the initial review of my poster description for acceptance as a poster presentation for the 2021 IOTA annual conference. For the second portion of the evaluation, I plan to have viewers of my poster complete a brief, five-question survey. This survey will consist of four, Likert-style questions evaluating my knowledge translation project in terms of content and presentation and one question asking for any additional comments or suggestions.

Slide 18

Recommendations & Implications for OT

- Visual screenings should be performed on all individuals with stroke
- Interpretation of screening measures should emphasize how the results may affect occupational performance (Gutman & Schonfeld, 2009)
- OTPs and researchers should assess all domains identified in the core outcome set for vision screening
- OTs should utilize standardized and validated screening measures
- VISA tool is free -to-access at www.vision-research.co.uk

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Narration.

In completion of this doctoral project, several implications for OT practice have become clear. Visual impairments can influence an individual's everyday functioning, safety, social interaction, and quality of life. Without skilled intervention and support, individuals experiencing these deficits may develop reduced self-efficacy, social isolation, and occupational deprivation. Immediate assessment and intervention may help to prevent these secondary impairments. Therefore, visual screenings should be performed on all individuals with stroke, even if visual deficits are not immediately apparent. If vision screening detects impairment, a referral to an eye care professional should be made. Results and interpretation of screening and assessment measures should emphasize how the results may affect occupational performance and not merely how much the results deviate from the norm. Occupational therapists are well-positioned to address this critical need for stroke survivors and provide necessary information to stroke survivors, their caregivers, and the stroke care team on the impact the patient's visual impairment may have on their functioning and discharge needs. Occupational therapy practitioners and researchers should measure and report on the domains identified in the core outcome set for vision screening. Occupational therapists should utilize standardized and validated screening measures such as the VISA tool to improve PSVI detection and optimize rehabilitation outcomes for all patients with stroke. The VISA tool is free-to-access at www.vision-research.co.uk.

Slide 19**Reflection**

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Narration.

When reflecting on my growth and learning over the past two years, two aspects stick out the most. The first is to be brave and bold. Completing this doctoral project required me to reach out to potential mentors, editors, professors, and researchers both domestically and internationally. These are people I would have ordinarily thought are too big or too busy for me, but I have been amazed at the positive responses I have received from these cold call emails and the relationships that have developed in response.

The second aspect that sticks out to me is how transferrable the skills I have gained during completion of this doctoral project are. While I focused my scholarly work primarily on screening for visual impairments post-stroke, the skill set I gained can be applied to any line of inquiry I choose to pursue in the future. This summer, I will be moving to Columbus, OH and beginning work in hand therapy. I feel more prepared to make this transition because I have improved my skills and confidence in reaching out to mentors in the field and following the steps of the evidence-based practice process to answer any clinical questions or practice dilemmas I may have in a new area of practice.

Slide 20

Next Steps

- Continue working with the editor of the Rehabilitation and Disability SIS
- Hopefully present at the IOTA conference this fall
- One Proposed Future Knowledge Translation Project
 - Stroke-Related Vision Impairment: Client Education Materials

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Moving forward, I will continue working with the editor of the Rehabilitation and Disability SIS to make the necessary revisions to my article to be considered for publication. Additionally, I am waiting to hear back from IOTA regarding acceptance of my poster description, but I do hope to be able to present at the IOTA conference in-person this fall.

When thinking about additional potential avenues for knowledge translation, the first that comes to mind is creating client educational materials. Stroke survivors and caregivers have reported not receiving information on their specific visual impairments or on available resources and supports. They have reported that generic information on visual impairment after stroke is not helpful and request more specific information and honesty about the likely prognosis or potential recovery of their vision. A future knowledge translation project could aim to address these needs in the form of client educational materials.

Slide 21

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- Parents Dave and Deb Lensing; sister Erica Schmitt
- Classmates Sarah Greene and Kate Turner

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Slide 22



Thank You

Any questions? Please ask!

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Thank you all very much for listening, and I would be happy to answer any questions at this time.

Slide 23

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