

Understanding Occupational Therapists' Knowledge and Confidence When Assessing for Spatial Neglect: A Special Issue Review

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Importance: Spatial neglect (SN)—failure to respond to stimuli on the side of the body contralateral to a poststroke lesion—is one of the most disabling impairments for stroke survivors, and 80% of stroke survivors may have undetected SN. Occupational therapists' evaluations should include determining the impact of poststroke SN.

Objective: To investigate occupational therapists' confidence, knowledge, current practices, barriers, and facilitators when assessing for SN in adult stroke survivors.

Design: A 30-item survey was created with guidance from stroke rehabilitation occupational therapists who reviewed the survey for face and content validity.

Setting: Online survey.

Participants: Occupational therapist survey responders ($N = 76$).

Outcomes and Measures: Self-report assessments were used to measure occupational therapists' confidence in identifying SN, SN assessment practices, and barriers to and facilitators of SN assessment. Knowledge of SN signs and symptoms, neuroanatomy, and clinical presentation were measured with a three-question quiz.

Results: Eighty-one percent of the respondents reported a high level of confidence in identifying SN, and 70% reported routinely assessing for SN, with 81% using clinical observation rather than standardized tools as the primary assessment method. Barriers to SN assessment included time and resources.

Conclusions and Relevance: Most respondents, despite reporting high levels of confidence with routine SN assessments, did not use standardized SN measures and demonstrated suboptimal knowledge of SN. These results emphasize the need to increase clinical education about SN and its assessments.

Plain-Language Summary: This study gathered baseline information on an underinvestigated topic—occupational therapists' education, confidence, current practices, barriers, and facilitators when assessing for spatial neglect in adult stroke survivors. The study results also contribute to future research on occupational therapists' current confidence and knowledge when assessing for spatial neglect.

Gasque, H., Morrow, C., Grattan, E., & Woodbury, M. (2024). Understanding occupational therapists' knowledge and confidence when assessing for spatial neglect: A special issue review. *American Journal of Occupational Therapy*, 78, 7802180140. <https://doi.org/10.5014/ajot.2024.050354>

Stroke affects more than 795,000 people annually in the United States and is a leading cause of disability (Tsao et al., 2022). Stroke survivors frequently experience motor, cognitive, and sensory impairments (Russell et al., 2018). Spatial neglect (SN) is one of the most common impairments, affecting approximately 68.7% of stroke survivors (Hreha et al., 2020). Defined as the failure to respond to stimuli on the side of the

body contralateral to the lesion (Heilman et al., 2000), SN potentially restricts participation in meaningful activities (Kerkhoff & Schenk, 2012). There are different subsets of SN, including personal, peripersonal, extrapersonal, allocentric, egocentric, attentional, and motor intentional (Buxbaum et al., 2004; Rorden et al., 2012). Researchers hypothesize that 80% of stroke survivors may have undetected SN (Sarwar & Emmady, 2023).

On interprofessional stroke care teams, the unique role of the occupational therapist is to evaluate the impact of stroke-related impairment on survivors' daily functioning (Winstein et al., 2016). The occupational therapy evaluation should assess for SN because it affects patient safety, reduces independence with activities of daily living (ADLs) and restricts instrumental activities of daily living (IADLs; Chen et al., 2015; Hammerbeck et al., 2019; Kerkhoff & Schenk, 2012). Accurate assessment of SN could lead to potential increased patient quality of life and safety (Chen et al., 2013).

Checketts et al. (2021) found that various health care professionals use a wide range of SN assessments, including the clock drawing test (Adunsky et al., 2002) and the Line Bisection, Star Cancellation, Figure Drawing, and Letter Cancellation subtests of the Behavioral Inattention Test (Wilson et al., 1987). Checketts et al. also found that occupational therapists do not show consistent clinical use of standardized assessments regarding SN. Potential reasons for inconsistencies include an inability to recognize signs of neglect, a lack of confidence in assessing neglect, and a lack of knowledge administering neglect assessments (McCluskey et al., 2013; Menon-Nair et al., 2006, 2007). McCluskey et al. (2013) found that Australian occupational therapists lack confidence in their ability to assess and treat neglect, and they noted a gap in therapists' assessment skills. Therefore, occupational therapists in the United States may also be unable to recognize signs of SN, have reduced confidence in assessing it, or lack knowledge about how to administer SN assessments (Mathisen et al., 2021; Vancleef et al., 2022). The purpose of this descriptive project was to investigate occupational therapists' confidence, knowledge, current practices when assessing for SN, and barriers to and facilitators of assessing for SN in adult stroke survivors. We developed a survey with the aim of understanding occupational therapists' identification and assessment of SN because of its prominence in the stroke population.

Method

Research Design

A sample of occupational therapists was recruited online through professional discussion boards, social media sites, and clinical networks. The project was screened by the local institutional review board and deemed to be a quality-improvement project.

Inclusion and Exclusion Criteria for Respondents

Occupational therapists were included if they worked with adult stroke survivors in any setting. They were excluded if they (1) worked with a pediatric population, (2) had not worked with a stroke survivor in the past year, or (3) did not anticipate working with a stroke survivor in the next 6 mo. The target sample size was 100 respondents. This number was based on

a literature review showing that for similar types of surveys the number of respondents ranged from 100 to 500 (Burgess & Jewell, 2018; Evald et al., 2021; Korner-Bitensky et al., 2011; Reyes & Brown, 2016).

Survey instructions reminded the respondents that participation was voluntary, that no private health information would be collected, and that all results would remain anonymous.

Procedure and Variables

A 30-item survey was created using Research Electronic Data Capture (REDCap; Harris et al., 2009), with guidance from seven experienced stroke rehabilitation occupational therapists who reviewed the survey for content and face validity. These occupational therapists each had more than 10 yr of experience working in stroke rehabilitation, including teaching graduate-level courses focusing on poststroke SN and conducting and analyzing research on poststroke SN. These occupational therapists provided feedback on the survey's usability (e.g., reduce the number of open-ended questions, add Likert rating scales, and revise wording for clarity).

The survey was distributed through online sites to recruit study participants with a QR code, a hyperlink, or both. Snowball sampling was used to further increase the sample size by inviting recipients to forward the link to clinicians in their professional networks (Burgess & Jewell, 2018). The survey was available for 32 days.

The survey collected quantitative and qualitative data. For the quantitative assessment, it included multiple-choice, fill-in-the-blank, 5-point Likert scale, and yes-no questions. We used Brown's (2010) examples for Likert surveys to create 5-point Likert scales. A free-text box was provided for qualitative clarification as needed for questions that included "Other" as an answer choice. Occupational therapists were unable to change answers because of the absence of a browser "back" button to enhance or encourage initial answers. The survey acquired information about respondents' demographics, current SN assessment practices, perceived confidence of assessing SN, and facilitators and barriers when assessing for SN.

Demographics

Demographic variables included years of practice in the field of occupational therapy, current state of practice, state of attendance for occupational therapy school, patient population, highest level of education, and current practice setting. Using the most recent data from the U.S. Census Bureau (n.d.), respondents' current state of practice were sorted into regions.

Perceived Confidence of Assessing SN

This was assessed with eight questions, with each question rated on a 5-point scale ranging from *novice to expert, very difficult to very easy, or not confident at all to completely confident*.

Current SN Assessment Practices

This was assessed using a five-question survey, with two questions rated on a 5-point rating scale (ranging from *never* to *always*) and three multiple-choice questions that included an option for free text. The survey respondents could choose multiple options for how they assess for SN.

Facilitators and Barriers When Assessing for SN

This was assessed with two multiple-choice questions that included an option for free text. Interviews were conducted with experienced occupational therapists to obtain their opinions concerning facilitators and barriers when assessing for SN. We used available evidence (Checketts et al., 2021; Chen et al., 2013; McCluskey et al., 2013; Menon-Nair et al., 2006) to obtain a list of potential facilitators and barriers. Occupational therapists with expertise in stroke rehabilitation reviewed the list to confirm inclusion. They were asked, "Please answer 'yes,' 'no,' or 'unsure' and briefly elaborate on your answer." The key findings from the interviews were used as multiple-choice questions.

Knowledge of SN

We created a three-question quiz to assess occupational therapists' SN knowledge (Table 1). Each

question had three to five correct responses. One point was given for each correct choice. The results were recorded as the aggregate number of points out of a total of 14 points. A passing score was designated as 10 out of 14, or 71% correct.

Data Analysis

Participant responses were exported from REDCap to Microsoft Excel and SAS (Version 9.4) for analysis. Continuous variables were reported as means with standard deviations, and categorical variables were reported as frequency counts with percentages (Trochim, 2020). Frequency counts were rounded to the nearest whole number. For those who reported "<1 year," the response was changed to a "0.5" continuous variable for data analysis purposes. All survey data were evaluated collaboratively by the research team in consultation with the panel of experienced stroke rehabilitation occupational therapists.

Results

Demographics

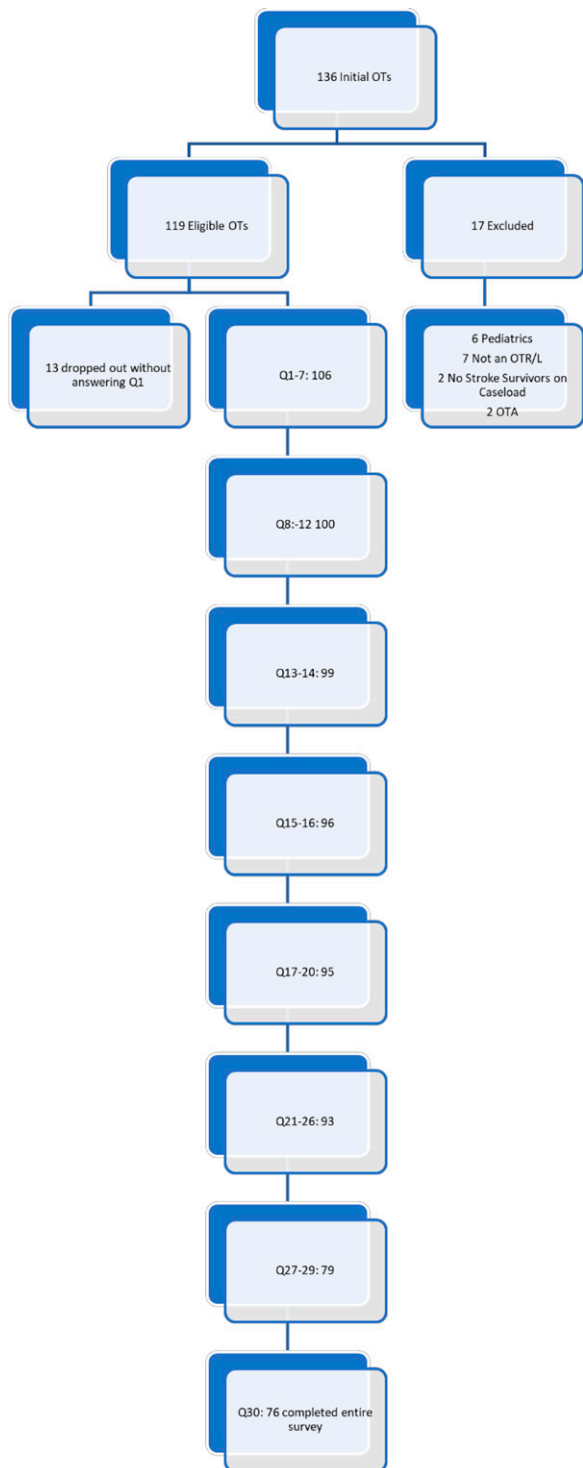
As shown in Figure 1, 136 occupational therapists opened the survey, 13 immediately discontinued, 17 were excluded, and 30 spontaneously dropped out.

Table 1. Knowledge Check Survey Questions and Correct Answers

Question	Response Options
1. What are common signs/symptoms of SN? Select all that apply. (Rode et al., 2017)	1. Head tilt/abnormal posture 2. Gaze deviation 3. Ignore stimuli/objects on affected side 4. Ignore affected side of body 5. Symptoms pronounced when task demands increase 6. I don't know 7. None of the above Correct answers: 1, 2, 3, 4, and 5
2. An infarct in which areas of the brain can result in SN? Select all that apply. (Karnath et al., 2011)	1. Inferior/posterior parietal lobe 2. Inferior frontal gyrus 3. Superior/middle temporal gyrus 4. Basal ganglia 5. White tracts 6. I don't know 7. None of the above Correct answers: 1, 2, 3, 4, and 5
3. In which of the following cases does the patient demonstrate SN? Select all that apply. (Buxbaum et al., 2004; Chechlacz et al., 2016; Chokron et al., 2020; Corbetta & Shulman, 2011; Coslett, 2018; Kamtchum-Tatuene et al., 2017; Peck & Goldberg, 2018)	1. The patient demonstrates inattention to one side. 2. The patient fails to report or respond to stimuli presented on the affected side opposite the lesion. 3. The patient reports loss of sight in half of their visual field. 4. The patient reports seeing two images of an object (double vision). 5. The patient is experiencing lateralized attention deficits often accompanied by sustained attention deficits. 6. The patient is provided with stimuli on their affected side, but they fail to detect it. 7. The patient is experiencing loss of ability to identify objects or people. Correct answers: 1, 2, 5, and 6

Note. SN = spatial neglect.

Figure 1. Flowchart of survey respondents and dropouts.



Note. OT = occupational therapist; OTA = occupational therapy assistant; OTR/L = occupational therapist registered, licensed; Q = question.

Seventy-eight percent of occupational therapists ($n = 136$) who met the inclusion criteria began the survey, and 76 (56%) completed it. Data from all respondents were analyzed, including those who did not answer every question. Calculation of percentages was based on number of people who completed that question in the survey.

As displayed in Table 2, the respondents came from a variety of practice settings across the United States. Most worked in acute care (38%), inpatient rehabilitation (29%), or adult outpatient rehabilitation (32%). Most held a Master of Occupational Therapy degree (69%) and had an average of 13 ($SD = 10.5$) years of practice experience. Twenty-eight (28) states were represented for occupational therapy school attendance, and 27 states were represented for current state of practice. Most occupational therapists who responded to the survey were from the South (47%) and the Northeast (24%), followed by the Midwest (17%) and West (12%). The 24 who did not complete the survey were from all regions of the United States and varied widely in age. We did not observe trends in the demographics of respondents who completed this section but spontaneously dropped out after that.

Occupational Therapists' Confidence in Assessing for SN

Altogether, 93 occupational therapists completed the confidence portion of the survey; 81% perceived themselves as being “fairly confident” or “completely confident” in their ability to recognize signs of SN. In addition, 68% of occupational therapists perceived themselves as “fairly confident” or “completely confident” in their ability to differentiate between a visual field cut and SN, and 50% perceived themselves as “fairly confident” or “completely confident” in their ability to administer an SN assessment. Last, 63% perceived themselves as “fairly confident” or “completely confident” in their ability to use results to guide a plan of care (see Table A.1 in the Supplemental Material, available online with this article at <https://research.ota.org/ajot>).

Identification of Assessments and Documentation Practices

Altogether, 74% of occupational therapists documented that they “usually” or “always” assess for SN in stroke survivors, and 68% stated that they typically assess for SN during initial screenings and evaluations. More than 90% indicated that they use clinical observation of ADLs, IADLs, and other functional tasks to assess for SN. Almost 30% stated that they use standardized assessments to assess for SN. Most occupational therapists stated that, after assessing for SN, they “usually” (15%) or “always” (79%) document their findings of SN in the patient’s chart.

Barriers to and Facilitators of Assessing for SN

Facilitators of SN assessment were gathered from therapists’ interviews when we created the survey questions and responses. The following facilitators were selected from responses to the question “What facilitators encourage you to assess your patients for neglect?” and to indicate “all that apply”:

Table 2. Respondents' Characteristics

Characteristic	Frequency (%)
No. of years practiced (<i>n</i> = 106)	
<1–2	12 (11)
3–5	22 (21)
6–10	25 (24)
11–15	12 (11)
16–20	13 (12)
≥21	22 (21)
Highest level of education (<i>n</i> = 106)	
Bachelor of Occupational Therapy	14 (13)
Master of Occupational Therapy	73 (69)
Entry-level occupational therapy doctorate	8 (8)
Postprofessional occupational therapy doctorate	8 (8)
Doctor of Philosophy	1 (1)
Postdoctoral fellow	1 (1)
Master of Business Administration	1 (1)
Current region of practice (<i>n</i> = 106)	
Northeast	25 (24)
South	50 (47)
West	13 (12)
Midwest	18 (17)
Region of OT school attended ^d (<i>n</i> = 106)	
Northeast	35 (33)
South	45 (42)
West	7 (7)
Midwest	19 (18)
Stroke population on current caseload (<i>n</i> = 100)	
Never	0 (0)
Seldom	13 (13)
About half the time	24 (24)
Usually	30 (30)
Always	33 (33%)
Current practice setting (<i>n</i> = 100)	
Adult acute care	40 (38)
Adult inpatient rehabilitation	31 (29)
Adult outpatient rehabilitation	34 (32)
Adult home health	12 (11)
Skilled nursing facility	16 (15)
Research center	3 (3)
Other	7 (7)

Note. OT = occupational therapy.

continuing education (63%), access to educational resources (40%), having a supportive employer (33%), mentor training (24%), reminders from the electronic

health record (20%), observation during patient evaluation (5%), and prior clinical experience (5%).

Occupational therapists selected the following barriers to SN assessment when asked to indicate “all that apply”: lack of assessment materials (47%), time (40%), knowledge (17%), and education (9%), as well as reimbursement concerns (3%). The following perceived barriers were listed in fill-in-the-blank statements: “Unsure of what standardized tests are available” and “Sometimes patients try to minimize it.” Thirty-four percent of respondents stated that there were no barriers to assessing for SN.

Occupational Therapists' Knowledge in Evaluating a Patient With SN

For Question 1, about focusing on the signs and symptoms of SN, 100% of survey respondents correctly identified at least one sign or symptom of SN, but only 46% were able to identify all five (Figure 2).

For Question 2, which focused on the neuroanatomy of the brain, 71% of the respondents could correctly identify at least one brain region that, when affected, could result in SN. However, only 33% of therapists identified 5/5 areas of the brain that, when affected, could result in SN (Figure 2).

For Question 3, which focused on patients who have SN, 52% of therapists identified 4/4 SN patient cases, 30% identified 3/4 SN patient cases, 10% identified 2/4 SN patient cases, 4% identified 1/4 SN patient cases, and 3% identified 0/4 SN patient cases. Therapists were penalized if they selected additional cases similar to SN (Figure 2).

In total, 38% of therapists who completed the knowledge portion of the survey earned a passing score of 10 out 14 points. Of the participants who completed the knowledge portion, only 4% earned a perfect score of 14/14, selecting the correct definitions of SN, distinct from other brain impairments or syndromes; specifically, 19% selected the patient case for which the primary impairment was hemianopia rather than SN. In addition, 19% selected the patient cases in which diplopia and agnosia were present to identify SN.

Discussion

The aim of this survey was to investigate occupational therapists' current practices, self-confidence, and knowledge when assessing for SN in stroke survivors. Encouragingly, most occupational therapists rated themselves as “confident” when recognizing signs and symptoms of SN, stated they “usually” assess for SN and document findings in the patient chart, and reported experiencing minimal barriers when assessing for SN. However, our results demonstrate that, in our sample of occupational therapists, knowledge about SN when presented with other syndromes (as per our SN knowledge test) was suboptimal. Williams et al.

(2021) stressed how complicated the syndrome of SN is, and inconsistency in terminology may lead to confusion among occupational therapists.

Response Rate

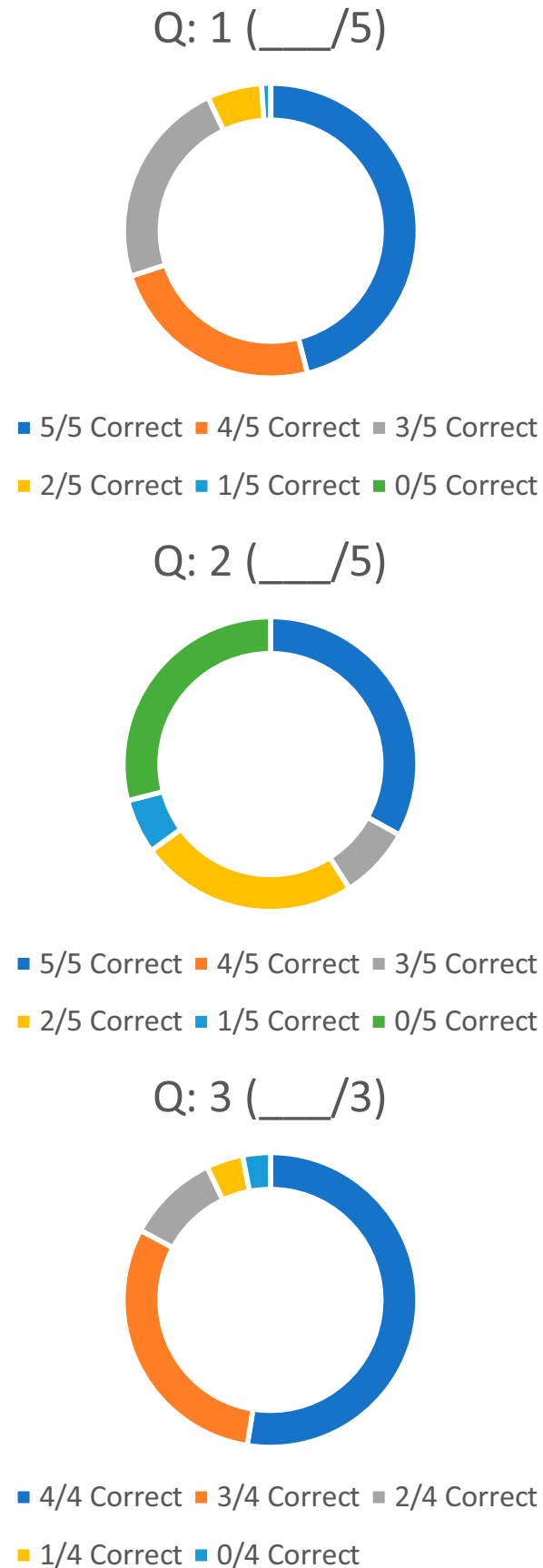
We chose to conduct this project using an online survey because of ease of access, usability, and cost-effectiveness (Burgess & Jewell, 2018; Reyes & Brown, 2016). These research strategies were used recently by Evald et al. (2021), who administered a nationwide survey to health care professionals, including occupational therapists, in Denmark that focused on their knowledge about and practices of SN. Their survey participation rate was 96.4% and completion rate was 68.8%. The current study focused on occupational therapists in the United States because there are differences in educational requirements, productivity demands, and reimbursement that may affect SN training and understanding. The number of therapists who received the survey link is unknown. Our response rate is based on the number of therapists who opened and completed the entire survey. We concluded that 78% of occupational therapists who met the inclusion criteria began the survey, and 76 out of 136 occupational therapists completed the survey, yielding a full survey completion rate of 56%. Although this is a small sample size for an online survey, and it encompasses several different geographic regions and practice areas, these data still provide valuable information.

Disparity Between Participants' Confidence Versus Their Knowledge of SN

Although our respondents were confident about their ability to recognize signs and symptoms of SN, they were not knowledgeable about SN's neuroanatomy. For example, although 81% of occupational therapists said they were confident in identifying this form of SN, only 38% correctly identified all SN definitions in the knowledge check portion; instead, they selected definitions of other non-SN syndromes or impairments. This question was included because, although there is a body of literature stating that the two syndromes are different (Kamtchum-Tatuene et al., 2017), there have also been discussions that extinction is a part of the SN syndrome (Vuilleumier & Rafal, 2000). Kamtchum-Tatuene et al. (2017) argued that extinction, as a unique syndrome, requires specific assessment and treatment methods. Moreover, they argued that each syndrome occurs independently, and there is evidence that extinction occurs with damage to the temporo-parietal junction and subcortical areas (Vossel et al., 2011). Although SN can also co-occur because of damage in these areas, there are a number of other regions of the brain that, when damaged, can result in neglect but do not result in extinction.

The data from this survey illustrate an inability on the part of respondents to differentiate between visual

Figure 2. Results of the knowledge check by individual question (Q).



deficits and SN despite high levels of self-confidence. Notably, 68% of occupational therapists stated they were confident in their ability to differentiate between a visual field cut and signs of SN. People with a hemianopia have a visual field deficit but are often aware of this deficit (Chokron et al., 2020). In contrast, people with SN often are unaware of their deficits (Heilman et al., 2000).

Although respondents reported high confidence in identifying signs and symptoms of SN, 5% were able to identify the correct patient cases pertaining to SN only when presented with other syndromes. Although some syndromes and impairments exhibit behaviors similar to SN, the literature suggests that SN is its own physiological impairment (Checketts et al., 2021; Kamtchum-Tatuene et al., 2017).

A concerning result was respondents' lack of knowledge of SN's neuroanatomy: Of the 79 occupational therapists who completed the question about identifying which area of the brain can lead to SN, only 33% identified the correct areas, and 29% could not identify any area of the brain that, when affected, could lead to SN.

This information can serve as a guide for addressing the difficulty in correctly identifying SN. Our findings indicate that occupational therapists would benefit from additional education regarding the neuroanatomy of SN and training to differentiate between SN and other syndromes with similar signs and symptoms.

Use of More Appropriate Assessments May Reduce Barriers

Assessing barriers and facilitators is important to facilitate more optimal SN assessment procedures. This study identified some barriers and facilitators, thereby providing insights into why occupational therapists may choose one way of assessing for SN versus another.

Although 34% of occupational therapists stated that there were no barriers to assessing for SN, 47% identified "Lack of time" as a barrier, and 40% identified "Lack of assessment resources," which is consistent with Checketts et al.'s (2021) findings. Because therapists may have limited time and resources, they may use short paper-and-pencil assessments because they are quick to administer and familiar (Checketts et al., 2021). However, evidence suggests that these methods are not optimal (Checketts et al., 2021). The results of this survey add to the literature in that they illustrate significant discrepancies in respondents' self-confidence in assessing SN compared with their ability to correctly identify signs and symptoms, areas of the brain that were affected, and patient cases with SN versus other differential diagnoses.

With regard to assessment methods, the Catherine Bergego Scale and the Kessler Foundation SN Assessment Process are considered highly sensitive to identifying SN (Checketts et al., 2021). It is critically

important for occupational therapists to evaluate for SN using tools that are sensitive, validated, and responsive (Williams et al., 2021), and our results showcase the need to improve occupational therapists' use of such assessments. However, these assessments are known to be time consuming and may not be practical for clinical use. Because of barriers identified by respondents, such as cost and time, it is imperative to develop SN assessments that can be used in clinical practice without sacrificing sensitivity and specificity.

Limitations

The current study has several limitations. First, this was an internet survey with broad inclusion criteria, and therefore the sample was self-selected (Evald et al., 2021). The sample may not be representative, which may limit the generalizability of results. Second, the results may be inflated if the participants selected answers that indicated a greater level of confidence with assessing for SN (Evald et al., 2021). This potential respondent bias could be reduced or avoided in a larger, controlled study. Third, some occupational therapists started but did not complete the entire survey, which limited the sample size for some parts of the data analysis. Fourth, respondents who were familiar/confident with SN may have been more likely to volunteer for this survey. Last, our knowledge assessment and scoring methodology were created through a collaboration of panel members specifically for this study. We did not use an existing assessment; neither did we incorporate a formal measure development process.

Implications for Occupational Therapy Practice

This project has a few key implications for clinical practice. SN negatively affects ADL performance and should be addressed by occupational therapy. However, this project suggests that occupational therapists (1) may underutilize standardized assessments and (2) may have suboptimal knowledge, in particular regarding the neuroanatomy of SN.

Conclusion

Assessment and identification of SN are important because nonidentification of SN can cause difficulty with all daily activities for stroke survivors (Kerkhoff & Schenk, 2012). This study provides baseline information on an underinvestigated topic for educational purposes and to inform future research on occupational therapy patient care for SN. The results indicate that our sample of occupational therapists demonstrated a limited use of sensitive assessments to accurately identify SN, thus indicating the need to increase clinical education about SN and its assessments. 🏠

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