A Scoping Review of Self-Awareness Instruments for Acquired Brain Injury

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Abstract

Background: Self-awareness and insight are critical functions required to maintain safe and optimal participation in all daily life activities in a variety of environmental contexts. In the past two decades, occupational therapists have developed several psychometrically sound assessments designed to identify self-awareness and insight deficits in patients with neurological disorders. This scoping review identifies and evaluates key properties of such assessments to inform clinical practice.

Method: Multiple electronic databases were searched using the key search terms of "self-awareness" and "self-awareness assessment," and "insight" and "insight assessment." Included studies were original primary sources from the peer-reviewed journals.

Results: Nine assessments met the inclusion criteria: Assessment of Awareness of Disability, Awareness Interview, Awareness Questionnaire, Insight Interview, Patient Competency Rating Scale, Patient Competency Rating Scale for Neuro-Rehabilitation, Patient Distress Scale, Self-Awareness of Deficits Interview, and Self-Regulation Skills Interview. Each assessment is reviewed in detail regarding its purpose, administration time, format, type of awareness assessed, psychometric properties, and advantages and disadvantages.

Conclusions: Although all nine assessments are psychometrically sound, some may hold more usefulness for occupational therapists depending on a variety of factors, including patient cognitive level and activity tolerance and clinical setting and time constraints.

Credentials Display

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Many clinical populations, including those with cerebrovascular accident, traumatic brain injury, dementia, multiple sclerosis, and Parkinson's disease, experience deficits in self-awareness, or lack of insight, regarding the functional limitations of injury (Bloomfield, Woods, & Ludington, 2016; Reich, Arias, Torres, Halac, & Carlino, 2015; Robertson & Schmitter-Edgecombe, 2015; Shany-Ur et al., 2014). Self-awareness and insight are critical functions required to maintain safe and optimal participation in all daily life activities in a variety of environmental contexts. Decreased insight into memory, executive function, and attention deficits have been shown to translate into poor judgment and poor safety (Skidmore, Swafford, Juengst, & Terhorst, 2017), dysfunctional interpersonal relationships (Bivona et al., 2014; Chesnel et al., 2018), the inability to set realistic goals (Fleming, Strong, & Ashton, 1996; McPherson, Kayes, & Weatherall, 2009; Robertson & Schmitter-Edgecombe, 2015), and poor compliance with and participation in rehabilitation (Geytenbeek, Fleming, Doig, & Ownsworth, 2017).

Although the literature is replete with information about patient insight and self-awareness problems, there is no universally accepted definition of these terms in the health care community. One commonly accepted interpretation in the rehabilitation literature defines self-awareness using two similar constructs: (a) possessing an objective knowledge regarding the existence of one's deficits and (b) possessing a subjective understanding of the significance of those deficits to one's daily functional performance (Cova et al., 2017; Katz, Fleming, Keren, Lightbody, & Martman-Maeir, 2002; Robertson & Schmitter-Edgecombe, 2015). Awareness deficits, however, can be selective in that a patient with multiple impairments may appear cognizant of some deficits while unaware of others (Toglia & Maeir, 2018).

Self-awareness has traditionally been divided into three interdependent awareness levels: intellectual, emergent, and anticipatory awareness (Barco, Crosson, Bolesta, Werts, & Stout, 1991; Chesnel et al., 2018; Crosson et al., 1989; Toglia & Maeir, 2018). Intellectual awareness is considered the lowest awareness level and is defined as a patient's basic understanding of the existence of a deficit (Toglia & Maeir, 2018). At this level, patients can comprehend that one or more specific functional skills are now impaired as compared to pre-injury function (Chesnel et al., 2018). Emergent awareness refers to a patient's ability to recognize and self-monitor difficulties as they occur during occupational performance in daily life. Anticipatory awareness is the most refined level of awareness and involves a patient's ability to anticipate that some difficulties will be experienced in future daily life situations because of deficits secondary to disability (Chesnel et al., 2018; Robertson & Schmitter-Edgecombe, 2015).

Fleming, Strong, and Ashton (1996) developed a three-tiered model of self-awareness. Patients functioning at the first tier possess self-awareness of their physical, cognitive, social, and emotional injury-related deficits apparent post-injury. Patients functioning at the second tier possess awareness of the functional implications of their deficits as related to their ability to participate in independent living, self-care, work, community mobility, leisure, and other daily activities. At the third tier of self-awareness, patients possess the ability to set realistic goals and accurately predict the future consequences of present actions.

Cognitive deficits can be difficult to detect during hospitalization for a variety of reasons (Bour et al., 2010). For example, hospitalized patients often experience disorientation because of unfamiliarity with the physical environment, loss of regular sleep patterns resulting from hospital activities and medical procedures, medications that can alter a patient's cognitive presentation, and feelings of confusion and denial that commonly accompany the early stages of a recently diagnosed disease or

injury (Dubose & Hadi, 2016; Smith-Gabai, 2011; Toglia & Maeir, 2018). To provide optimal patient care that promotes safety, it is critical that therapists use assessments to identify, precisely, present cognitive deficits and distinguish them from the disorientation that typically coincides with hospitalization.

Over the past 2 decades, occupational therapists have developed several psychometrically sound assessments designed to identify deficits of self-awareness and insight in patients with neurological disorders. Occupation-based assessments of self-awareness are critically important because they assess self-awareness in daily life activities and are ecologically valid. The results of occupation-based, ecologically valid self-awareness assessments often yield distinctly different information about patient function in natural contexts compared to typical pencil and paper neuropsychology test batteries (Burgess et al., 2006). For example, patients who may display intact memory functions when presented with a contrived list of words, may demonstrate significant dysfunction when asked to recall and demonstrate the steps of a complex daily life activity, such as balancing a checkbook or simultaneously monitoring two to three items on a stove.

The purpose of this paper is to report the results of a scoping review in which we identified the most psychometrically sound self-awareness and insight measures to help therapists understand which can best inform practice decisions. This paper is intended to serve as (a) an informational resource to increase therapists' knowledge of available self-awareness assessments and as (b) an evaluative critique of those instruments to help therapists make instrument selection decisions based on a range of variables.

Method

Multiple electronic databases were searched, including CINAHL, PubMed, PsycINFO, and the Cochrane Database. Key search terms used in all of the databases were "self-awareness" and "self-awareness assessment," and "insight" and "insight assessment." We included studies that were original primary sources from peer-reviewed journals, and excluded books, book chapters, literature reviews, and secondary sources. Assessments were included in this review if they reported psychometric properties, addressed patients aged 18 years or older, and were available in English. The selection of included instruments in this review was established by researcher consensus (i.e., all three research members) after each first and separately selected assessment based on the above established criteria. Once separate selection was made, the authors then discussed each instrument until full consensus was established. Articles were initially screened by title and abstract. Access to full text was obtained for articles that all of the researchers deemed relevant to the assessment of patient self-awareness and insight following acquired brain injury (i.e., cerebrovascular accident, traumatic brain injury, tumor). Once the relevant articles were obtained, the first author then hand searched reference lists to uncover additional instruments as well as further information about identified measures. Newly identified information was then reviewed by all of the researchers to determine relevance. The researchers met approximately once per month over the 5-month data collection and analysis period to review articles, interpret data, and reach consensus. Data extraction was considered complete when the searches revealed no further newly identified articles.

Results

Nine assessments met the inclusion criteria for this review and are discussed below: Assessment of Awareness of Disability, Awareness Interview, Awareness Questionnaire, Insight Interview, Patient

Competency Rating Scale, Patient Competency Rating Scale for Neuro-Rehabilitation, Patient Distress Scale, Self-Awareness of Deficits Interview, and Self-Regulation Skills Interview (see Table 1).

Assessment of Awareness of Disability

Tham, Bernspang, and Fisher (1999) developed the Assessment of Awareness of Disability (AAD) to measure patient awareness and self-evaluation of disability in relation to actual performance in activities of daily living (ADL). The AAD defines awareness of disability as congruency between the patient's functional limitations secondary to disability and his or her perceived performance level in daily activities. The instrument is used with patients with neurological deficits experiencing ADL limitations and who can answer questions about their experiences and perceptions.

The AAD is a 7-question interview that is rated using a 4-point Likert scale to measure awareness level (0 = *patient completely denies his or her disabilities*; 4 = *patient can accurately describe his or her difficulties*); administration requires approximately 30 min, depending on the respondent's cognitive and communication abilities. The interview questions are administered directly after the performance of the Assessment of Motor and Process Skills (AMPS), which was selected as the assessment of actual performance to be used in conjunction with the AAD, because it is a valid and reliable Rasch analysis based on ADL performance measures.

The AAD interview questions can be adapted to match the patient's present and unique clinical situation; however, question meaning and difficulty level should not be altered. The AAD measures possible discrepancies between the patient's actual disability (as obtained from AMPS scores) and the patient's perceived disability (based on the AAD interview question results). Additional interview items address how patients evaluate their disabilities in a global way and whether they can describe difficulties in the functional performance of specific tasks.

Rasch analysis indicated that the AAD measures a single construct, can discriminate between clients with different awareness levels, and possesses internal scale validity (*MnSq* values ≤ 1.4 in combination with z values ≤ 2) and acceptable rater reliability (2 misfits of 672 responses = 0.003%).

Awareness Interview

Anderson and Tranel (1989) developed the Awareness Interview to evaluate patients' insight of cognitive and motor deficits after brain damage secondary to cerebral infarction, dementia, or head trauma. The assessment contains eight sections with questions regarding the patient's (a) perceptions about his or her need for hospitalization, (b) cognizance of motor impairments, (c) general thinking and intellect, (d) orientation, (e) memory, (f) speech and language function, (g) visual perception, and (h) ability to judge functional performance and return to daily life activities. Section 8 is administered following the completion of a neuropsychological evaluation. Administration time of the Awareness Interview is approximately 3-7 min.

Deviation scores are compiled for each of the eight sections based on a comparison of the observer's (e.g., occupational therapist, neuropsychologist) and the patient's rating of test performance and ability to return to desired daily life activities. Scoring for the assessment is conducted on a 3-point Likert scale in which a score of 1 indicates *significant impairment*, a score of 2 indicates *mild to moderate impairment*, and a score of 3 indicates *no impairment*.

Low to moderate correlations were found between the Awareness Interview and scores of verbal IQ (VIQ) ($r = .33$, $p < .001$), performance IQ (PIQ) ($r = -.40$, $p < .001$), and temporal disorientation ($r = .33$, $p < .001$); no correlations were found between the instrument and measures of memory or visual perception. When specifically examining patients with dementia, the Awareness Index was found to

moderately correlate with VIQ ($r = .37$, $p < .005$) and temporal disorientation ($r = .44$, $p < .001$). In a similar way, when examining patients who sustained head trauma, the Awareness Index moderately correlated with VIQ ($r = -.51$, $p < .01$) and temporal disorientation ($r = .64$, $p < .01$). Patients who sustained cerebrovascular accident exhibited Awareness Index scores that moderately correlated with PIQ ($r = -.48$, $p < .01$) and temporal disorientation ($r = .51$, $p < 0.1$). Interrater reliability of the Awareness Interview was found to be high ($r = 0.92$, $p < .05$).

Awareness Questionnaire

The Awareness Questionnaire was developed to further previous findings regarding the characteristics of impaired awareness after brain injury and their relationship to functional outcomes (Sherer, Bergloff, Boake, High, & Levin, 1998). The instrument was intended to be used with adults who sustained any type of acquired brain injury and measures awareness of function in physical, cognitive, behavioral or affective, and community domains.

The questionnaire consists of three rating forms: patient, family member or caregiver, and clinician. The forms ask the respondent to rate the patient's (or self's) function in the four domains noted above. Each form contains 46 items, 26 of which are designed to measure awareness in general functioning, and 20 of which are designed to measure function in specific daily life situations. The rating scales are used to measure the discrepancy between patient and caregiver and patient and clinician scores. Scores can also be used to measure a patient's perceptions of cognitive abilities compared to performance on neuropsychological tests. Administration time for the Awareness Questionnaire is approximately 10 min (Sherer, 2004).

Principal component factor analysis with varimax rotation identified three factors (cognitive, behavioral or affective, and motor or sensory) indicating support for the validity of item construction: Factor 1 (patient = .88, family = .80), Factor 2 (patient = .78, family = .80), and Factor 3 (patient = .68, family = .57) (Sherer et al., 1998). The assessment was also found to have predictive validity relating to productivity and employment outcomes post-injury (Sherer et al., 1998). The total scale, as well as the cognitive and behavioral or affective scales, have been shown to have acceptable internal consistency (Cronbach's α = .88, .80, and .80, $p < .05$), respectively.

Insight Interview

The Insight Interview was developed to assess the awareness of deficits over time, from early recovery stages (< 3 months post-injury), following traumatic brain injury (Malouf, Langdon, & Taylor, 2014). Administration time for the Insight Interview is approximately 30 min to 1 hr, depending on the patient's cognitive level. The assessment consists of three separate interview forms for the patient, family, and clinician. Using a 19-question, semi-structured interview format, patients are first asked to rate their abilities in specific functional areas (1 = *not at all*, 5 = *excellent*); once they have completed the functional areas, they are asked to respond to a series of 38 questions regarding their perceived abilities. The instrument allows for the assessment of five awareness domains: (a) change, (b) severity of impairment, (c) current functional consequences, (d) future functional consequences, and (e) goal-setting.

Different assessment methods are used depending on the domain of awareness being assessed. For example, when assessing the "awareness of change" domain, patients are asked to provide yes or no responses to indicate whether their abilities in a functional area have changed postneurological insult. In the domains of "severity of impairments," "current functional consequences," and "future functional consequences," patients are asked to provide self-ratings of their abilities to complete relevant current or

future tasks using a 5-point scale (1 = *cannot do*, 5 = *can do with proficiency*). Family informants and clinicians also complete similar rating scales assessing patient functional abilities.

Scoring of the Insight Interview is based on a difference method in which scores are calculated at the domain and sub-domain level and range from -4 to 4. Scores of 0 indicate congruency between patient and family or clinician scores, positive scores indicate patient-perceived abilities to be lower level than family and clinician perceptions, and negative scores indicate patient perceived abilities to be higher level than family and clinician perceptions. The more negative the score, the greater the patient's awareness deficit.

Interrater reliability was found to be high with interclass correlation coefficients (*ICC*) ranging from .74 to .83 (Malouf, Langdon, & Taylor, 2014). Moderate concurrent validity was found between the Insight Interview and the Self Awareness of Deficits Interview on patient and family member awareness of function (*r* = .50, *p* < .05), and between the Insight Interview and the Patient Competency Rating Scale for Neuro-Rehabilitation on family member awareness of future functional disability consequences.

Patient Competency Rating Scale

The Patient Competency Rating Scale (PCRS) is a 30-item, 10-min, self-report measure intended to be used in postacute settings to determine a patient's awareness of deficits after brain injury, stroke, multiple sclerosis progression, and brain tumor (Kolakowsky-Hayner, 2010; Prigatano et al., 1986). The PCRS is designed to evaluate lack of insight in four psychosocial domains of function: activities of daily living, cognitive or prevocational skills, emotional lability, and interpersonal skills.

The instrument is administered to both the patient with brain injury and an informant familiar with the individual's abilities (e.g., family member and/or rehabilitation professional). The assessment asks respondents to judge the patient's ability in a variety of everyday situations that require behavioral and emotional functions, cognitive abilities, and physical functions. A 5-point Likert scale is used for scoring each scale. A score of 1 indicates *cannot do* and a score of 5 indicates *can do with ease*. Total scores range from 30 to 150, with higher scores denoting greater competency.

Three scoring methods for the PCRS are suggested: (a) discrepancy scores between the two total scores (the patient's and informant's), (b) frequency counts of the number of items for which there is a discrepancy between the two respondents, and (c) conversion of the magnitude of discrepancy into a total magnitude score. For all three suggested scoring approaches, impairment in self-awareness is considered greater, as the discrepancy between both respondents' scores increases.

Principle component factor analysis with varimax rotation was performed separately for patients and family versions. After four items with ambiguity in factor loading patterns were excluded, both scales demonstrated good discriminant validity. Moderate convergent validity was established between the PCRS and the Barthel Index (patients: *r* = .52; family: *r* = .49) and the World Health Organization Quality of Life Scale (patients: *r* = .65; family: *r* = .60) (Barskova & Wilz, 2006). Both test-retest and interrater reliability of the PCRS were found to be high (*r* = .85 - .97, and *r* = .92, respectively) (Fordyce & Rouche, 1986; Prigatano, Altman, & O'Brien, 1990). Internal consistency of patient and family member scale versions were also found to be high (Cronbach's α =.91 and .93, respectively) (Fleming, Strong, & Ashton, 1998).

Patient Competency Rating Scale for Neuro-Rehabilitation

Patient endurance is often limited during acute inpatient rehabilitation, reducing the ability to perform full self-assessment of awareness. To assess patients' self-perceptions of functioning in the

acute care setting, as well as patients' level of awareness compared to family and caregiver ratings, Borgaro and Prigatano (2003) developed a shortened version of the 30-item Patient Competency Rating Scale, called the Patient Competency Rating Scale for Neuro-Rehabilitation (PCRS-NR), which is intended for use with patients in the acute stages of traumatic brain injury.

The PCRS-NR is a 13-item, 5-min questionnaire that asks patients to judge how easy or difficult a specific behavioral activity has become since entering neurorehabilitation by choosing one of five rating scale responses ranging from *can't do* to *can do with ease*. Discrepancy scoring is used to compare patient ratings to those of the family and caregivers.

Patient PCRS-NR responses of the original 19 scale items were submitted to principle component factor analysis with varimax rotation. The analysis yielded five factors that, combined, accounted for 69% of scale variance, indicating support for discriminant validity. Because of factor loading, 13 items were retained, which formed the final version of the scale. All factors and total scale items were shown to have high internal consistency using a Cronbach's alpha coefficient: emotional functioning, $\alpha = .87$; interpersonal functioning, $\alpha = .81$; cognitive functioning, $\alpha = .78$, and total scale, $\alpha = 0.82$; $p < .05$, respectively.

Patient Distress Scale

Borgaro, Prigatano, Alcott, Kwasnica, and Cutter (2003) developed the Patient Distress Scale (PDS) to assess awareness of emotional disturbances in patients after brain injury and during recovery in acute inpatient neurorehabilitation. The PDS is an 11-item, 4-point Likert scale questionnaire that asks patients to rate their levels of perceived emotional distress since injury. Administration time requires approximately 5 min. Family and caregivers are also asked to complete a version of the questionnaire identifying their perceptions of the patient's emotional functioning. Scores range from 1 to 4, with higher scores indicating more severe emotional distress (1 = *mild problem*, 4 = *severe problem*). Calculation of a discrepancy score between patient and caregiver ratings provides an index of awareness concerning emotional functioning. The advantage of PDS use is its brevity, easy administration, and ease of understanding by acute inpatients in neurological rehabilitation.

Principle component factor analysis with varimax rotation was performed on the original pool of 36 items. After item analysis, in which only those items having a mean of 1.0 or higher were retained, 21 items were discarded and 15 retained. A principle components factor analysis with varimax rotation was then performed on these 15 items. Because of factor loading, three items were discarded, leaving the 11 that comprise the final version of the PDS, supporting discriminate validity. Internal consistency using Cronbach's alpha coefficients were found to be high for items on the client and caregiver versions: $\alpha = .82$ (clients) and .86 (caregiver), $p < .05$, respectively. Internal consistency for patient response items ranged from $\alpha = .61 - .86$, $p < .05$. One-week test-retest reliability was found to be high for both patient ($r = .97$) and caregiver (r = .93) PDS versions ($p < .05$, respectively).

Self-Awareness of Deficits Interview

The Self-Awareness of Deficits Interview (SADI), created by Fleming, Strong, and Ashton (1996), is a 30-min semi-structured interview that aims to provide both qualitative and quantitative data regarding self-awareness following traumatic brain injury. The interview contains three specific questions with nine prompts that target patients' self-awareness levels regarding (a) self-awareness of deficits, (b) self-awareness of functional implications of deficits, and (c) ability to set realistic goals. Interviewers record patient verbatim responses to questions and can adapt and reword questions in the interview context. The essence of the questions, however, must remain unchanged.

A 4-point Likert scale is used to score patient responses (0 = *no disorder of self-awareness*, 3 = *severe disorder of self-awareness*); however, interviewers must gain background knowledge regarding patients' current functional levels to evaluate patient responses. Discussion with relatives and staff familiar with the patient is recommended. The higher scores of each assessment index represents lower levels of self-insight; a maximum score of nine indicates severe impairment in self-awareness. Score calculation is heavily weighted by the clinical judgment of the practitioner performing the interview administration.

Intraclass correlation coefficients (*ICC*) were calculated for each section of the SADI and the total SADI score to determine reliability (Simmond & Flemming, 2003). Test-retest reliability was found to be high for each of the three scale sections and total scale: (a) self-awareness of deficits: *ICC* = .85; (b) self-awareness of functional implications of deficits: *ICC* = .86; (c) ability to set realistic goals: *ICC* = .86; and (d) total scale: *ICC* = .94; $p < .05$, respectively. Interrater reliability using internal consistency scores was also found to be high (Cronbach's α = .85, $p < .01$). The SADI was found to be able to discriminate between adults with severe traumatic brain injury with high and low self-awareness (Fleming, Strong, & Ashton, 1998).

Self-Regulation Skills Interview

The Self-Regulation Skills Interview (SRSI) is a clinical measure intended for use during the postacute rehabilitation stage (Ownsworth, McFarland, & Young, 2000) and is designed to measure a range of metacognitive skills essential for rehabilitation planning, monitoring an individual's progress, and evaluating the outcome of interventions. The instrument is a semi-structured interview consisting of six questions that assess six key metacognitive or self-regulation skills: emergent awareness, anticipatory awareness, readiness to change, strategy generation, degree of strategy use, and strategy effectiveness. The six questions are applied to a patient-identified area of difficulty experienced in everyday living. The measure is optimally used and most accurate with patients who can demonstrate a basic level of self-awareness regarding general physical, cognitive, behavioral, and social difficulties following injury. Administration time requires approximately 30-45 min depending on patient level of concentration and response time generation. Standard prompts and guidelines for scoring patient responses were developed for each question. Scoring is performed on a 10-point Likert scale (0 = *very high*, 10 = *very low*) and indicates level of awareness, self-rating of readiness to change, and strategy behavior.

Using an intraclass correlation coefficient, a high level of interrater reliability was found between raters for each SRSI item ranging from .81 to .92 ($p < .05$). Test-retest correlation coefficients ranged from moderate to high (*ICC* = .69 - .91, $p < .05$), indicating stable results between two time points at 1-month apart. The SRSI was also found to have discriminate ability between patients with and without brain injury regarding awareness level and strategy behavior. No differences were found, however, between these groups regarding readiness to change. Convergent validity was also found on the awareness index between the SRSI and both the (a) SADI ($r = .61$, $p < .01$) and (b) Health and Safety scale ($r = .56$, $p < .01$).

Table 1

Key Factors of Nine Self-Awareness Assessments

Assessment	Administration Length	Type of Self-Awareness Assessed	Self-Awareness Assessed within Functional Activity	Perceived Self-Awareness Assessed through Interview/Questionnaire	Availability of Patient, Caregiver, and Practitioner Versions	Reliability	Validity	Advantages	Disadvantages
Assessment of Awareness of Disability (AAD)	30 min	Intellectual and Emergent	Yes: Directly following the Assessment of Motor and Process Skills (AMPS)	Yes	Patient Version: Yes Caregiver Version: No Practitioner Version: Yes (practitioner scores the AMPs)	Interrater	Construct Internal Scale Discriminate	Patient awareness is measured within ADL performance. Triangulation with practitioner perceptions is possible.	AAD is intended to be used in conjunction with the AMPS. To administer the AMPS, therapists must receive training and certification. Administration length may be difficult for patients with decreased endurance or concentration.
Awareness Interview	3 – 7 min	Intellectual	No	Yes	Patient Version: Yes Caregiver Version: No Practitioner Version: Yes	Interrater Internal Consistency	Concurrent	Triangulation with practitioner perceptions is possible.	Patient awareness not assessed in functional performance. No triangulation with caregiver perceptions.
Awareness Questionnaire	10 min	Intellectual	No	Yes	Patient Version: Yes Caregiver Version: Yes Practitioner Version: Yes	Internal Consistency	Construct Criterion Predictive	Patient awareness can be triangulated with caregiver and practitioner perceptions.	Patient awareness not assessed in functional performance.
Insight Interview	30 min – 1 hr	Intellectual	No	Yes	Patient Version: Yes	Interrater	Concurrent	Includes assessment of current and	Patient awareness not assessed in

					Caregiver Version: Yes Practitioner Version: Yes			future functional consequences, as well as ability to set goals. Patient awareness can be triangulated with caregiver and practitioner perceptions.	functional performance. Administration length may be difficult for patients with decreased endurance or concentration.
Patient Competency Rating Scale (PCRS)	10 min	Intellectual	No	Yes	Patient Version: Yes Caregiver Version: Yes Practitioner Version: Yes	Test-Retest Interrater Internal Consistency	Convergent Discriminant	Evaluates insight within four psychosocial domains of function: activities of daily living, cognitive and prevocational skills, emotional lability, and interpersonal skills. Patient awareness can be triangulated with caregiver and practitioner perceptions.	Patient awareness not assessed in functional performance.
Patient Competency Rating Scale for Neuro-Rehabilitation (PCRS-NR)	5 min	Intellectual	No	Yes	Patient Version: Yes Caregiver Version: Yes Practitioner Version: Yes	Internal Consistency	Discriminate	Patient awareness can be triangulated with caregiver and practitioner perceptions.	Patient awareness not assessed in functional performance.

Patient Distress Scale (PDS)	5 min	Intellectual	No	Yes	Patient Version: Yes Caregiver Version: Yes Practitioner Version: Yes (Same as Caregiver version)	Test-Retest Internal Consistency	Discriminate	Patient awareness can be triangulated with caregiver and practitioner perceptions.	Patient awareness not assessed in functional performance.
Self-Awareness of Deficits Interview (SADI)	30 min	Intellectual	No	Yes	Patient Version: Yes Caregiver Version: No Practitioner Version: No	Test-Retest Interrater	Discriminant	Practitioners can reword questions to enhance patient understanding provided question meaning is not altered.	Administration length may be difficult for patients with decreased endurance or concentration. No triangulation with caregiver and practitioner perceptions.
Self-Regulation Skills Interview (SRSI)	30 – 45 min	Emergent and Anticipatory	No	Yes	Patient Version: Yes Caregiver Version: No Practitioner Version: No	Test-Retest Interrater	Convergent Discriminative	Assesses emergent awareness, anticipatory awareness, readiness to change, strategy generation, degree of strategy use, and strategy effectiveness.	Can only be used with patients already possessing intellectual awareness. Administration length may be difficult for patients with decreased endurance or concentration. No triangulation with caregiver and practitioner perceptions.

Discussion

This scoping review identified nine assessments with the intended purpose of measuring self-awareness. Although all nine assessments were determined to be strong with established forms of reliability and validity for each, some assessments may hold greater value for occupational therapists to measure patient self-awareness than others.

The majority of the nine assessments evaluate perceived self-awareness in the context of interviews, rather than functional daily life activities (i.e., Awareness Interview, Awareness Questionnaire, Insight Interview, Patient Competency Rating Scale, Patient Competency Rating Scale for Neuro-Rehabilitation, Patient Distress Scale, Self-Awareness of Deficits Interview, and Self-Regulation Skills Interview). Information gained from interviews can only yield data about patient and caregiver perceptions, rather than actual performance. Without observing patients in the context of their daily life activities, it is difficult to gain an accurate understanding of patient insight into the existence of deficits, how deficits impact functional performance, and the potential consequences of deficits in near future events. Assessments that collect data from both functional activities and interviews have the potential to yield the most accurate information about self-awareness (Hanley, 2012). Only one instrument, the Assessment of Awareness of Disability, collects data about patient self-awareness through both direct observation of functional activity performance and interview. All other assessments require the test administrator, and often a caregiver, to possess previous knowledge of the patient's performance to score accordingly. This is a problematic characteristic, as it introduces some degree of subjectivity into the administrator's scoring procedures, depending on the practitioner's level of exposure to patient self-awareness in functional activity over time. Because of curtailed hospitalization lengths, many practitioners may have insufficient opportunity to observe patient self-awareness in a variety of functional activities. Caregivers, too, may possess bias regarding patient self-awareness, because of denial or misjudgment, and may inaccurately rate patient insight.

Assessments that establish patient self-awareness through the corroboration and triangulation of three instrument versions—patient, caregiver, and practitioner—are likely to yield the most accurate information about patient self-insight. Five of the nine assessments possess patient, caregiver, and practitioner versions: Awareness Questionnaire, Insight Interview, Patient Competency Rating Scale, Patient Competency Rating Scale for Neuro-Rehabilitation, and Patient Distress Scale. The remaining four assessments only possess patient and/or practitioner versions and do not triangulate data from three sources.

The type of awareness evaluated in the nine assessments is a critical factor for occupational therapy practitioners to consider, as treatment and discharge planning are dependent on patient self-awareness level and type. Only one instrument, the Self-Regulation Skills Interview, assesses both emergent and anticipatory awareness and can provide information regarding patients' abilities to identify if, when, and how potential problems may occur as a result of self-awareness deficits. The Assessment of Awareness of Deficits measures both intellectual and emergent but not anticipatory awareness. All other assessments measure intellectual awareness alone and can only yield basic data about the patients' abilities to recognize a deficit's presence. Information about the patient's ability to understand how an existing deficit could impact functional performance in the present or near future is not assessed. Such information is critical when planning discharge to the safest possible environment.

Test administration length is another key factor and can influence the appropriateness of an instrument's use with patients. Four of the assessments have administration lengths of 30 min to 1 hr; the other five assessments can be administered in under 10 min. Patients with cognitive deficits and decreased endurance often cannot tolerate assessments having lengthy administration times (Wylie et al., 2017). Clinicians, too, are commonly challenged by time constraints and productivity demands that may impact the feasibility of administering lengthier assessments. However, while short screenings often accommodate clinical schedules and are more easily tolerated by patients, they do not provide detailed information about patient performance in functional daily activity; such information can only be gained through lengthier observation periods, and therapists must weigh time constraints and patient tolerance with the level of clinical detail desired.

Limitations and Future Research

One acknowledged limitation was our restriction of searches to four databases (CINAHL, PubMed, PsycINFO, and Cochrane Database). Although these four databases are considered the primary indexing repositories of health care publications, articles about self-awareness instruments may have been indexed in other databases and inadvertently omitted by our search strategy. Although we used the search terms of "self-awareness," "self-awareness assessment," "insight," and "insight assessment," some instruments assessing this phenomenon may have been labeled using different terms and unintentionally excluded from our search. A further limitation involved our search restriction to peer-reviewed, English language journal articles. We omitted self-awareness assessments published in books, non-English language journals, and unpublished materials (e.g., dissertations). One final limitation relates to our ability to uncover all information about the psychometric properties of the included instruments. Although we searched four primary health care indexes, and then hand searched article references to further unearth information about instrument psychometric properties, we may have inadvertently failed to identify relevant reliability and validity data. Future research should expand search strategies to a greater number of health care databases and search terms and to books and the grey literature.

Conclusion

This scoping review revealed the existence of nine reliable and valid patient self-awareness assessments. Although all nine assessments can be considered psychometrically sound, some may be more useful to occupational therapists than others, depending on a variety of factors, including patient cognitive level and activity tolerance and clinical setting and time constraints. When selecting assessments for specific patients, therapists must consider whether the assessment measures self-awareness through functional activity and/or interview; the availability of patient, caregiver, and practitioner versions for data corroboration and triangulation; type of self-awareness to be assessed; and administration length. Therapists must consider and weigh these factors when selecting assessments that can best inform treatment and discharge planning for specific patients. This scoping review was intended both to enhance therapists' knowledge of existing self-awareness assessments and to provide key information critical to make appropriate selections for specific patients in therapists' own practice settings.

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