Assessment of Dementia: Screening for Cognitive Decline with Asian Clients

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In our review of the extant literature on cognitive decline and dementia in Asian elders we made several key observations. First, the literature on the assessment of cognitive decline in Asian elders in a US context is extraordinarily limited. In fact, the vast majority of relevant research has been internationally conducted, possibly limiting the generalizability of norms and cutoffs to Asian elders residing in the USA. Second, many Asian cultures possess a great deal of stigma towards with cognitive decline, making assessment more difficult. For example, the Chinese word for dementia is 痴呆 Chīdāi; the first character means "imbecile" or "silly" and the second means "foolish" or "stupid" (Dementia, 2013). Unfortunately, dementia is present in Asian elders with an estimated prevalence rate of 9 % in primacy care settings. While this is lower than the 16 % prevalence rate observed in Caucasian individuals in primary care settings (Chen, Foo, & Ury, 2002), it is clear from these numbers that a substantial number of Asian elders are impacted by cognitive impairment. Complicating things further is the broad range of diversity that constitutes the Asian culture; 24 ethnicities make up the Asian American panoramic in the USA (U.S. Census Bureau, 2000), and each of these ethnic groups has its own language, customs, and challenges in assessment. Finally, our review of the literature also revealed numerous sources that emphasized the importance of considering literacy and educational attainment when assessing for cognitive decline with Asian elders.

In addition to the observations we made in our review of the literature, Dick and colleagues (2006) outlined the challenges in assessing dementia in Asian elders which include perceiving memory problems as a normal part of aging and misattributing cognitive impairment to the stress of immigration and acculturation, an imbalance of yin and yang, mental illness, or punishment for past actions. Dick and colleagues also noted the complexities of language that result in difficulty translating and adopting existing tests. As a result, a number of experts have proposed alternatives for words when words or phrases either do not exist in another language or the translation itself creates nuanced problems. For example, in the Shanghai version of the MMSE

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"please close your eyes" was replaced with "please raise your hands" as "please close your eyes" has a death connotation in Shanghai (Zhang et al., 1990). Moreover, differential linguistic performance has been demonstrated for tasks that involve recall where the number of syllables varies across languages. For example, Hispanic individuals completing digit span tend to perform poorer on digit span as the numbers in Spanish produce a greater number of syllables whereas Vietnamese and Chinese speaking individuals score higher on these same tests (Dick et al., 2006).

Dick and colleagues (2006) also discussed the relevance of timed tasks with Asian clients, emphasizing that many Western psychological tests place a premium on efficiency. Specifically, they discussed how Spreen and Strauss (1998) found that Asian individuals took longer to complete Part A of the Trail Making Test than their Caucasian peers even when educational differences were accounted for. Others have also cited the fast pace as a Western and particularly US cultural characteristic. Indeed, researchers have found that even when education is controlled for, Chinese individuals take longer on timed tests than Caucasians (Spreen & Strauss, 1998). Therefore the test administrator may take this into account particularly in instances where performance is poor on time measures only.

Given the limited research available on this population, we choose to limit the scope of this chapter to assessment measures that function as screens for cognitive impairment and to assessments that are specific to Asian cultural groups. We also took care to limit our discussion of the measures that are the most applicable to Asians who are residing in the USA as the focus in this book is mostly within that context, although when necessary we extended beyond research conducted in a US context and ventured abroad for resources to provide the most salient recommendations for assessment possible.

The American Psychological Association (2011) created guidelines for the evaluation of dementia and age-related cognitive decline, emphasizing the importance of the clinical interview and the administration of standardized psychological and neuropsychological tests. The guidelines call for the use of a brief mental status examination and for comprehensive neuropsychological evaluations for dementia and cognitive change including tests that assess multiple cognitive domains including memory, attention, perceptual and motor skills, language, visual-spatial abilities, reasoning, and executive functions (and in certain instances measures of mood and personality). Because the neuropsychological assessment chapter in this book covers a range of tests that are specific for the evaluation of the above domains, we refer the reader to that chapter for specifics regarding the appropriate use of these tests in Asian American populations.

Mini-Mental Status Examination

The Mini-Mental Status Examination (MMSE; Folstein, Folstein, & McHugh, 1975) is a 30-item measure assessing seven cognitive domains including orientation to time, orientation to place, registration, attention and calculation, recall, language, and visual construction. For the standard English version of the MMSE the cutoff is 24 out of 30, with a score of 23 or less indicating cognitive impairment.

There are several versions of the MMSE that are applicable to Asian individuals although the bulk of the research on these measures was conducted abroad and therefore their generalizability should be taken into consideration. For example, the Chinese Mini-Mental Status Examination (C-MMSE) was initially developed by Katzman et al. (1988) and since then a series of cultural and linguistic modifications of MMSE for C-MMSE have been recommended (see Table 19.1 for details). In addition to cultural and linguistic modifications, our review of the literature revealed varying cutoff scores with corresponding sensitivity and specificity levels (see Table 19.2 for details). Moreover, adjustments based on literacy and educational attainment have been developed. For example Cui and colleagues (2011) reported that the Institute of Mental Health of Peking University recommends using the following cutoff scores: 14/15 for individuals who are illiterate and 19/20 for individuals who are non-illiterate. In terms of educational adjustments, Cui et al. reported that the Shanghai Mental Health Center

Table 19.1 Cultural and linguistic modifications for Chinese versions of the MMSE

Measure	Item	Revised item	Source
CMMSE	Orientation (place, floor, city, county, state)	Province, district, street, place, floor	Katzman et al., 1988 as cited in Zhang et al., 1990
	Repetition ("no if, ands, or buts")	"Forty-four stone lions"	Katzman et al., 1988 as cited in Zhang et al., 1990
	Following commands ("close your eyes")	"Please raise your hands"	Katzman et al., 1988 as cited in Zhang et al., 1990
	Sentence construction ("write a sentence")	"Say a sentence" to account for lack of education	Chiu et al., 1998
	Attention (spell "world" backwards)	Reversal of five digits	Chiu et al., 1998
	Registration (apple, table, penny)	National flag, tree, rubber ball	Xu, Meyer, Huang, & Du, 2003
CAMSE	Registration (apple, table, penny)	Apple, table, ax	Xu et al., 2003
	Attention (spell "world" backwards)	"JIN MU SHUI HUO TU" (metal, wood, water, fire, earth) backwards	Xu et al., 2003
	Naming (pencil, watch)	Button, watch	Xu et al., 2003
	Following commands ("close your eyes")	Observing and imitating the posture shown by a cartoon of a man crossing his arms across his chest	Xu et al., 2003
	Sentence construction ("write a sentence")	Ask: "If you did not know my name how would you find out my name?"	Xu et al., 2003

CMMSE Chinese Mini-Mental Status Examination, *CAMSE* Chinese Adapted Mini-Mental Status Examination

Table 19.2 Cutoff scores and sensitivity and specificity levels for the Chinese versions of the MMSE

Measure	Source	Cutoffs	Specificity (%)	Sensitivity (%)	Notes
CAMSE	Xu et al., 2003	22	86.44	81.67	For literate participants
	Xu et al., 2003	20	73.17	84.85	For illiterate participants
CMMSE	Wong et al., 2013	23/24	84	58	
	Sahadevan, Lim, Tan, & Chan, 2000	20/21	93	94	Aged 60–74 with 0–6 years of education
	Sahadevan et al., 2000	23/24	87	93	Aged 60–74 with more than 6 years of education
	Sahadevan et al., 2000	18/19	92	94	Aged 75 and older with 0–6 years of education
	Sahadevan et al., 2000	22/23	88	100	Aged 75 and older with more than 6 years of education
	Zhang et al., 1990	17/18	92.7	85.2	No formal education
	Zhang et al., 1990	20/21	92.7	85.2	1–6 years of education
	Zhang et al., 1990	24/25	92.7	85.2	More than 6 years of education
	Hu et al., 2013	26	53	85	For detecting MCI
	Hu et al., 2013	26	95	94	For detecting AD

CMMSE Chinese Mini-Mental Status Examination, *CAMSE* Chinese Adapted Mini-Mental Status Examination

recommends 17/18 for those without formal education, 20/21 for those with 1–6 years of education (primary school), and 24/25 for participants with more than 6 years of education (middle school or higher). Similarly, the Beijing Union Medical College recommends the following cutoff scores: 19/20 for those without formal education, 22/23 for those with 1–6 years of education (primary school), and 26/27 for participants with more than 6 years of education (middle school or

Table 19.3 Cultural and linguistic modifications for Indian version of the Hindi Mini-Mental Status Examination (H-MMSE; Ganguli, Ratcliff, Chandra, Sharma, & Gilby, 1995)

Item	Revised item
Orientation (day, date, month, year, season)	Time of day, day of week, date, month, season
Orientation (place, floor, city, county, state)	District, postal district, village, block, "whose house is this?"
Registration (apple, table, penny)	Mango, chair, coin
Attention (spell "world" backwards)	Name the days of the week backwards
Naming (pencil, watch)	Pen, watch
Repetition (repeat "no if, ands, or buts")	"Neither this nor that"
Following commands ("close your eyes")	If illiterate, told "look at me and do exactly what I do" and then the examiner closes his or her own eyes
Sentence construction ("write a sentence")	Ask "tell me something about your house"
Copy intersecting pentagons	Copy a diamond within a square

higher). If an individual scores below these cutoffs cognitive impairment is suspected and further assessment is required. In additional to the C-MMSE, other renditions of the MMSE that are specific to varying cultural groups also exist. Tables 19.3 and 19.4 summarize linguistic and cultural modifications to various renditions of the MMSE, and Table 19.5 summarizes recommended cutoff scores and sensitivity and specificity levels for the same measures.

In our review we noted a few important findings that merit a discussion here. First, Tse and colleagues (2013) noted that enhancement of older adults' performance on some C-MMSE items, including attention and orientation to time and place, highlights the role of attention as an early marker for dementia. While not specific to Asians, Tse et al. also reported that it is likely that education enhances performance in some C-MMSE components because the tasks involved reflect typical routine tasks learned in school. In light of the findings described above some experts focused on adapting the MMSE for those who are illiterate or minimally educated (Xu et al., 2003). For example, as shown in Table 19.1, the CAMSE asks participants to respond to the question "If you did not know my name how would you find out my name?" rather than "write a sentence" to account for educational differences.

Montreal Cognitive Assessment

The Montreal Cognitive Assessment (MoCA) is used to assess for mild cognitive impairment (MCI) and covers several domains including attention, orientation, language, verbal memory, visual-spatial ability, and executive function. A score of ≥ 26 (out of a possible 30 points) is indicative of normal cognitive functioning with a 1-point education correction for those individuals who have less than 12 years of education (Nasreddine, Phillips, Bedirian, et al., 2011). It is freely available in multiple languages on the Internet (http://www.mocatest.org/) with available references regarding its use related to a broad spectrum of cognitive disorders (e.g., Parkinson's, Alzheimer's dementia, HIV-related dementia) as well as a bibliography detailing the research that has been conducted on this measure. This measure has been demonstrated to be reliable, valid, specific, and sensitive (e.g., Nasreddine et al., 2011; Luis, Keegan, & Mullan, 2009). For example, Smith, Gildeh, and Holmes (2007) administered the MoCA and the MMSE to 32 individuals with dementia, 23 individuals with MCI, and 12 controls at baseline and at 6-month follow-up. They found that the MoCA was effective in identifying those at risk of developing dementia at 6-month follow-up.

A review of the extant literature revealed that the MoCA may effectively be used with Taiwanese (Tsai et al., 2012), Japanese (Fujiwara et al., 2010), Korean (Lee et al., 2008), Chinese (Hu et al., 2013; Lu et al., 2011; Wong, Lam et al., 2013; Zhang & Liu, 2008), Thai (Tangwongchai et al., 2009), and Sri Lankan individuals (Karunaratne, Hanwella, & de Silva, 2011). Moreover, research on this measure with Chinese individuals revealed that it is a useful and psychometrically valid tool for the assessment of gross cognitive function in patients who have experienced a traumatic brain

Table 19.4 Cultural and linguistic modifications for Korean, Taiwanese, and Thai versions of the MMSE

Group	Measure	Item	Revised item	Source
Korean MMSE	K-mMMSE	Registration (apple, table, penny)	Airplane, pine tree, sincerity	Seul-Ki, Ki-Hyun, & Jae-Min, 2004
	MMSE-K	Following commands ("close your eyes")	Ask: "Why do people wash their clothes?"	Park & Kwon, 1990
	MMSE-K	Sentence construction ("write a sentence")	Ask: "How can you give an ID card back to the owner if you find it on the street?"	Park & Kwon, 1990
	MMSE-K	Repetition (repeat "no if, ands, or buts")	In Korean, "all Korea, beautiful"	Park & Kwon, 1990
	K-MMSE	Repetition (repeat "no if, ands, or buts")	In Korean, "seeing is believing"	Han et al., 2008
	K-MMSE	Three-stage command ("take this paper in your right hand, fold it in half, and put it on the floor")	"Turn the paper over, fold it in half, and give it to me"	Han et al., 2008
Taiwanese MMSE	CMMSE	Orientation (place, floor, city, county, state)	City, district, street, floor, room	Shyu & Yip, 2001
		Registration (apple, table, penny)	Bicycle, happy, red	Shyu & Yip, 2001
		Repetition (repeat "no if, ands, or buts")	"Black words are truly written on white paper"	Shyu & Yip, 2001
Thai MMSE		Repetition (repeat "no if, ands, or buts")	"Today is a good day"	Phanthumchinda, Jitapunkul, Sitthi-Amorn, Bunnag, & Ebrahim, 1991
		Attention (spell "world" backwards)	Spell "Bangkok" backwards (in Thai)	Phanthumchinda et al., 1991

Given the limited existent data for the Japanese MMSE there are no suggested cultural and linguistic modifications

injury (Wong et al., 2013) and for individuals with cerebral small vessel disease (Wong et al., 2009). The usefulness of this measure is not only specific to Chinese individuals but also with elderly individuals from other Asian backgrounds and can be used effectively to screen for MCI (Lee et al., 2008). Table 19.6 summarizes the research on the MoCA with various Asian groups.

Despite the ample body of research that supports the use of this measure with individuals of various Asian backgrounds, Lu and colleagues (2011) highlighted that the generalizability of the MoCA's validity to large general (non-clinical) populations (as it had mostly been researched in clinical settings) was questionable. In light of this, Lu et al. examined the use of the MoCA with cognitively normal individuals, individuals with MCI, and individuals with dementia in mainland China. They established that the MoCA is in fact a valid screen for cognitive impairment.

Similar to the MMSE, several authors recommended cultural and linguistic modifications of MoCA for the different Asian populations. For example, even among those with the highest level of education, the words "watch" and "ruler" in the abstract thinking task were only correctly identified 50 % of the time in the Chinese population (Hu et al., 2013). Table 19.6 summarizes linguistic and cultural modifications that are recommended, and Table 19.7 summarizes available recommended cutoff scores and sensitivity and specificity levels. It is important to note that much of the research described above has been conducted abroad and therefore when using the MoCA with individuals residing in the USA, results may need to be interpreted with caution.

Table 19.5 Cutoff scores and sensitivity and specificity levels for the Indian, Japanese, Korean, Taiwanese, and Thai versions of the MMSE

Group	Measure	Source	Cutoffs	Spec. (%)	Sens. (%)	Recommendations
Indian MMSE	MMSE	Ng, Niti, Chiam, & Kua, 2007	23/24	75.6	97.5	This study included Chinese, Malay, and Indian participants
Japanese MMSE	Japanese MMSE	Konagaya et al., 2007	26	95.3	91.8	
	Japanese MMSE	Fujiwara et al., 2010	28/29	97	89	Participants in study limited to mild AD
Korean MMSE	K-mMMSE	Seul-Ki et al., 2004	69/70	79	86	For detecting MCI; authors used an expanded scoring (0–100) to allow for finer discrimination
	K-mMMSE	Seul-Ki et al., 2004	59/60	78	91	For detecting AD; authors used an expanded scoring (0–100) to allow for finer discrimination
	MMSE-K	Park, Park, & Ko, 1991	23/24	91.5	92	
	K-MMSE	Heo, Lee, Park, Ahn, & Kim, 2012	23/24	80	82	For detecting AD
	K-MMSE	Heo et al., 2012	26/27	65	62	For detecting MCI
Taiwanese MMSE	MMSE-short	Lou, Dai, Huang, & Yu, 2007	11 (out of 16)	97.4	100	16-item measure assessing orientation, recall, and attention and calculation
Thai MMSE	MMSE-Thai 2002	Limpawattana et al., 2012	24	66.3	78.7	
	MMSE-Thai 2002	Limpawattana et al., 2012	24	76.8	35.4	Illiterate participants; suggested cutoff is 14
	MMSE-Thai 2002	Limpawattana et al., 2012	24	88.9	56.6	Participants with 0–6 years of education; suggested cutoff is 17
	MMSE-Thai 2002	Limpawattana et al., 2012	24	91.2	92	Participants with more than 6 years of education; suggested cutoff is 22
	Thai MMSE	Phanthumchinda et al., 1991	18	75	78	

Hasegawa Dementia Scale

The original Hasegawa Dementia Scale (HDS; Hasegawa, Inoue, & Moria, 1974) consisted of 11 items, took 10 min to administer, was predominantly used in East Asian countries, and was characterized by eastern social and cultural backgrounds. Since then the HDS has been revised (HDS-R) and shortened to nine items that assess for orientation to age, time, and date; orientation to place; memory of three words; calculation; recall of numbers in reverse order; delayed recall of three words; memory of five objects; and verbal fluency. A score of 20 or less (out of 30) indicates cognitive impairment

Table 19.6 Cultural and linguistic modifications for the MoCA

Group	Measure	Item	Revised item	Source
Chinese	MoCA-C; BJ-MoCA	Alternating Trail Making (Roman alphabets)	Chinese character sequences 甲/乙/丙/丁/戊	Hu et al., 2013; Lu et al., 2011; Nie et al., 2012; Yu, Li, & Huang, 2012
	MoCA-C; BJ-MoCA	Attention-Auditory Vigilance (English alphabet)	Arabic numerals	Hu et al., 2013; Lu et al., 2011; Nie et al., 2012; Yu et al., 2012
	MoCA-C	Language—Sentence repetition	Names were changed to more common Chinese names	Hu et al., 2013
	MoCA-C; BJ-MoCA	Language—Verbal fluency (phonemic letter fluency)	Animal category fluency	Hu et al., 2013; Lu et al., 2011; Nie et al., 2012; Yu et al., 2012
	MoCA-C	Alternating Trail Making (character sequence)	Suggested change: Color changes	Hu et al., 2013
	MoCA-C	Naming Test ("rhinoceros" and "camel")	Suggested change: Replace with "tiger" and "panda"	Hu et al., 2013
	MoCA-C	Word memory test ("velvet" and "church")	Suggested change: Replace with "silk" and "temple"	Hu et al., 2013
	BJ-MoCA	Word memory test ("velvet" and "daisy")	"Silk" and "chrysanthemum"	Yu et al., 2012; Lu et al., 2011
Korean	MoCA-K	Word memory test ("velvet" and "daisy")	"Silk" and "azalea"	Lee et al., 2008
	MoCA-K	Language—Verbal fluency (phonemic letter fluency)	Objects bought in a market fluency	Lee et al., 2008
	MoCA-K	Alternating Trail Making (Roman alphabets)	Korean character sequences	Lee et al., 2008
Sinhalese	MoCA-S	Alternating Trail Making (Roman alphabets)	Sinhala alphabet	Karunaratne et al., 2011
		Naming Test ("rhinoceros" and "camel")	"Rabbit" and "elephant"	Karunaratne et al., 2011
		Word memory test ("velvet," "church," and "daisy")	"Cotton," "temple," "Araliya" (a flower)	Karunaratne et al., 2011
		Language—Sentence repetition (the name "John")	The name "Nimal"	Karunaratne et al., 2011
		Verbal fluency (words beginning with "F")	Words beginning with "S"	Karunaratne et al., 2011

(Katoh et al. as cited in Tsuboi et al., 2009). The HDS-R is more focused on memory and verbal fluency than the MMSE and therefore may be more sensitive and specific regarding screening for Alzheimer's disease than the MMSE (Kim et al., 2005; Tsukamoto et al., 2009). The HDS and the HDS-R have both been fairly well researched with a focus in Japan and China (e.g., Mu et al., 2000). Our review of the literature also revealed a Korean version of the HDS-R, which has been demonstrated to be more robust to demographic influences than the MMSE (Jeong et al., 2007) and better suited as a screening instrument for Alzheimer's disease than the MMSE (Kim et al., 2005). Some additional observations that we made as we were reviewing the literature include that older age, lower education, and being male can impact the performance of the HDS-R (Jeong et al., 2007; Mu et al., 2000) and therefore adjustments to cutoff scores based on these factors may be necessary. Specifically Jeong et al. (2007) found that these factors were associated with lowered performance on the HDS-R. Despite these caveats the HDS-R has been demonstrated to be a valid means to screen for cognitive impairment (Kim et al., 2005;

Table 19.7 Cutoff scores and sensitivity and specificity levels for the MoCA

Group	Measure	Source	Cutoffs	Specificity (%)	Sensitivity (%)	Recommendations
Chinese	MoCA-C	Hu et al., 2013	26	85	92	For detecting MCI
	MoCA-C	Hu et al., 2013	26	96	92	For detecting AD
	BJ-MoCA	Lu et al., 2011	13/14	83.2	80.9	No formal education
	BJ-MoCA	Lu et al., 2011	19/20	82.5	83.8	1–6 years of education
	BJ-MoCA	Lu et al., 2011	24/25	81.5	89.9	More than 6 years of education
	BJ-MoCA	Yu et al., 2012; Lu et al., 2011	22	63.9	68.7	
Japanese	MoCA-J	Fujiwara et al., 2010	25/26	87	93	For detecting MCI
	MoCA-J	Fujiwara et al., 2010	25/26	89	100	For detecting AD
Korean	MoCA-K	Lee et al., 2008	22/23	84	89	For detecting MCI
	MoCA-K	Lee et al., 2008	22/23	84	98	For detecting AD
Sinhalese	MoCA-S	Karunaratne et al., 2011	24	79.6	98.1	
Taiwan	MoCA-T	Tsai et al., 2012	23/24	78	92	
Thailand	Moca-Thai	Tangwongchai et al., 2009	24	80	80	

Table 19.8 Cutoff scores and sensitivity and specificity levels for the HDS-R

Group	Measure	Source	Cutoffs	Specificity (%)	Sensitivity (%)	Recommendations
Chinese	HDS-R	Mu et al., 2000	17	97.7	95.1	
Japan	HDS-R	Fujiwara et al., 2010	26/27	97	97	Participants in study limited to mild AD
Korea	HDS-R	Kim et al., 2005	18/19	89	88.6	For detecting MDI
	HDS-R	Kim et al., 2005	17/18	92.7	90.2	For detecting AD

Yamamoto et al., 2012) and has been used frequently in epidemiological research studies (e.g., Shiba et al., 1999). Table 19.8 summarizes the limited available data for recommended cutoff scores and sensitivity and specificity levels.

Cognitive Abilities Screening Instrument

The Cognitive Abilities Screening Instrument (CASI) is a 40-item measure of global cognitive functioning that combines items from the MMSE and HDS-R to assess attention, concentration, orientation, short-term memory, long-term memory, language abilities, visual construction, list-generating fluency, abstraction, and judgment (Teng et al., 1994). Originally designed for use in Japan, scores range from 0 to 100 with Teng and colleagues finding the original cutoff to range between 70 and 76 in Japan.

Dick and colleagues (2006) summarized the research on the CASI and indicated that valid versions of the CASI exist for English-speaking individuals in Guam; Chinese elders in Kimmen and Taiwan; Japanese elders in Seattle, Honolulu, and Japan; and individuals in Vietnam. They also reported that both education and age-related norms exist for the Chinese and Taiwanese versions of this measure. Some experts have indicated that the (Chinese) CASI has superior specificity and similar sensitivity to the MMSE (Rong, Zhuming, & Xiehe, 2000), at least when used in international settings. Our review of the literature revealed that the CASI has been used extensively in a variety of areas, including examining cognitive decline in mild Alzheimer's disease (Huang et al., 2013), depression (Chen,

Table 19.9 Cutoff scores and sensitivity and specificity levels for the CASI

Group	Measure	Source	Cutoffs	Specificity (%)	Sensitivity (%)	Recommendations
Chinese	CASI C-2.0	Lin et al., 2002	49/50	85	83	No education
	CASI C-2.0	Lin et al., 2002	67/68	91	83	1–5 years of education
	CASI C-2.0	Lin et al., 2002	79/80	90	89	More than 6 years of education
	CASI C-2.0	Tsai, Lin, Wu, & Liu, 2004	78.5	97.1	91.9	
Osaka, Japan	CASI	Teng et al., 1994	70/71	94	95	
Tokyo, Japan	CASI	Teng et al., 1994	75/76	93	93	

Yeh, & Tsai, 2012), and white matter lesions (Inaba et al., 2011).

We identified only a single study that examined the psychometric properties of the CASI. Gibbons and colleagues (2009) reported that while the CASI had been designed for use in cross-cultural studies in Japanese and Japanese-American elderly in Japan and the USA, the equivalence of the Japanese and English-language version of this measure had not been investigated. Using an impressive sample of Japanese-American elderly they found that the CASI measures cognitive function equivalently in Japanese and English. Recommended cutoff scores and sensitivity and specificity levels are reported in Table 19.9.

The Seoul Neuropsychological Screening Battery

The Seoul Neuropsychological Screening Battery (SNSB; Kang & Na, 2003) assesses traditional domains of language, visual-spatial abilities, as well as attention, memory, and executive functioning that are common in most neuropsychological evaluations. This battery is being described here as it has been adapted to include a dementia-specific screen (SNSB-D; Ahn, Kim, Saxton, & Kim, 2007) that has good overall convergent validity with the MMSE ($r=0.876$) as well as moderate-to-good convergent validity for the general cognitive functioning score and the subdomains of the SNSB-D (attention $r=0.629$, language and related function $r=0.848$, visual-spatial function $r=0.779$, memory $r=0.945$, frontal/executive function $r=0.919$). Further, the SNSB-D was able to differentiate among a sample of Korean patients with MCI, Koreans with Alzheimer's dementia, and normal controls, with a high degree of test–retest reliability (0.960 for normal controls, 0.999 for MCI, and 0.918 for Alzheimer's dementia). With the exception of the subtest that is used to measure frontal lobe/executive functioning ($p<0.072$), the discriminant validity of this measure is good (being able to discriminate normal controls from cognitively impaired individuals). Despite the apparent strong psychometric properties of this measure, it was developed and designed for use in Korea. Thus, it presents several challenges for the clinician who is not fluent in Korean and who practices in the USA. It was introduced here mainly to support the initial assertion that there are universal constructs across cultures as evidenced by the inclusion of the aforementioned domains of neuropsychological functioning.

Clinical Dementia Rating Scale

The Clinical Dementia Rating (CDR) is a semi-structured, informant-based interview designed to examine a person's memory, orientation, judgment and problem solving, community affairs, home and hobbies, and personal care. The person is assigned a score (on a 5-point spectrum) ranging from "none" to "severe." Scores in each of these are combined to obtain a composite score that ranges from 0 through 3 (Morris, 1993). The CDR is relevant here as it has been described as a

global clinical scale, has established diagnostic, severity-ranking utility, and has been amply researched with Asian individuals (Lim, Chong, & Sahadevan, 2007). In a review of the extant literature on the CDR and Asian individuals Lim, Chong, and Sahadevan concluded that clinicians who use the CDR with Asian individuals should be mindful of the influence of cultural factors on premorbid lifestyle, informant reliability, and performance in certain CDR test items (specifically judgment and problem solving, community, and home and hobbies).

Generally speaking there is support that this measure can be useful with Asian clients who are suspected of having dementia. For example, Lim and colleagues (2005) conducted a retrospective review of 329 multiracial Asian patients who attended their clinic from 1994 to 1999. They found substantial evidence for the validity of the CDR's overall ability to stage dementia severity. Specifically the CDR showed convergent validity when compared against clinical features, mental status, and psychometric test scores and DSM III-R measures of dementia severity. More recently Lam and colleagues (2010) explored the applicability of a combined cognitive and clinical approach to identify older Chinese adults at risk of cognitive decline. Community-dwelling participants (aged 60 or over; $N = 740$) were assessed at baseline and 2 years with CDR and a cognitive battery. They conducted that a combined approach may be more practical in screening for MCI participants with diverse educational and cultural background highlighting the importance of collateral contacts when cognitive decline is suspected. Therefore in addition to cognitive batteries, measures such as the CDR should be used to assess for the presence of cognitive decline. In addition to the above, the CDR has been effectively used in validity and reliability studies of other measures to assess Alzheimer's disease in Korean patients (Ahn et al., 2007).

Recommendations

In this chapter we reviewed several screening instruments that can be used with Asian elders to screen for cognitive impairment as well as other relevant measures that can be useful when cognitive decline associated with dementia is suspected. Our review of the literature revealed several themes, which resulted in the following recommendations.

The Asian cultural panoramic in the USA is broad, and clinicians are likely to encounter individuals with varying levels of acculturation as well as individuals who were born in the USA; individuals who immigrated to the USA during childhood; and individuals who immigrated to the USA as adults. Our first recommendation is that the clinician assess the client's level of acculturation as well as his or her level of fluency in English (which again can range broadly—some clients will be native English speakers whereas others may not be able to speak English at all). Based on the client's level of acculturation and level of English proficiency, the clinician should determine the client's optimal language for testing (this is typically the person's native language) as researchers found an inverse relationship between years spent in one's native country during school age and cognitive performance in late life (Yano et al., 2000).

The clinician should be aware that the client may not come forth with concerns about cognitive decline because of the stigma associated with dementia and also with the possible misattributions of memory impairments that have been documented in the literature (Dick et al., 2006). Therefore it is important that when cognitive decline is suspected (particularly cognitive decline that is associated with dementia) measures such as the CDR be used and/or that the clinician make contact with collaterals. Moreover, the clinician should not assume that multilingualism may act as a protective factor against the development of dementia. For example, researchers have found that for Japanese individuals, multilingualism did not act as a protective factor against the development of cognitive decline in later life (Crane et al., 2010). Screening for cognitive impairment is important, and thus our second recommendation is that screening for cognitive impairment occur at routine appointments, as researchers found that Asians are not as likely to seek mental health services as other ethnic groups (Meyers, 2006).

Our third recommendation is that clinicians consider the various adjustments discussed within this chapter. Adjustments to scores may be necessary based on the client's education (e.g., Tse et al., 2013) and age. We also encountered an abundance of literature that emphasized the importance for considering literacy and for the MMSE adjustments based on whether or not the person can read does exist (Xu et al., 2003). Moreover, the presence of agraphia may not in and of itself be an indicator of cognitive impairment despite literacy levels as individuals who do not practice writing characters regularly may be prone to committing errors due to lack of practice rather than cognitive impairment (Akanuma et al., 2010).

In this chapter we covered the following measures: MMSE, MoCA, HDS, CASI, SEOL, and CDR. Each of these measures comes with its own strengths and weaknesses, and the utility of each of these measures varies in terms of the client's educational attainment, literacy, and native language. These factors should all be considered for selecting the ideal screening instrument for a particular client or homogenous group of individuals. Ultimately each of these measures offers a reasonable means for screening for cognitive impairment, and if concerns arise, the clinician should refer the client for further testing. The neuropsychological assessment chapter in this book provides a detailed overview of the specific domains that should be tested when cognitive impairment is suspected and details recommendations for specific measures that assess said domains.

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