

# Canadian Academy of Geriatric Psychiatry Survey of Brief Cognitive Screening Instruments



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## ABSTRACT

### Background

The use of brief cognitive screening instruments is essential in the assessment of dementia. The purpose of this study is to determine the frequency of use and perceived characteristics of cognitive screening instruments among Canadian psychogeriatric clinicians.

### Methods

Members of the Canadian Academy of Geriatric Psychiatry (CAGP) and attendees to the 2010 Annual Scientific Meeting were asked to complete a computerized survey. This survey assessed the perceived characteristics and frequency of use of 14 instruments.

### Results

The survey had a 55% response rate, with a total of 155 respondents. The most commonly used instruments are the Clock Drawing Test (CDT), Mini-Mental State Exam (MMSE), Montreal Cognitive Assessment (MoCA), and Delayed Word Recall. Effectiveness, ease of administration, and speed of administration were the perceived characteristics of instruments most correlated with frequency of use.

### Conclusions

Consistent with previous surveys, a small number of cognitive screening instruments are used by the majority of clinicians. Use of the CDT and the MMSE were comparable. To our knowledge, this is the first survey demonstrating that the MMSE is not the most commonly used tool, and other, newer instruments like the MoCA, are gaining prominence.

**Key words:** cognitive screening, dementia screening, Clock Drawing Test (CDT), Montreal Cognitive Assessment (MoCA), neuropsychiatry, geriatric psychiatry, cognitive testing

## INTRODUCTION

With the aging of the population, there is an increased need for clinicians to ascertain for the presence of cognitive impairment and dementia. A number of tools and scales referred to as “cognitive screening instruments” are widely used for this purpose. These instruments can be used for both detecting and for ruling out cases.<sup>(1,2)</sup> Screening is a first step to identify and diagnose dementia. Early diagnosis allows for education of family about changes in behaviour, cognition, function or mood. Patients and families can undergo appropriate financial and testamentary planning, and prepare for end-of-life care. An early dementia diagnosis may also allow earlier intervention with medications, if necessary. However, false positives and stigma of dementia diagnosis are of concern. Ruling out dementia is useful to reassure older individuals and their family who worry about the possibility of dementia in the context of cognitive changes associated with normal aging. While there are now a large number of cognitive screening instruments that can be used for detecting or ruling out dementia,<sup>(3)</sup> the frequency of use of these instruments and their perceived characteristics is unclear. Previous surveys have ascertained the use and utility of these instruments in the community.<sup>(4-7)</sup> By and large, surveys have found that a small number of instruments are used by a large number of individuals, most commonly the Mini-Mental State Exam (MMSE).<sup>(8)</sup> Our goal was to survey Canadian psychogeriatric specialists, in a similar fashion to the survey of international psychogeriatric clinicians conducted at the International Psychogeriatric Association (IPA) congress in 2004.<sup>(7)</sup> We wanted to determine the frequency of use of several cognitive screening instruments, and their perceived characteristics, in order to inform clinicians globally about screening practices in Canada.

## METHODS

The survey was modelled in the same style as the IPA survey published in 2006: the first part of the survey gathered demographic data, the second part assessed the familiarity with and frequency of use of instruments, and the third part assessed the perceived characteristics of each instrument. The authors arrived at a consensus of which instruments to include in the survey based on results from the previous surveys, and on newer instruments that were felt to be important, or of interest based on the literature.<sup>(3)</sup> The instruments included were Alternating Sequences, Behavioural Neurology Assessment (BNA), Clock Drawing Test (CDT), Delayed Word Recall, Folstein Mini-Mental State Exam or its variants (MMSE), General Practitioner Assessment of Cognition (GPCOG), the Go/No-go test, Mini-Cog, Montreal Cognitive Assessment (MoCA), Rowland Universal Dementia Assessment Scale (RUDAS), Similarities, Test Your Memory (TYM), Trail Making Test, and Verbal Fluency. Frequency of use was rated on a four-point scale as “rarely or never”, “sometimes”, “often” or “routinely”. Respondents were then asked to rate the perceived characteristics only of the instruments with which they were familiar. For each instrument, the following perceived characteristics were then rated on the same four-point scale: quick to administer, well-tolerated, easy to administer, easy to score, and effective.

The survey was created on Survey Monkey (<http://www.surveymonkey.com>). In September 2010, two weeks prior to the annual scientific meeting of the CAGP, the survey link was emailed to all CAGP members and meeting registrants. This was repeated two days prior to the meeting. During the meeting, computers were set up for attendees to complete the survey on-site and they were encouraged to do so. Finally, reminders were emailed to members and attendees two weeks and one month after the meeting, prior to closing off the survey.

Survey results were collated in an SPSS spreadsheet and analysis was done with SPSS (version 15.0). Spearman’s correlation analysis was completed to assess the relationships among the frequency of use and specific perceived characteristics of the instruments. Cross-tabs analyses were conducted to assess relationships between demographic characteristics of the respondents and familiarity, frequency of use, and perceived characteristics.

## RESULTS

There were 219 CAGP members at the time of the survey, as well as 189 people attending the meeting, 127 of which were CAGP members, for total of 281 possible respondents. There were 155 respondents, representing a 55% response rate. Respondent demographics are shown in Table 1. Most respondents were geriatric psychiatrists (66%), followed by nurses (9%) and general psychiatrists (8%). Respondents’ modal demographic characteristics were as follows: they

TABLE 1.  
Demographic characteristics of 155 survey respondents

<i>1. Professional Discipline</i>			
	Geriatric psychiatrist	101	65.6%
	Nurse	14	9.1%
	General psychiatrist	13	8.4%
	Other	26	16.9%
	Total	154	
	Skipped question	1	
<i>2. Membership in The Canadian Academy of Geriatric Psychiatry</i>			
	Yes	108	72.0%
	No	42	28.0%
	Total	150	
	Skipped question	5	
<i>3. Age</i>			
	35 and under	20	13.2%
	36-45	45	29.6%
	46-55	51	33.6%
	56-65	27	17.8%
	Over 65	9	5.9%
	Total	152	
	Skipped question	3	
<i>4. Gender</i>			
	Male	53	35.3%
	Female	97	64.7%
	Total	150	
	Skipped question	5	
<i>5. Years of Clinical Practice</i>			
	0-5	31	20.1%
	5-10	19	12.3%
	11-20	39	25.3%
	More than 20	65	42.2%
	Total	154	
	Skipped question	1	
<i>6. Primary Setting of Clinical Practice</i>			
	Academic (teaching) hospital	82	53.6%
	Community hospital	30	19.6%
	Community office	25	16.3%
	Other	16	10.5%
	Total	153	
	Skipped question	2	
<i>7. Location of Clinical Practice</i>			
	Ontario	96	62.7%
	British Columbia	20	13.1%
	Quebec	15	9.8%
	Alberta	8	5.2%

TABLE 1.  
Continued.

Other	14	9.3%
Total	153	
Skipped question	2	
8. <i>Percentage of Professional Practice Devoted to Care of the Elderly</i>		
0%-25%	8	5.2
26%-50%	16	10.4
51%-75%	21	13.6
76%-100%	100	70.8
Total	154	
Skipped question	1	

were members of the CAGP (72%), female (65%), between the ages of 46 and 55 (34%), resided in the Province of Ontario (63%), worked in an academic hospital (54%), had more than 20 years of clinical practice (42%), and dedicated over 75% of their professional effort to the care of elderly patients (71%).

Table 2 shows the frequency of use of the 14 instruments: four were used often or routinely by the majority of respondents: CDT, MMSE, MoCA, and Delayed Word Recall, in that order. Table 3 shows the Spearman's correlation analysis. All instrument perceived characteristics were significantly intercorrelated (Spearman's  $r$  ranged from 0.293–0.776). All the instrument-perceived characteristics were also significantly, but modestly, correlated with frequency of use (Spearman's  $r$  ranged from 0.199 to 0.323). Table 4 shows correlation between individual instrument characteristics and usage of each instrument.

In terms of the relationship between demographic characteristics of the respondents and familiarity, frequency of use, and perceived characteristics, the only clearly significant result was that males use Verbal Fluency more than females ( $\chi^2 17.574, p = 0.001, df = 3$ ). No significant relationships were identified between perceived characteristics and professional discipline, years of clinical practice, or practice setting.

## DISCUSSION

Consistent with previous literature, the most significant finding of this Canadian survey is that a small number of cognitive screening instruments are used by the majority of clinicians. Only the CDT, MMSE and its variants, MoCA, and Delayed Word Recall, in that order, were used often or routinely by a majority of respondents. It is notable that in this survey, the CDT is now used as often as the MMSE. In the IPA survey that was mailed out in the fall of 2004, 92% of respondents used the MMSE often or routinely, followed by the CDT (72%), Delayed Word Recall (56%), and Verbal Fluency (39%). In the Canadian primary care survey published in 2009, the most frequently used instruments were the

MMSE and variants (76%), Delayed Word Recall (56%), CDT (53%), Alternating Sequences (13%), and the MoCA (5%).

The MMSE has long been the most commonly used cognitive screening instrument to ascertain for cognitive impairment as it was the first instrument specifically designed for this purpose. Over the years, however, a number of shortcomings of the MMSE have been reported including lack of sensitivity to frontal pathology and biases based on education, language, and culture.<sup>(3)</sup> Some researchers feel that the MMSE has outlived its purpose.<sup>(9)</sup> The only correlation of perceived characteristic and use of the MMSE in our survey was ease of scoring. This may reflect familiarity and use from habit. As more options have become available, it appears that in Canada an increasing number of psychogeriatric clinicians are using the CDT and other instruments instead of, or in addition to, the MMSE. In our survey, the use of the CDT was correlated with its perceived tolerability by patients and effectiveness, speed, and ease of administration. A recent study assessed the utility of the CDT together with the MMSE in detecting mild cognitive impairment (MCI). In this study, the CDT better differentiated healthy controls from MCI patients. In contrast, the MMSE better differentiated MCI patients from subjects affected by dementia.<sup>(10)</sup> A Brazilian study also confirmed that the CDT is a useful instrument to ascertain the presence of dementia: the co-administration of the CDT and MMSE improved sensitivity and specificity for ascertainment of dementia in a geriatric outpatient population with heterogeneous education levels.<sup>(11)</sup> A Spanish group of researchers has named this MMSE–CDT combination the “Mini-Clock” and confirmed its good psychometric properties in ascertaining MCI and mild AD.<sup>(12)</sup> A systematic review has shown that, while the CDT is less susceptible to bias than the MMSE, it is still somewhat susceptible to bias related to age, education, language, and scoring method.<sup>(13)</sup> Furthermore, the overall ability of the CDT alone to detect MCI does remain weak.<sup>(14)</sup> Qualitative observations of clock drawing errors can help increase sensitivity of the CDT to MCI. Use of a more detailed scoring system is necessary to differentiate individuals with MCI from cognitively healthy older adults.<sup>(15,16)</sup>

While the MoCA is still a relatively new instrument, it has become relatively popular among Canadian physicians. In the Canadian Primary Care Survey mailed out in 2007, the MoCA was used by 5% of the physician sample.<sup>(4)</sup> The MoCA is gaining recognition outside of Canada, as well.<sup>(17)</sup> Our finding that by 2010 the MoCA was used often or routinely by 80% of Canadian psychogeriatric clinicians is quite remarkable, given that the MoCA was designed specifically to detect MCI. However, recent literature supports the use of the MoCA in a number of different areas including neurooncology,<sup>(18)</sup> stroke,<sup>(19,20)</sup> HIV,<sup>(21)</sup> Parkinson's Disease,<sup>(22)</sup> and Huntington's Disease<sup>(23)</sup> — all consistent with the increasing popularity of this instrument. In our survey, ease of scoring, effectiveness, ease of administration, and tolerability were

TABLE 2.  
Frequency of use of cognitive screening instruments

<i>Test</i>	<i>n (number familiar)</i>	<i>Never or Rarely</i>	<i>Sometimes</i>	<i>Often</i>	<i>Routinely</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
Clock Drawing Test	141	3.50%	3.50%	18.40%	74.50%	3.64	0.72	1
Folstein Mini-Mental State exam or variant (MMSE, SMMSE)	140	2.10%	6.40%	20.70%	70.70%	3.60	0.71	2
Montreal Cognitive Assessment (MoCA)	136	7.40%	12.50%	28.70%	51.50%	3.24	0.94	3
Delayed Word Recall	134	16.40%	9.00%	14.90%	59.70%	3.18	1.15	4
Trail Making Test	133	27.10%	29.30%	24.10%	19.50%	2.36	1.08	5
Verbal Fluency (FAS, Set test)	135	36.30%	20.70%	24.40%	18.50%	2.25	1.14	6
Similarities	130	41.50%	19.20%	17.70%	21.50%	2.19	1.20	7
Mini-Cog	133	59.40%	23.30%	10.50%	6.80%	1.65	0.92	8
Go/No-go Test	133	59.40%	27.10%	10.50%	3.00%	1.57	0.80	9
Alternating Sequences	131	61.10%	28.20%	7.60%	3.10%	1.53	0.77	10
Rowland Universal Dementia Assessment Scale (RUDAS)	133	89.50%	5.30%	3.00%	2.30%	1.18	0.60	12
Behavioural Neurology Assessment (BNA)	137	80.30%	14.60%	2.20%	2.90%	1.28	0.65	11
Test Your Memory (TYM)	130	94.60%	2.30%	3.10%	0.00%	1.08	0.37	13
General Practitioner Assessment of Cognition (GPCOG)	131	93.90%	4.60%	0.80%	0.80%	1.08	0.38	14

TABLE 3.  
Spearman's correlation analysis between specific instruments perceived characteristics and frequency of use

	<i>Frequency of Use</i>	<i>Quick to Administer</i>	<i>Well-tolerated</i>	<i>Easy to Administer</i>	<i>Easy to Score</i>	<i>Effective</i>
Frequency of Use			.219	.276	.199	.323
Quick to Administer	.222		.726	.770	.430	.293
Well-tolerated	.219	.726		.776	.438	.389
Easy to Administer	.276	.770	.776		.535	.408
Easy to Score	.199	.430	.438	.535		.438
Effective	.323	.293	.389	.408	.438	

Correlation is significant at the .01 level (two-tailed).

the most significant perceived characteristics correlated with the use of the MoCA.

In terms of the perceived characteristics of the instruments, effectiveness, ease of administration, and speed of

administration (in that order) correlated most strongly with frequency of use, although all these characteristics were intercorrelated. In the IPA survey, effectiveness and ease of administration also were the perceived characteristics most

TABLE 4.  
Correlation between individual test characteristics and usage

<i>Test</i>	<i>Characteristics Correlated with Usage</i>
Alternating Sequences	None
Behavioural Neurology Examination (BNA)	Effective <sup>a</sup>
Clock Drawing Test (CDT)	Quick to administer <sup>b</sup> Well-tolerated <sup>b</sup> Easy to administer <sup>b</sup> Effective <sup>b</sup>
Delayed Word Recall	Easy to score <sup>a</sup> Effective <sup>a</sup>
Folstein Mini Mental State Examination or its variants (MMSE)	Easy to score <sup>a</sup>
General Practitioner Assessment of Cognition (GPCOG)	None
The Go/No-go	Well-tolerated <sup>a</sup>
Mini-Cog	None
Montreal Cognitive Assessment (MoCA)	Well-tolerated <sup>a</sup> Easy to administer <sup>a</sup> Easy to score <sup>b</sup> Effective <sup>b</sup>
Rowland Universal Dementia Assessment Scale (RUDAS), Similarities	None
Test Your Memory (TYM)	None
Trail Making Test	Effective <sup>b</sup>
Verbal fluency	Well-tolerated <sup>a</sup> Quick to administer <sup>b</sup> Effective <sup>b</sup>

<sup>a</sup>Correlation is significant at the .05 level (two-tailed).

<sup>b</sup>Correlation is significant at the .01 level (two-tailed).

highly correlated with frequency of use.<sup>(7)</sup> In the Canadian primary care survey, validity/accuracy was identified as the most important characteristic of a cognitive screening instrument, followed by ease of administration and administration time.<sup>(4)</sup> The recently published IMPACT survey explored a broad range of attitudes and perceptions of European physicians in order to obtain a detailed and up-to-date picture of the physician mindset concerning AD. More generalists (62%) than specialists (50%) felt that cognitive screening was important. Physicians who did not support routine cognitive screening indicated screening inaccuracy as their most common reason (44%). Generalists also cited time as a factor against routine screening.<sup>(24)</sup> In a survey of primary care patients, acceptability was an important factor for the patients<sup>(25)</sup> as well as their caregivers.<sup>(26)</sup> In sum, ease of administration, whether it be due to time, tolerability or acceptance is a very important factor for physicians when choosing a cognitive screening instrument, but this factor is weighed against the accuracy, validity or effectiveness of an instrument.

Our survey is not without limitations. Despite a relatively high 55% completion rate, there is still potential for selection bias among those who chose to complete the survey. While the majority of respondents are geriatric psychiatrists, other professions are represented and may provide a different or confounding perspective. Geographically, the province of Ontario is over-represented, relative to its population in Canada, and the province of Quebec is underrepresented. Thus, regional differences in screening may not have been ascertained. Notwithstanding these potential limitations, our analysis did not pick up differences based on profession or location. Some of the instruments were not well-enough known to survey respondents to gather meaningful information on their use and thus, due to sample size, an ideal test may have been overlooked. Finally, the content of some instruments overlaps. For instance, it may have been unclear to respondents whether the Trail Making test referred to trail making in the MoCA or the original Trail Making test used independently, and this may result in some bias.



## CONCLUSION

Like their international colleagues, Canadian psychogeriatric clinicians use a relatively small number of cognitive screening instruments. CDT and MMSE are the most commonly used instruments, followed by the MoCA and delayed word recall. To our knowledge, this is the first survey in which the MMSE is not by far and away the most commonly used tool. Furthermore, perhaps consistent with its Canadian origins, the MoCA is also extensively used by the respondents of this survey, almost all of whom practice in Canada. Effectiveness, ease of administration, and speed of administration were the perceived characteristics of instruments that correlated the most strongly with frequency of use. These factors are important to consider for future instrument development, and this Canadian data contribute to the global knowledge on cognitive screening practices for dementia.

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## CONFLICT OF INTEREST DISCLOSURES

The authors declare that no conflicts of interest exist.

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