

# The NUH Memory Clinic

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## ABSTRACT

**Objective:** To assess the cognitive performance of elderly patients referred to the memory clinic.

**Design:** The patients were interviewed using the computerised mental state programme, GMS-AGECAT, and assessed on the Cognitive Assessment Scale (CAS) which includes the Elderly Cognitive Assessment Questionnaire (ECAQ) and the Cambridge Memory Test (CMT), modified for Chinese elderly.

**Subjects:** There were 72 Chinese elderly subjects aged 65 years and above, referred to the NUH memory clinic in the first year.

**Results:** Only 45 (62.5%) of the 72 subjects were diagnosed to have dementia using DSM III R criteria. There were 25 cases of Alzheimer's Disease and 20 multi-infarct dementia. In the non-demented group, 15 (20.8%) had depression or anxiety disorders and 12 (16.7%), had no mental disorders but had physical illness which could affect memory. There was a highly significant difference in the ECAQ, CMT and CAS scores of demented and non-demented elderly. There was also a significant difference in the cognitive performance of elderly with mild dementia and those with no mental disorder.

**Conclusion:** The memory clinic is a useful facility for the diagnosis and management of dementia. The Cognitive Assessment Scale provides a valid and reliable battery of tests for dementia.

**Keywords:** memory clinic, elderly, dementia

## INTRODUCTION

Memory difficulty is not uncommon in late life and may be due to the normal process of ageing or associated with physical or mental disorders. The most common disease causing poor memory in old people is dementia and careful assessment is necessary to recognise the 'treatable' or secondary dementia, eg disorders related to thyroid disorder, deficiency of vitamin B<sub>12</sub>, etc. Early detection of primary dementia like Alzheimer's disease is important to plan for future management and pharmacological treatment with putative agents appears to yield encouraging result if given at an early stage.

A memory clinic is essentially for the diagnosis and management of dementia. The Memory Clinic in the National University Hospital was first started in November 1993 with the following objectives:

1. To provide an assessment facility for patients with complaints of memory problem.

2. To develop sensitive methods of detecting early dementia.
3. To provide patients and carers with information on memory management and services for dementia.

Research on memory has been hampered by limitations of assessment instruments. Many existing clinical memory tests lack adequate normative data, reliability and validity<sup>(1)</sup>. Some instruments may not be appropriate for different languages and culture, especially where literacy is low. Elderly subjects are often intimidated by psychometric tests if they are too lengthy and exhausting to administer.

We have constructed a screening questionnaire called the Elderly Cognitive Assessment Questionnaire (ECAQ)<sup>(2)</sup> for the early detection of dementia by the primary health care doctor. It is a 10-item questionnaire that can be administered in 12 minutes and lacks bias for literacy and culture. The ECAQ is available in Chinese and Malay. For more detailed assessment of cognitive deficit, we have designed the Cognitive Assessment Scale (CAS) which comprises the ECAQ, the modified Cambridge Memory Test (CMT) and items on Attention, Calculation, Language and Praxis. The CMT is modified from the cognitive section of the CAMDEX<sup>(3)</sup>, which is a structured interview schedule for the elderly. The modified CMT includes items which are more relevant and familiar to the Chinese elderly in Singapore eg Chinese festival, food, places, etc. A version of the CAS is in Appendix I. The ECAQ has a maximum score of 10 points, CMT 30 points and the total CAS is 50 points. The inter-rater reliability of the CAS - comparing psychiatrist and psychologist - in a pilot study of 10 elderly subjects achieved a mean phi coefficient of 0.86.

This paper presents the data of the first 72 Chinese patients referred to the Memory Clinic and the cognitive assessment results using the CAS.

## METHODS

The assessment team in the Memory Clinic comprises a psychiatrist, psychologist and geriatrician. A detailed history is taken from the patient and family caregivers. On physical examination, particular attention is paid to higher neurological function, such as language, ability and praxis. Laboratory investigations include a full blood count, serum urea, electrolytes and glucose,

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## Appendix I - Cognitive Assessment Scale (CAS)

I	ECAQ	
1	How old are you?	1
2	When is your birthday? OR in what year were you born?	1
3	What is the year?	1
	date?	1
	day?	1
	month?	1
4	Where are we? Hospital/Clinic	1
5	What is his/her job? (Eg. nurse, doctor)	1
6	Recall: I want you to remember this number. Can you repeat after me (4517). I shall test you again in 15 mins.	2
	Subtotal	
II	CAM-Memory Tests (CMT)	4 (4517)
7	Recall photos - shopping list	6
	Recognise photos	6
8	Repeat words (eye, house, cat)	3
	Recall words	3
9	Remote Information	
	Mid-Autumn festival	
	What month?	1
	What special food eaten?	1
	What is Qing Ming Festival?	1
	What special food is eaten during the fifth month festival?	1
10	Current Information	
	Who is the Prime Minister?	1
	Previous Prime Minister?	1
	What are the colours of the Singapore flag?	1
	Where is the Singapore Airport?	1
	Subtotal	
III	Attention and calculation	
11	20 minus 1 test	5
IV	Language and praxis	
12	Point to a pen, button and a watch. Have the patient name them as you point.	3
13	Have the patient follow an instruction "Show me your right hand and close your eyes"	2
	Subtotal	
	Grand total	

(Instruction to administer is available from the authors)

## RESULTS

### Patients' Characteristics

All the subjects were 65 years and above – there were 32 men and 40 women; the mean age of the men was 72.9 years (SD 5.4) and women 73.7 years (SD 4.9). There was no statistical difference in age between the men and women.

About 74% of patients were referred by general practitioners or physicians, and 26% by family caregivers.

From the GMS-AGECAT computerised diagnosis and DSM IIIR criteria, there were 45 cases (62.5%) of dementia, 15 (20.8%) major depression or dysthymia and generalised anxiety disorders and 12 (16.7%) had no mental disorders. The sample was subdivided into 3 groups.

1. Group A had definite memory impairment due to Alzheimer's disease (n=25) or multi-infarct dementia (n=20). On the Clinical Dementia Rating, there were 19 with mild dementia, 22 moderate dementia and 4 severe dementia.
2. Group B (n=15) had complaints of poor memory which was secondary to depression or anxiety.
3. Group C (n=12) had no mental disorder and there were 6 with diabetes mellitus, 4 hypertension, and 2 heart diseases.

Comparing the 3 groups, there was no significant difference in age or sex. Table I shows the tests of cognitive functions for the 3 groups. The mean scores on the ECAQ, CMT and CAS are significantly different for the dementia (group A) and non-dementia patients (groups B, C). Comparing the depressed or anxious elderly (group B) and those without mental disorder (group C), the difference is significant for only CMT ( $p < 0.05$ ) and CAS ( $p < 0.05$ ), but not for the ECAQ.

Table II compares the elderly with mild dementia and those in groups B and C. The results show significant difference between the mean scores in all the cognitive tests for those with mild dementia and those without mental disorder (group C). But the ECAQ could not distinguish between the depressed or anxious elderly (group B) and those with mild dementia; however the CMT and CAS scores were significantly different.

### DISCUSSION

Dementia is often not recognised until the deterioration is at a severe stage. Doctors and family members may consider poor memory as normal ageing. Usually, referral to the Memory Clinic is because of a crisis at home when the patient is agitated, has insomnia, paranoid delusion or when the carer is unable to cope with behavioural problems. In the Edinburgh study by Williamson et al<sup>(8)</sup>, it was found that four-fifths of cases were missed by general practitioners. It can be difficult for a busy family

liver and thyroid function tests, vitamin B<sub>12</sub> and folic acid levels, and syphilis serology. A CT brain scan is done and, if necessary, ECG and chest X-ray.

Patients in this study were assessed in the outpatient clinic by a psychiatrist using the Geriatric Mental State (GMS) Schedule<sup>(4,5)</sup>, which has a computerised system to generate diagnostic syndromes. The severity of the dementia was rated mild, moderate and severe as in the Clinical Dementia Rating<sup>(6)</sup>. The psychologist administered the Cognitive Assessment Scale and those with physical illness were also examined by the geriatrician.

The diagnostic criteria for dementia was according to the DSM IIIR<sup>(7)</sup>. Data analysis was performed using the computer package SPSS-PC – statistical significance level was at  $p < 0.05$ .



**Table I - Mean scores of diagnostic groups on cognitive tests**

Tests	Group A (n = 45)	Group B (n = 15)	Group C (n = 12)	Mann-Whitney U significance levels	
				Group A vs Group B	Group A vs Group C
ECAQ	3.1	5.9	7.9	p < 0.05	p < 0.01
CMT	9.7	20.1	23.5	p < 0.01	p < 0.001
CAS	15.9	33.2	42.0	p < 0.01	p < 0.001

Group A - Dementia

Group B - Depression or Anxiety

Group C - No Mental Disorder

**Table II - Mean scores of elderly with mild dementia and diagnostic Groups B and C on cognitive tests**

Tests	Mild dementia (n = 19)	Group B (n = 15)	Group C (n = 12)	Mann-Whitney U significance levels	
				Mild dementia vs Group B	Mild dementia vs Group C
ECAQ	4.3	5.9	7.9	NS	p < 0.05
CMT	14.6	20.1	23.5	p < 0.05	p < 0.01
CAS	23.4	33.2	42.0	p < 0.05	p < 0.01

NS - not significant

doctor to recognise early dementia – but primary health care doctors do not have any difficulty in using the screening questionnaire ECAQ for diagnosis of 'probable' dementia.

The Memory Clinic offers a facility to investigate people with memory problems and to establish a diagnosis of dementia with a view to improve the management, to treat curable causes of memory loss and to control psychiatric symptoms<sup>(9)</sup>. The assessment procedure in the NUH clinic is not too arduous, and the memory tests are unobjectionable to the elderly. The CAS is simple, valid and reliable to rate memory impairment for identification of dementia. The battery of tests can distinguish between memory complaints of those with and without dementia. There has been recent development of memory tests with self-administered computerised programmes. But it is important to know that computers can be intimidating to the elderly and programmes have to be user-friendly. Items on the memory tests should be culture-related and the 'shopping list' for memory assessment can be modified for the local setting.

However, the diagnosis of early or mild dementia can be difficult<sup>(10)</sup>. Early detection is a preliminary to intervention aimed at reducing disability and

postponing the need for institutional care. There has been increasing interests in age-related memory dysfunction associated with dementia. Benign senescent forgetfulness<sup>(10)</sup>, is defined as mild memory disorder and more recently termed, 'age associated memory impairment' by Crook et al<sup>(12)</sup> to delineate ageing-related memory decline in otherwise healthy elderly people. In this study, the mean scores of those with mild dementia were significantly different from those without mental disorders, but the ECAQ could not distinguish between mild dementia and depressed or anxious elderly. This underlines the fact that the ECAQ is only a screening instrument and should not be used for diagnosis of dementia. Those who score 5 or 6 points on the ECAQ need further assessment. However, the CMT and CAS scores are significantly different for early dementia and depression.

Depression is well known to affect subjective and objective memory performance. This has been shown from the studies by Barker et al<sup>(13)</sup>, O' Connor<sup>(14)</sup>, and Kahn et al<sup>(15)</sup>. These authors also found that depressed patients complained more about memory problems than dementia patients and they also performed less well on memory tests than normally elderly – this is similar in our study.

Only 62.5% of the referred subjects in this study had dementia. In a memory clinic at London, Philpot and Levy<sup>(16)</sup> reported that 51% of patients suffered from dementia. In both studies, many elderly with subjective memory complaint were suffering from depression.

The memory clinic also provides a service to the elderly with dementia with a memory training programme using psychological techniques like memory aids, reality orientation therapy and reminiscence therapy<sup>(17)</sup>. To enhance the emotional well-being of family caregivers, the staff runs a regular family support group and provides information about services and care in the community.

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## CORRIGENDUM

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Please note the amendment to paragraph two (under Conclusion):

The study has revealed that while the SAF smoker may intellectually agree that smoking is harmful to himself and others, this knowledge or belief does not necessarily translate into the appropriate health promotive action for a minority group of 20%. Health educational efforts should therefore be aimed not only at the imparting of health knowledge per se, but at bringing about attitudinal and behavioural change. The very young age of smoking onset also points to the need to focus more attention on smoking among youths, before they enter National Service.