

Experience with a Community-based Multidisciplinary Memory Clinic: A Primary Care Perspective

Dear Editor,

Ten percent of Singapore's elderly suffer from dementia.¹ This figure is set to rise with our ageing population. As a patient's first contact point in the health system, family physicians working in the primary care setting are increasingly challenged to meet the healthcare needs of patients with dementia. Primary care-based multidisciplinary memory clinics have been designed and implemented in Western countries.^{2,3} In Singapore, this is a novel concept. We report our experience in developing such a service at SingHealth Polyclinics (SHP).

The Cognitive Assessment and Rehabilitation Programme (CARE), a collaboration between SHP and National Neuroscience Institute (NNI), was set up in 2013. The team developed a workflow to receive and manage patients, standardised documentation templates, and trained healthcare personnel. Sited within polyclinics, CARE comprises a multidisciplinary team of neurologists, family physicians, and nurses. It receives internal referrals for assessment of patients above 55 years with cognitive complaints.

Referred patients were assessed on the Mini-Mental State Examination (MMSE), and the 15-item Geriatric Depression Scale (GDS).⁴ They were also offered blood tests to screen for secondary causes of cognitive impairment: serum vitamin B12, folate and thyroid function. Accompanying caregivers were asked to complete a 12-item Zarit burden questionnaire.⁵ Patients underwent clinical assessment by a dementia-trained family physician co-consulting with a neurologist. The diagnosis of dementia or mild cognitive impairment (MCI) were made on clinical grounds, based on the National Institute on Aging-Alzheimer's Association (NIAA) criteria.^{6,7}

Results

A total of 251 patients (86 male, 77.7 ± 9.2 age, 235 Chinese, 8 Malays, 7 Indians) and 166 of their caregivers were seen between May 2013 and December 2014 (Table 1); 119 (47.4%) and 91 (36.3%) patients were diagnosed with dementia and MCI, respectively. The most frequent cognitive symptoms were memory difficulty (93.2%), mood/behavioural changes (40.2%), and executive dysfunction (35.1%). The mean MMSE score (graded out of 30) was

17.0 ± 5.8 and 24.2 ± 4.3 for patients with dementia and MCI respectively ($P=0.019$). Sixty-eight (57.2%) patients with newly diagnosed dementia had MMSE scores of greater than 16 at the time of presentation. Screening for secondary causes of cognitive impairment was done. The following previously undiagnosed conditions were found: 43 (17.1%) patients had B12 deficiency, 59 (23.5%) had folate deficiency, and 3 (1.2%) patients were found to be hypothyroid.

Patients with dementia were more likely to be female (OR 10.4, $P=0.006$), older ($P<0.001$), and of lower educational level ($P=0.002$). Amongst patients with dementia, the prevalence of behaviours of concern (BOC) was 4.4% for the group with MMSE ≥ 16 ; 15.8% in the MMSE 10-15 group, and 10% amongst those with MMSE < 10 ($P=0.13$). Eleven subjects (9.2%) were found to be depressed (GDS score ≥ 10). In contrast, there was a significantly higher incidence of depression amongst patients with no cognitive impairment (NCI); 24% (10 out of 41) were found to be depressed. In addition, 4 (9.8%) patients in this group were suspected to suffer from anxiety disorder.

The mean Zarit score amongst the 166 caregivers surveyed was 16.4 ± 8.5 (graded out of 48). Caregivers were more likely to attend if their relative was suffering from dementia (OR 26.6, $P<0.001$). Forty-one (34.5%) carers of patients with dementia reported high caregiver burden (Zarit ≥ 17). Worse dementia severity was correlated with higher caregiver burden ($r=0.19$, $P=0.014$).

Discussion

There was a female predominance amongst patients diagnosed with dementia or MCI. This is in keeping with data from Asia and Europe, which have found a significantly higher risk of dementia amongst females.^{8,9} Inter-ethnic differences in dementia risk has previously been studied in several large scale studies in Singapore.¹⁰⁻¹² These papers have consistently reported a higher prevalence of dementia amongst Malays and Indians as compared with Chinese. Our study was not adequately powered to study these inter-ethnic differences. Population census data¹³ in 2014 show that ethnic Chinese accounted for 76.2% of the citizen population, followed by Malays and Indians at 15% and 7.4%, respectively. The ethnic distribution of patients

Table 1. Baseline Characteristics of the Study Population

	Dementia (n = 119)	MCI (n = 91)	NCI (n = 41)	P Value
Demographics				
Female	81 (68.1%)	50 (54.9%)	34 (82.9%)	0.006
Age	80.0 ± 8.2	76.2 ± 9.1	74.1 ± 10.7	<0.001
Chinese	110 (92.4%)	86 (94.5%)	39 (95.1%)	0.85
Ever smoker	11 (9.2%)	14 (15.4%)	4 (9.8%)	0.36
Years of education	4.2 ± 4.4	5.8 ± 4.2	6.8 ± 5.0	0.002
Cognitive assessment				
MMSE score	17.0 ± 5.8	24.2 ± 4.3	26.8 ± 3.3	<0.001
MMSE <10	10 (8.4%)	0	0	
Chronic disease burden				
Hypertension	88 (73.9%)	64 (70.3%)	28 (68.3%)	0.74
Hyperlipidaemia	86 (72.3%)	72 (79.1%)	33 (80.5%)	0.40
Diabetes mellitus	42 (35.3%)	32 (35.2%)	13 (31.7%)	0.91
Previous stroke	13 (10.9%)	10 (11.0%)	2 (4.9%)	0.50
Ischaemic heart disease	16 (13.4%)	12 (13.2%)	4 (9.8%)	0.80
Cognitive symptoms				
Memory difficulty	116 (97.5%)	87 (95.6%)	31 (75.6%)	<0.001
Executive dysfunction	64 (53.8%)	16 (17.6%)	8 (19.5%)	<0.001
Mood/behaviour problems	55 (46.2%)	32 (35.2%)	14 (34.1%)	0.12
Visuospatial problems	41 (34.5%)	17 (18.7%)	4 (9.8%)	<0.002
Attention deficits	40 (33.6%)	17 (18.7%)	7 (17.1%)	0.019
Language difficulty	18 (15.1%)	14 (15.4%)	3 (7.3%)	0.41
Depression (GDS score ≥10)	11 (9.2%)	8 (8.8%)	10 (24.4%)	0.025
GDS 6 – 9	17 (14.3%)	18 (19.8%)	7 (17.1%)	
GDS 0 – 5	76 (63.9%)	62 (68.1%)	22 (53.7%)	
High caregiver stress (12-item Zarit burden score ≥17)	41 (34.5%)	20 (22.0%)	10 (24.4%)	0.35
Total caregivers who attended	98 (82.4%)	51 (56.0%)	17 (41.5%)	<0.001
Secondary causes of cognitive impairment*				
B12 deficiency (B12 <145 pmol/l)	27 (22.7%)	13 (14.3%)	3 (7.3%)	0.27
Folate deficiency (folate ≤13.4 nmol/l)	36 (30.3%)	18 (19.8%)	5 (12.2%)	0.30
Hypothyroidism (TSH ≥10 µU/l)	2 (1.7%)	0	1 (2.4%)	0.50

MCI: Mild cognitive impairment; MMSE: Mini-Mental State Examination; NCI: No cognitive impairment; GDS: Geriatric Depression Scale; TSH: Thyroid stimulating hormone

*Previously undiagnosed.

visiting SHP follows similar trends. In our study, 93.6% of referred patients were Chinese. This is likely a reflection of referral patterns rather than disease trends.

At the time of first presentation to primary care, the majority of patients are in the early stage of disease (MCI, or mild to moderate dementia severity). This emphasises the important role that memory clinics in the primary care setting can play in the early diagnosis and management of patients with dementia, where interventions are likely to be more effective.

In our study, we used a cutoff score of 9/10 for the

GDS to define depression in dementia.¹⁴ The prevalence of depression in patients with dementia was at 9.2%. A review by Enache et al¹⁵ found that the prevalence of depression amongst outpatients with dementia varied widely in different studies (ranging from 0.9% to 44%), due to differing diagnostic criteria and study design. Amongst NCI patients, the prevalence of comorbid depression or anxiety was high; 24.4% (10 patients) were depressed, and 9.8% (4 patients) were suspected to have anxiety disorder. These diagnoses could account for the subjective cognitive complaints. Primary care physicians should be alert to

differentiate these mimickers of dementia. It should be noted that amongst patients without dementia, the optimal cutoff score for depression has been suggested to be GDS 4/5.¹⁶ Using this cutoff, 41.5% of those in the NCI group would have fulfilled the criteria for depression. While this may be related to the small sample size in the NCI cohort (n = 41), this finding warrants further confirmation in larger cohorts of primary care population.

Insights

Siting memory clinics within the primary care sector facilitates the outreach of dementia care to a wider audience. With adequate training, the family physician can be equipped with the necessary skills-set to diagnose and manage patients with dementia. Primary care memory clinics can also serve as a triage system, to allow rightsiting of more complex cases to the appropriate tertiary institutions. Caregiver stress occurs commonly and should not be overlooked.

One of the limitations to our service is the lack of established workflows for access to neuroimaging. Furthermore, management of dementia is a resource-intensive undertaking. SHP is still in the infancy stage of developing our memory clinic. With the necessary funding, we hope to enhance our multidisciplinary support staff to include nurse educators, medical social workers, psychologists, and occupational therapists. We are also looking to expand our range of services, to include patient education and caregiver training workshops, and caregiver support services.

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