

Prevalence of Undetected Cognitive Impairment and Depression in Residents of an Elderly Care Home

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SUMMARY

The elderly population in Malaysia is growing rapidly. Some of the most vulnerable are in residential care. Research is needed into the characteristics of this population to aid clinicians and policy makers in addressing the needs of this group. This observational, cross-sectional study aims to determine prevalence of undetected cognitive impairment and depression in elderly care home residents in Malaysia. One hundred and sixty-seven people over 60 years of age living in a state run residential home were interviewed. Validated assessment tools were used to measure dependency, cognitive impairment and depression. The prevalence of probable dementia is 36.5%, with increasing prevalence with age and level of dependence. Prevalence of depression is 67.0% (major depression 13.2%), with more depression in males and in the Indian population. None of the identified cases had been previously investigated or treated for dementia or depression.

KEY WORDS:

Elderly, Depression, Dementia, Malaysia

INTRODUCTION

The World Health Organisation predicts that the number of elderly people in the Western Pacific region will double over the next twenty years¹. This is a phenomenon in many developing countries following improvements in sanitation, diet and health care. Malaysia is growing rapidly economically, aiming for “developed” status by 2020. It is estimated that by the year 2020, Malaysia will have 9.5 per cent of its population aged 60 or over².

In common with many Asian cultures, the family traditionally has the major role in looking after elderly people in Malaysia. This means that it is less common for the elderly to require state-provided institutional care than in European countries. However, there is a significant group of vulnerable elderly people without families or whose families are unable to care for them. At present institutional care for poor, older persons in Malaysia is provided in a total of 11 old people’s homes (Rumah Seri Kenangan) funded by the federal government³.

There are three main racial/cultural groups in Malaysia: Malays, Chinese and Indians (there are also much smaller groups of many other races and cultures). There are

differences in health, education and economic status between these groups and for this reason we have included race as a variable as well as comparing by age and gender.

There is evidence from the UK that dementia and depression are important problems in the elderly, particularly in residential and nursing homes, causing a large amount of morbidity and mortality in this group⁴. Little is known about the characteristics of the residential and nursing home population in developing countries in Asia as geriatrics and psychogeriatrics have only recently emerged as important specialties in the region. This study aims to determine the prevalence of undetected cognitive impairment and depression in residents of a nursing home in Malaysia, thereby offering an insight for clinicians and policymakers into this group.

MATERIALS AND METHODS

Objectives and Design

The objectives of the study were:

1. To determine the prevalence of cognitive impairment in elderly care home residents in Malaysia.
2. To determine the prevalence of depression in elderly care home residents in Malaysia.
3. To compare prevalence between races, genders, and levels of dependency.
4. To determine whether cognitive impairment or depression has been recognised, investigated and treated.

The study is an observational, cross-sectional survey.

Subjects and Setting

Participants were recruited from a 200-bedded state-run elderly care home in Malaysia. Criteria for admission to the institution include: age over 60 years; homeless or requiring care which the family cannot give; and lack of funds to pay for own care. Exclusion criteria were those under 60 years of age. For practical reasons those who were deemed at risk of violent or aggressive behaviour by staff were not included.

Data collection

Face-to-face interviews were conducted with each participant in their preferred language. This was possible as the data collection team included speakers of Malay, Tamil, Mandarin and other Chinese dialects. All participants gave verbal consent or assent depending on their level of cognitive ability. Data obtained about level of dependence, previous

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diagnoses, investigation and treatment was verified by checking with care home staff and records. The following were recorded for each participant:

- Age
- Gender
- Race
- Barthel Index Score⁵
- Elderly Cognitive Assessment Questionnaire (ECAQ) Score⁶
- Geriatric Depression Scale (GDS) Score⁷
- Any previous diagnosis, investigations or treatment for a cognitive disorder or depression.

Assessment tools

Level of dependence was assessed using the Barthel index, a well-established and commonly used nursing tool⁵. It objectively assesses functional independence in activities of daily living.

The Elderly Cognitive Assessment Questionnaire (ECAQ) is a ten-item screening test for dementia developed and validated in Singapore⁶. Similar to the Abbreviated Mental Test Score used in the UK, it is used in the developing world for patients who may be illiterate or have a relatively low level of education. Versions in English, Malay and Chinese have been validated⁶. It is scored out of 10: a score of 7 or more is considered normal, 5 or 6 is borderline and 4 or less probable dementia.

The Geriatric Depression Scale (GDS) is a questionnaire completed by the subject, which is used as a diagnostic tool for depression in the elderly worldwide. We used the original 30-point questionnaire which uses a cut-off at 20/30 to suggest major depression and 10-20/30 to suggest minor depression⁷. There are validated English, Malay and Chinese versions^{8,9}.

Data analysis

Descriptive statistics was used to explore the prevalence of each conditions and the extent to which they have been recognised and treated. SPSS was used to analyse data. Chi-square was used to compare prevalence of disease by gender, age, race and dependency. Multinomial logistic regression was carried out with depression or cognitive impairment as the dependant variable to see the effect of age, race and gender.

RESULTS

167 of the 200 residents fit our inclusion criteria and agreed to participate in the study. The baseline characteristics of participants are shown in Table I.

Cognitive Impairment

Cognitive impairment was shown to be relatively common with 36.5% of patients scoring 4 or less on the ECAQ over the whole sample. Cognitive impairment was more common over the age of seventy.

There is a significant linear association between cognitive impairment and age ([chi]= 5.041, d.f.= 1, P= 0.025), meaning that with increasing age there is more dementia. Multinomial logistic regression showed that those above 80 had odds of having dementia 3.2 (1.1 – 9.5) times of those 60 – 69.

There was no significant difference in ECAQ or prevalence of cognitive impairment between males and females. Racial differences, however, were significant ([chi]=12.8, d.f.=4, P<0.01). Table II shows ECAQ scores according age and racial group.

The highest prevalence of cognitive impairment was in the Chinese with Indians having the lowest. Multinomial Logistic regression showed that Chinese had odds of having cognitive impairment of 4.8 times (1.5 – 14.8) as compared to Indians after controlling for age (p<0.5). Malays had odds of 2.9 times higher (0.99 -8.2).

Level of dependency was also significantly associated with ECAQ score with the participants with higher dependency more likely to be cognitively impaired than more independent participants. ([chi]=15.02, d.f.=1, P<0.01). Within the high dependency group 20% were cognitively intact and 80% had cognitive impairment (ECAQ score of 4 or less).

Depression

One hundred and six of the initial 167 participants were eligible to complete the depression screening. Sixty-one participants were excluded as their ECAQ score was 4 or less. The overall prevalence of depression (using a GDS cut-off of 10/30) was found to be 67%. The prevalence of major depression (GDS 20 or more) in our sample is 13.2%, the prevalence of minor depression (GDS between 10 and 19) is 53.8%.

Prevalence of depression in different age groups and races is shown in Table III. There was no significant difference in prevalence of depression by age. The prevalence of major depression is the same in males and females. However, there is a significantly higher prevalence of minor depression in males. (61.8% compared with 39.5% in females). ([chi]=5.95, d.f.=2, P<0.05). The odds of having minor depression after controlling for race and age was 3 (1.2 – 7.8) p<0.02.

Table I: Characteristics of residents in a state run elderly care home in Malaysia in 2006

Characteristic	N (%) (Total = 167)
Age (years)	
60-69	69 (41.3)
70-79	70 (41.9)
80-89	25 (15.0)
90-99	1 (0.6)
Over 100	2 (1.2)
Gender	
Male	101 (60.5)
Female	66 (39.5)
Race	
Malay	78 (46.7)
Chinese	49 (29.3)
Indian	40 (24.0)
Barthel Index Score	
High dependency (0-4)	5 (3.0)
Moderate dependency (5-8)	9 (5.4)
Low/moderate dependency (9-12)	25 (15.0)
Low dependency (13-20)	128 (76.6)

Table II: Elderly Cognitive Assessment Questionnaire score by age and race in a state run elderly care home in Malaysia in 2006

			Cognitive Impairment (ECAQ)			Total
			Dementia (0 - 4)	Borderline (5 - 6)	Normal (7 - 10)	
Age Groups	60 - 69	Count	19	12	38	69
		% within Age Groups	27.5%	17.4%	55.1%	100.0%
		% within Cognitive Impairment (ECAQ)	31.1%	37.5%	51.4%	41.3%
	70 - 79	Count	30	13	27	70
		% within Age Groups	42.9%	18.6%	38.6%	100.0%
		% within Cognitive Impairment (ECAQ)	49.2%	40.6%	36.5%	41.9%
	> 80	Count	12	7	9	28
		% within Age Groups	42.9%	25.0%	32.1%	100.0%
		% within Cognitive Impairment (ECAQ)	19.7%	21.9%	12.2%	16.8%
Total		Count	61	32	74	167
		% within Age Groups	36.5%	19.2%	44.3%	100.0%
		% within Cognitive Impairment (ECAQ)	100.0%	100.0%	100.0%	100.0%
Race	Malay	Count	32	12	34	78
		% within Race	41.0%	15.4%	43.6%	100.0%
		% within Cognitive Impairment (ECAQ)	100.0%	100.0%	100.0%	100.0%
	Indian	Count	6	13	21	40
		% within Race	15.0%	32.5%	52.5%	100.0%
		% within Cognitive Impairment (ECAQ)	23	7	19	49
	Chinese	Count	23	7	19	49
		% within Race	46.9%	14.3%	38.8%	100.0%
		% within Cognitive Impairment (ECAQ)	61	32	74	167
Total		Count	61	32	74	167
		% within Race	36.5%	19.2%	44.3%	100.0%

Table III: Geriatric Depression Scale score by age and race in a state run elderly care home in Malaysia in 2006

			Depression Scale			Total
			Normal 0-9	Minor Depression 10-19	Major Depression 20-30	
Age Groups	60 - 69	Count	16	24	10	50
		% within Age Groups	32.0%	48.0%	20.0%	100.0%
		% within Cognitive Impairment (ECAQ)	31.1%	37.5%	51.4%	41.3%
	70 - 79	Count	16	21	3	40
		% within Age Groups	40.0%	52.5%	7.5%	100.0%
		% within Cognitive Impairment (ECAQ)	49.2%	40.6%	36.5%	41.9%
	> 80	Count	3	12	1	16
		% within Age Groups	18.8%	75.0%	6.3%	100.0%
		% within Cognitive Impairment (ECAQ)	19.7%	21.9%	12.2%	16.8%
Total		Count	35	57	14	106
		% within Age Groups	33.0%	53.8%	13.2%	100.0%
			Depression Scale (Coded. Not Assessed if ECAQ <=4)			Total
Race	Chinese	Count	10	10	6	26
		% within Race	38.5%	38.5%	23.1%	100.0%
		% within Cognitive Impairment (ECAQ)	100.0%	100.0%	100.0%	100.0%
	Indian	Count	7	25	2	34
		% within Race	20.6%	73.5%	5.9%	100.0%
		% within Cognitive Impairment (ECAQ)	100.0%	100.0%	100.0%	100.0%
	Malay	Count	18	22	6	46
		% within Race	39.1%	47.8%	13.0%	100.0%
		% within Cognitive Impairment (ECAQ)	23	7	19	49
Total		Count	35	57	14	106
		% within Race	33.0%	53.8%	13.2%	100.0%

Racial differences were present with Indians having the highest prevalence of depression at 79.4%. However, this was predominantly minor depression (73.5%). The Chinese and Malay groups had similar overall rates of depression (61.6% and 60.8% respectively) but the Chinese had higher rates of major depression. The differences were found to be significant ($[\chi^2]=9.54$, $d.f.=4$, $P<0.05$). There was no association between prevalence of depression and level of dependency.

Previous investigation and treatment

Participants identified as having cognitive impairment had no evidence of previous investigation for or diagnosis of

dementia. There was also no evidence of any of the participants identified as having depression having a formal diagnosis of depression or having seen a psychiatrist. None were prescribed antidepressant medications.

DISCUSSION

36.5% of participants had evidence of cognitive impairment, with a higher prevalence in older, more dependent participants. Overall prevalence of depression is 67.0%. The prevalence of major depression is 13.2% and minor depression 53.8%, with higher rates of depression in males and in the Indian population.

Strengths and limitations

Our large, mixed sample of elderly people in a long-term care home means that our findings can be applied across residential and nursing homes in Malaysia as well as other developing countries in Asia. However, we only had access to one institution in our study and confirmation of our findings in other institutions will be important. We did not include residents who were considered violent or dangerous by staff. The prevalence of mental health problems is therefore possibly higher than our sample suggests. In addition, these residents are the most likely to be on treatment for identified mental health problems and hence the number of residents with identified mental health problems may be higher than our survey suggests.

Health records at the institution were not always complete. This may contribute to the result that none of the residents has evidence of treatment or investigation for dementia or depression.

We were not able to assess those with cognitive impairment for depression as the GDS is not valid at low levels of cognitive function. This means that a number of our sample were not assessed or included in figures for prevalence of depression.

The ECAQ and GDS are not yet validated in Tamil and this means that they were carried out in Malay in most cases. Most of the Indian community is conversant in the Malay language but the results may have been affected as some participants will not have completed the questionnaires in their first language. Speakers of Chinese dialects other than Mandarin may also have used a second language.

Explanation and comparison with other studies on cognitive impairment in the elderly

Cognitive impairment is known to be a common problem in the elderly. In the UK the prevalence of cognitive impairment in those over 75 years old has been found to be 18%¹⁰. A Malaysian study shows the prevalence of cognitive impairment among the elderly rural population is 22.4%¹¹.

Our prevalence of 36.5% with cognitive impairment is less than a similar group in the UK as a recent study commissioned by the Alzheimer's society found a prevalence of dementia of 66.9% in nursing homes and 52.2% in residential homes¹². A Singapore study of nursing home residents found a prevalence of cognitive impairment of 48%¹³. We found a significant association with age, which echoes other studies showing prevalence of moderate to severe cognitive impairment increasing steeply with age¹⁴.

We also found a correlation between level of dependence and cognitive impairment. This is probably because those with dementia are less able to care for themselves, hence need more help with activities of daily living. Chinese people also seem to be more likely to have cognitive impairment even when controlled for age and other variables. The reason for this finding is unclear.

It is surprising that according to our study there were no participants who had been investigated or treated for their cognitive impairment as systematic review of the evidence

has shown that treatment of mild to moderate Alzheimer's disease with cholinesterase inhibitors is effective¹⁵. These drugs and other measures are also recommended by the Clinical Practice Guidelines on management of dementia, produced for Malaysia in 2003¹⁶.

Explanation and comparison with other studies on depression in the elderly

UK figures show that the prevalence of depression among people aged over 65 is greater than 30% in residential homes⁴. Our findings suggest that the number of elderly people in care homes with depression is much higher (67%). However, this takes account of both major and minor depression. If major depression alone is considered our finding of 13.2% prevalence is in keeping with those of other studies in the region.

A study carried out on community-dwelling elderly people in rural China found a prevalence of depression in the elderly of only 6.0%¹⁷. It used to be thought that prevalence of depression was much lower in the Asia-Pacific region than in the Western world. However, recent review of available epidemiological data suggests that, while this remains the case to a certain extent, rates of depression are now comparable across both regions¹⁸. A study of the elderly rural population of Selangor, Malaysia showed the prevalence of depression to be 7.6%¹¹. Another study of an elderly population visiting a primary health care centre in Butterworth, Malaysia showed a prevalence of depression of 19%¹⁹. This study also showed a higher risk of depression in the female population in contrast to our study, which showed a significantly higher percentage of males with depression (even when controlled for age and race). In general there is good epidemiological evidence that women have a higher prevalence of depression than men²⁰.

We found higher prevalence of minor depression in Indians, which may be related to their overall lower socio-economic status in Malaysia, although there is no other research to confirm this finding.

Our findings that none of our identified group had been investigated or treated for depression are in keeping with evidence from the UK which suggests that depression is often missed in the elderly in residential care and that training programmes for staff can help with its detection²¹. Treating depression in the elderly is known to be effective, supported by the conclusions of recent systematic review of the evidence²².

Implications for policymakers and clinicians

Over two-thirds of residents of elderly care homes in Malaysia appear to have mental health problems of either cognitive impairment or depression. At present there is little support within care homes for these residents and the staff of the care homes who deal with them on a day-to-day basis.

Malaysia is an example of an Asian country in the process of coming to terms with its ageing population. The National Policy for the Elderly was formulated by the Malaysian government in 1995. Among its aims is encouraging the provision of facilities for older persons so as to ensure care and protection for them²³. The National Advisory and Consultative Council of the Elderly was set up in Malaysia in 1996²⁴. It is a council of government departments and non-

governmental organisations concerned with elderly care. Its main functions are policy formulation, coordination and monitoring. There is currently no screening for mental health problems in the elderly, including those in care homes of the type in this study. Given the findings of our research, we suggest that a screening programme is implemented in this type of elderly care home along with adequate training for staff in mental health issues in the elderly.

Future research

More detailed research into the causes of cognitive impairment in this group would be useful. We were not able to identify a cause for cognitive impairment in our sample and hence prevalence of Alzheimer's disease, vascular dementia and other causes for cognitive impairment could not be commented upon. There is also the possibility that the cognitive impairment was secondary to acute confusional state or reversible causes of dementia and further investigation would be necessary to rule this out.

Development of ECAQ, GDS and other screening tools such as the mini-mental state examination in Malay, Tamil and other Asian languages would be extremely helpful for future research as well as clinical practice.

Future research in mental health in the elderly in developing countries in Asia should also focus on further identifying high risk groups for screening and which methods of screening are most successful. Any training of staff should be evaluated with regards to effect on outcome in elderly people with mental health problems.

Contribution of authors

Dr Muna Al-Jawad conceived and designed the study, interpreted the data, wrote the article and approved the final version for publication. Dr Abdul Rashid Khan conceived and designed the study, interpreted the data, critically revised the article and approved the final version for publication. Professor Narayan analysed and interpreted the data, critically revised the article and approved the final version for publication.

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Ethical approval

Ethical approval was granted by the Asian Institute for Medicine, Science and Technology. Permission to carry out the study was granted by the supervisor of the institution as well as the State Director of Social Welfare.

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