ORIGINAL ARTICLE

Cognitive Impairment Among the Elderly in a Rural Community in Malaysia

M S Sherina, MMed, L Rampal, PhD, A Mustaqim, BSc

Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 Serdang, Selangor

Summary

Cognitive impairment is common in late life and may be due to the normal process of ageing or associated with physical or mental disorders. The aim of this study was to determine the prevalence of cognitive impairment among the elderly in a rural community setting. A cross sectional study design using stratified proportionate cluster sampling method was used in this study. A questionnaire similar to the Elderly Cognitive Assessment Questionnaire (ECAQ) was used as a screening instrument for cognitive impairment. The prevalence of cognitive impairment was 22.4% (50/223) among the elderly respondents. Cognitive impairment among the elderly was significantly associated with age, gender, ethnicity, marital status and level of education.

Key Words: Prevalence, Cognitive impairment, Elderly, Rural community

Introduction

Cognition is the process of thinking, learning, and remembering. Cognitive impairment is not uncommon in late life and may be due to the normal process of ageing or associated with physical or mental disorders[1]. It is characterized by memory disturbances, which occurs frequently among the elderly[2].

The most common disease causing cognitive impairment in the elderly is dementia. There are many causes of dementia. Primary dementia like Alzheimer's disease is the commonest cause of dementia. Secondary causes of dementia include thyroid disorders and deficiency of vitamin B12. Early detection of dementia (primary or secondary) is of extreme importance as treatment at an early stage yields encouraging results[1].

Dementia is referred to as the "silent epidemic"; a disease that no one talked about. Yet it has tremendous implications for the patient and family members as well as for the social and health services. These patients not only have memory disturbances, but also suffer from behavioural changes such as irritability, depression, agitation, and disorientation. People are ashamed to admit that there is someone with dementia in the family. Over the past 20 years there has been a quantum leap in awareness of the fact that dementia is a real disease in developed countries[3].

The "Alzheimer's Disease International 10/66 Dementia Research Group" claims that 66% of those with dementia live in developing countries and consist mainly of the elderly. More research on dementia among the elderly is needed in developing countries[4]. A study among the elderly in urban settlements in Malaysia identified 24.0% with cognitive impairment. These included those with dementia, age associated memory decline, depressive and anxiety related disorders[2,5].

Research on dementia has been hampered by limitations of assessment instruments. Some

instruments may not be appropriate for different languages and cultures, especially where literacy is low. Elderly subjects are often intimidated by psychometric tests if they are too lengthy and exhausting to administer[1]. The Elderly Cognitive Assessment Questionnaire (ECAQ) was developed to screen for cognitive impairment among the elderly people in developing countries. It was designed to detect "probable" cases of dementia for further assessment[6].

The ECAQ was derived from items in the mini mental status examination (MMSE) and geriatric mental status schedule (GMS). These questionnaires (MMSE and GMS) were sometimes found not to be applicable in developing countries because of low levels of literacy and cultural differences. The ECAQ consists of 10 items grouped under 3 categories: memory (3 items), orientation (6 items) and memory recall (1 item). Each item has a weightage of one mark for a correct response. Maximum possible score is 10. A score of 5/6 is taken as the cutoff point, where a score of 5 or less indicates cognitive impairment with "probable" dementia. It has a sensitivity of 85.3%, specificity of 91.5% and a positive predictive value of 82.8%[6].

The diagnosis of dementia however is much more complicated. Although its diagnosis can be based on the DSM IV Criteria or NINCDS/ADRDA, memory clinics have also been set up using a multidisciplinary concept as making a diagnosis of dementia needs many steps[1].

Materials and Methods

Both urban and rural communities are found in Malaysia. Rural communities are further divided into small towns and villages depending on the size of the population. The study was conducted in the rural community of Mukim Sepang with a population of 7,598. There were six traditional villages, two small towns and one "Orang Asli" village in Mukim Sepang. The main difference between traditional villages and the "Orang Asli" village is ethnicity. The traditional villages consist mainly of villagers from the Malay, Chinese and Indian ethnic groups. The "Orang Asli" village's main ethnic group is the aboriginal tribe, who are natives of Malaysia.

A cross sectional study design using stratified cluster sampling was used in this study. Three out of six traditional villages, one out of two small towns and one

"Orang Asli" village were randomly selected. All residents aged 60 years and above in the selected villages were personally interviewed by one of the authors. The interviewer had undergone a Research Methodology course which included interviewing techniques.

In this study, elderly is defined as respondents aged 60 years and above. The questionnaires included questions on socio demographic characteristics and the validated Bahasa Malaysia version of the Elderly Cognitive Assessment Questionnaire (ECAQ). The questionnaires were pre-tested in another locality which was not included in the study area.

Data was analysed using Statistical Package for Social Sciences version 10.0. Chi-square test was used to determine the relationship between cognitive impairment and age, gender, ethnicity, marital status, living arrangement, occupation, family income and education level. The level of significance used for the above data was $p < 0.05$.

Results

Out of the 263 elderly residents, 223 agreed to participate giving a response rate of 84.8%.

Socio-demographic profile
Table I shows the distribution of the elderly respondents by age and gender. The mean age was 69.7 years with a SD of 6.8 years. Age ranged from 60-99 years. Median age was 68 years. Table II shows the socio demographic profile of the respondents. The cut off point for family income of less than RM 500 per month was calculated from the median of family income of the respondents. The table shows that the majority of the respondents were females (55.2%), Malays (53.8%), married (60.1%), living with family (91.5%), not working (83.4%) and had a monthly family income of less than RM 500.00 (68.2%).

Elderly Cognitive Assessment questionnaire (ECAQ) scores
The mean ECAQ score was 7.65 + 0.156 and the median score was 8.00. The scores ranged from 3 to 10. Based on the ECAQ scores, 50 (22.4%) out of 223 respondents had scores of 5 or less. The study shows that the prevalence of cognitive impairment among the elderly in Mukim Sepang was 22.4% (Table III).

Table IV shows the association between cognitive impairment and socio demographic factors. The table shows that the prevalence of cognitive impairment was significantly higher among the respondents who were aged 70 years old and above (32.2%) compared to those aged 60 to 69 years old (15.8%). Cognitive impairment also had a higher prevalence among females (30.9%) compared to males (12.4%), the unmarried (30.2%) compared to the married (15.7%) and those with no education (38.0%) compared to those with education (9.8%). The prevalence of cognitive impairment was also higher among the "Orang Asli" (66.7%) and Indians (35.6%) compared to the Chinese (19.2%) and Malays (16.7%). The association of cognitive impairment and ethnicity was found to be significant (p<0.05).

Cognitive impairment occurred more commonly among the elderly who lived alone (26.3%) compared to those who lived with family (22.1%), the unemployed and retired (23.7%) compared to the employed (16.2%) and those with monthly family income less than RM500 (27.7%) compared to those with family income of RM500 and above (12.0%). However, all these differences were not statistically significant.

Table I: Distribution of the elderly respondents in Mukim Sepang by age and gender

Age	Male (%)	Female (%)	Total
60 – 69 years	60 (49.2)	62 (50.8)	122 (54.7)
70 – 79 years	27 (39.1)	42 (60.9)	69 (30.9)
80 -89 years	12 (44.4)	15 (55.6)	27 (12.1)
90 years and above	1 (20.0)	4 (80.0)	5 (2.3)
Total	100 (44.8)	123 (55.2)	223 (100.0)

Table II : Socio demographic profile of the elderly respondents in Mukim Sepang (n=223) from 17th June to 25th July 2002

Socio demographic profile	Number	Percentage (%)
Gender		
Females	123	55.2
Males	100	44.8
Race		
Malays	120	53.8
Chinese	52	23.3
Indians	45	20.2
Orang Asli	6	2.7
Marital Status		
Married	134	60.1
Single /Widowed/Divorced	89	39.9
Living Arrangement		
Living alone	19	8.5
Living with family	204	91.5
Occupation		
Not working	186	83.4
Working	37	16.6
Family Income		
Less than RM500	152	68.2
RM500 and above	71	31.8
Level of education		
No education	100	44.8
Primary education	110	49.3
Secondary education	13	5.9

Table III: Elderly Cognitive Assessment Questionnaire (ECAQ) scores among the elderly respondents in Mukim Sepang (n=223) from 17th June to 25th July 2002

ECAQ scores	Number	Percentage (%)
5 and less	50	22.4
More than 5	173	77.6
Total	223	100

Table IV: Association between Cognitive Impairment and Socio demographic factors among the elderly respondents in Mukim Sepang (n=223) from 17th June to 25th July 2002

Socio demographic Factors	Cognitive Impairment (n=50)	No Cognitive Impairment (n=173)	Prevalence (%)
Age			
60-69 years old	21	112	15.8
70 years old and above	29	61	*32.2
Gender			
Female	38	88	*30.2
Male	12	85	12.4
Race/Ethnicity			
Malays	20	100	16.7
Chinese	10	42	19.2
Indians	16	29	35.6
Orang Asli	4	2	66.7
Marital Status			
Married	21	113	15.7
Single /Widowed/Divorced	29	60	*32.6
Living Arrangement			
Living alone	5	14	26.3
Living with family	45	159	22.1
Occupation			
Not working	44	142	23.7
Working	6	3	16.2
Family Income			
Less than RM500	41	107	27.7
RM500 and above	9	66	12.0
Education			
No formal education	38	62	*38.0
Formal Education	12	111	9.8

*significant ($p < 0.05$)

Discussion

The Elderly Cognitive Assessment Questionnaire (ECAQ) is only a screening instrument. However, it has been proven to be a useful tool for primary health care doctors in screening for cognitive impairment among the elderly[1]. Those screened positive should be referred for further assessment as cognitive impairment among the elderly is associated with an increased risk of developing dementia[7].

This study shows that the prevalence of cognitive impairment is 22.4% among the elderly respondents. This finding is consistent with an earlier study which identified that 24.0% of Malaysian elderly in urban settlements had cognitive impairment[5].

In this study cognitive impairment was significantly higher among the elderly in the above 70 years age-group compared to those in the 60 to 69 age-group. A recent study in the United States found that the prevalence of cognitive impairment increases with age. In respondents aged 65 years and older, the prevalence was 23.4%. This figure increased to 38% among respondents aged 85 years and older[8].

The prevalence of cognitive impairment among the elderly respondents was significantly higher in females compared to males in this study, which corresponds to the study by Krishnaswamy S in 1995[5]. A reason for the high prevalence of cognitive impairment among women could be due to the loss of the estrogen hormone after menopause. Studies have shown that there is a significant association between memory decline and estrogen loss among postmenopausal women[9,10] (mean age for menopause = 50.7 years [11]). The ECAQ used to screen for cognitive impairment in this study had 4 out of 10 items on memory screening. The low ECAQ scores in this study could be a reflection of low scores in the memory items of the questionnaire. However, further studies should be done in greater depth to confirm these findings.

This study also found that the prevalence of cognitive impairment was higher among the elderly who were not married (either single, widowed or divorced) compared to those who were still married. However, larger in-depth studies should be done to confirm this finding.

Cognitive impairment was significantly higher among the elderly respondents with no education compared to those with education. Another study also found that low education level was significantly associated with cognitive impairment and increased risk for dementia[12]. There is a hypothesis that education increases the brain cognitive reserve, and that mental stimulation can delay the onset of cognitive impairment[2].

This study was only done at a screening level to detect the prevalence of cognitive impairment among the elderly in a rural community in Malaysia. As cognitive impairment is associated with an increased risk of developing dementia, further studies need to be done at a deeper level to diagnose dementia.

Conclusion

Factors found to be significantly associated with cognitive impairment in the elderly were age, gender, marital status, education level and ethnicity. The failure to detect and treat cognitive impairment in the elderly may have serious clinical and public health consequences, as cognitive impairment is associated with increased risk of dementia. Primary Care providers need to be vigilant when treating elderly patients in their care as dementia is common in this age group.

Acknowledgements

References

1. Kua EH, Tan SL, Lee KS, et al. The NUH Memory Clinic. Singapore Medical Journal 1997; 38: 53. http://www.sma.org.sg/smj/3803/articles/3803a3.htm

2. Krishnaswamy S. Psychiatric problems among the elderly in Malaysia. Med J Malaysia 1997; 52: 222-24.

3. Graham N. The Appa Rao lecture Dementia! Raising Awareness. Report of TS Srinivas Institute of Neurological Sciences and research Public Health Centre 2003; 18(1).

4. Prince M. Introduction and the Global 10/66 Study. Report of TS Srinivas Institute of Neurological Sciences and research Public Health Centre 2003;18(1).

5. Krishnaswamy S. Screening for dementia among elderly Malays in urban settlements in Kuala Lumpur. Malaysia J Psychiatry 1995; 3: 654-58.

6. Kua EH, Ko SM. A questionnaire to screen for Cognitive Impairment among elderly people in developing countries. Psychiatrica Scandinavica 1992; 85: 112-19.

7. Bischkopf J, Busse A, Angermeyer MC. Mild cognitive impairment – a review of prevalence, incidence and outcome according to current approaches. Acta Psychiatrica Scandinavica 2002; 106: 403.

8. National Institutes of Health. Cognitive Impairment High Among Older People, Study Suggest. Press Release. 12 November 2001.

9. McGill R. Restoring remembering: Hormones and Memory, McGill Reporter 2001; 3(10). http://www.mcgill.ca/reporter/33/10/sherwin

10. Estrogen therapy may prevent memory decline in elderly women. Media Release. October 11, 2000. http://www.mcgill.ca/releases/2000/october/sherwin/

11. Ismael NN. A study on the menopause in Malaysia, Matuiritas 1994; 19: 205-9.

12. Kukull WA, Higdon R, Bowen JD, et al. Dementia and Alzheimer's Disease incidence: a prospective cohort study. Arch Neurol 2002; 59: 1737-46.

APPENDIX 1: The Elderly Cognitive Assessment Questionnaire (ECAQ)

Memory
1. Sila ingatkan/hafal nombor ini. Sila ikut sebutkan nombor ini selepas saya (4517).
   (Recall: I want you to remember this number. Can you repeat after me (4517).)
2. Berapa umur anda?
   (How old are you?)
3. Bilakah harijadi anda? ATAU Pada tahun apakah anda dilahirkan?
   (When is your birthday? OR What year were you born?)

Orientation
4. Apakah tarikh hari ini? (What is the date today?)
5. Hari? (Day?)
6. Bulan? (Month?)
7. Tahun? (Year?)
8. Apakah nama tempat ini? (eg. klinik, rumah)
   What is this place called? (eg. clinic, house)
9. Apakah pekerjaan beliau? (eg. jururawat, doktor)
   (What is his/ her job? eg. nurse, doctor)

Memory Recall
10. Bolehkah sebutkan semula nombor tadi.
    (Can you recall the number again?)