ORIGINAL ARTICLE

Cognitive Impairment Among The Elderly Malays Living In Rural Malaysia

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SUMMARY

Cognitive impairment is a common psychiatric problem among the elderly. The objective of the study was to determine the prevalence of cognitive impairment among the elderly Malays living in a rural community in north Malaysia. A cross sectional study was conducted among the elderly population of 22 villages in north Malaysia. Elderly Cognitive Assessment Questionnaire was used to determine the cognition status. Analysis was done using SPSS version 13. The prevalence of cognitive impairment among the older adults in these villages was 11% (n=46). There was an increasing prevalence of cognitive impairment with increasing age (p<0.05). Being unmarried (OR 2.31), unemployed (OR 2.74) and living alone (OR 2.32) were significantly associated with the risk of being cognitively impairment. Being unemployed (OR 2.29) was a significant predictor variable for cognitive impairment. Similar to other studies conducted in Malaysia the prevalence of cognitive impairment was high.

KEY WORDS:
Cognitive impairment, rural, Malays, Malaysia

INTRODUCTION

The elderly population is expected to grow considerably in the near future [1]. It is projected that the population of the elderly in the world will rise by 21% in the next 50 years [2]. In the developing countries an increment of 140% is projected, compared to 51% in the developed countries [3]. The population of Malaysia is 25 million and is made up of several ethnic groups, comprising mostly of Malays [4]. Due to improved health, longer life expectancy, low mortality as well as declining fertility, by the year 2020, it is expected that almost 10% of Malaysia's population will be 60 years and above [5]. This increase in the elderly population will have an inevitable impact on the overall healthcare cost [6].

Only a fraction of those who need mental health care receive it [7]. By one estimate only about 10% of the elderly who are in need of psychiatric treatment ever receive this service [8]. Memory is strongly related to the ability to perform tasks of daily living and in turn, to live independently. Cognition declines with older age. Longitudinal studies report conversion rates of mild cognitive impairment to a diagnosis of dementia of approximately 10% per year [9]. Prevalence of dementia which is characterised by a decline in memory, language and other cognitive functions is high in the older population [10]. Several studies show dementia to be more prevalent in women than in men [11]. It is estimated that there is a new case of dementia every seven seconds and the number of cases in the developing world are forecasted to increase by 100% between 2001 and 2040 [12].

In the United States the mean annual cost per capita for home and institutional care for cognitively impaired person was US $18 500 from the years 1981 to 1982 [13]. The current rise in the number of elderly people with moderate and severe cognitive impairment will out pace the increase in the elderly population as a whole. Aging within the group is likely to lead to even higher growth in the numbers for whom nursing and residential care is the current option [14].

Geriatrics and psychogeriatrics are emerging specialties in Malaysia, and so to date there has been relatively little research in these areas. However there is evidence from other countries that dementia is an important problem in the elderly causing a large amount of morbidity and mortality in this group. The objective of this study was to determine the prevalence of cognitive impairment and its associated risk factors including among others activities of daily living and body mass index among the elderly Malays living in a rural region of north Malaysia.

MATERIALS AND METHODS

Setting: Twenty two villages were selected from a north western state in Malaysia called Kedah. Kedah has one of the highest rates of elderly population in the country. All the villagers were Malay Muslims and most were working as fishermen and farmers due to the proximity of the villages to the sea and the foot hill of a mountain. **Study Design:** A cross sectional study design was chosen to achieve the objective of the research. The study was conducted from 2008 to 2009. **Sampling:** The villages were so chosen due their proximity to the work place of the researcher and the respondents were taken from among the elderly residents defined as someone who is 60 years and older living in these 22 villages. No sample size calculation was made; those who consented and who were able to communicate effectively were eligible to participate. **Tools:** The data was collected by trained research assistants using a questionnaire. The

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interviews were conducted in the respondent's homes. Besides the baseline demographic information, Elderly Cognitive Assessment Questionnaire (ECAQ) was used to determine whether the respondents were cognitively impaired. ECAQ is a ten item screening test assessing long term memory, orientation and recall validated in Singapore and is a useful tool for routine screening. It is used in the developing world for patients who may be illiterate or have relatively low level of education [15]. A score of 7 or more is indicative of normal memory and score of 4 and below indicate probable dementia. In addition, Barhtel index [16] which is a well established and commonly used nursing tool[8] was used to assess the functional independence in the activities of daily living (ADL) of the respondents. The respondents were categorized as independent and dependent according to this index. Body mass index (BMI) which is well recognized as an easy and relatively accurate way to determine a person's nutritional status [17] and blood pressure was measured using standardized methods. BMI was calculated by dividing weight in Kg with height in metres squared. The index was categorised as <18.5 as underweight, 18.5 – 24.9 as normal, 25-29.9 overweight and ≥ 30 obese. **Analysis:** Data was tabulated, cross tabulated and analysed using SPSS version 13. The variables were compared as appropriate with either the Pearson chi-square test or the Fisher's exact test. A probability value of P<0.05 was considered to be statistically significant. Binary logistic regression was conducted and odds ratio was used to estimate the risk for cognitive impairment. **Ethics:** The research was conducted ethically. The research had received the approval of the institution's research and ethics committee. All respondents were asked to give an informed consent before starting the interview. The anonymity of the respondents is assured.

RESULTS

A total of 428 villagers were 60 years and above, 418 responded giving a response rate of 97.7%. There were more female (56.7%) respondents compared to males (43.3%), most were within the ages of 60 to 70 (66.5%), married (76.3%) and living with family members (84%). There were almost equal numbers of employed (50.7%) and unemployed (49.3%) respondents. Majority had a family income of less than RM 600 (USD 187) (71.8%) a month. Most were independent (96.7%) and had normal BMI (51.4%) (Table I).

Table I: Profile of the elderly respondents from 22 villages in north Malaysia

Variables	Number (percentages)
Sex	
Female	237 (56.7%)
Male	181 (43.3%)
Age	
60-70	237 (56.7%)
71-80	109 (26.1%)
>80	31 (7.4%)
Marital status	
Unmarried	99 (23.7%)
Married	319 (76.3%)
Occupation	
Unemployed	212 (50.7%)
Employed	206 (49.3%)
Income	
≤ RM 600	300 (71.8%)
> RM 600	118 (28.2%)
Living arrangement	
Alone	67 (16.0%)
Family	351 (84.0%)
Disability	
Dependent	14 (3.3%)
Independent	404 (96.7%)
BMI	
Under nutrition	95 (22.7%)
Normal	215 (51.4%)
Overweight	83 (19.9%)
Obese	25 (6.0%)
Hypertension	
Hypertensive	228 (54.5%)
Normal	190 (45.5%)

The prevalence of cognitive impairment among the elderly in these villages was 11% (n=46). As shown in table II, there was an increasing prevalence of cognitive impairment with increasing age (p<0.05). There was about a two fold increase in the risk of being cognitively impaired when the respondent was unmarried (OR 2.31. 95% CI 1.22;4.39), unemployed (OR 2.74. 95% CI 1.39;5.37) and living alone (OR 2.32. 95% CI 1.15;4.69). Differences in sex, income, disability, BMI and hypertension were not found to be statistically significant.

As shown in table III, a binary logistics regression was done using sex, marital status, occupation, living arrangement, and BMI as predictor variables. Occupation (OR 2.29. CI 1.13;4.64) was found to be a significant predictor variable. The model had -2 likehood ratio of 274.212, Cox and Snell R squared 0.035 and Nagelkerke R square 0.070.

DISCUSSION

Cognitive impairment is a common problem among the elderly. It was estimated that 25 million people had dementia in 2005 and the number is expected to double every 20 years [12]. The prevalence of dementia in residential and nursing homes is higher and has been reported up to 80% in some studies [18,19]. The prevalence of cognitive impairment in this study (11%) was found to be considerably lower than other studies conducted in Malaysia. The prevalence of cognitive impairment among rural population in central Malaysia was found to be 22.4% [20] whereas in north Malaysia the prevalence was 18.5% [21] and in an elderly care home 36.5% [22].

Although dementia is not a natural part of ageing, the likelihood of being diagnosed with dementia doubles every five years [23]. The findings of this study showed that the prevalence of cognitive impairment increased with age. Similarly studies conducted locally [21, 22] and abroad [24, 25] have shown that the prevalence of moderate to severe cognitive impairment increases steeply with age.

Being unmarried and living alone are risk factors for cognitive impairment. A study in Finland showed that those who were living with a partner were significantly less likely to show cognitive impairment compared to those who were single, separated, divorced or widowed. The same study also showed that those who were married or lived with a significant other had a 50% lower risk of having dementia in late life compared to those who lived alone [26]. It is believed that social

Table II: Factors associated with cognitive impairment among the respondents from 22 villages in north Malaysia

Variable	Cognitive impaired (n= 46) f (%)	Normal (n=372) f (%)	χ^2 / P	OR (CI 95%)
SEX			χ^2 =2.41 p=0.081	
Female	31 (13.1%)	206 (86.9%)		
Male	15 (8.3%)	166 (91.7%)		
Age *			χ^2 =8.297 p=0.016	
60-70	22 (7.9%)	256 (92.1%)		
71-80	18 (16.5%)	91 (83.5%)		
>80	6 (19.4%)	25 (80.6%)		
Marital status *			χ^2 =6.823 p=0.009	2.31 (1.22;4.39)
Unmarried	18 (18.2%)	81 (81.8%)		
Married	28 (8.8%)	291 (91.2%)		
Occupation *			χ^2 =9.138 p=0.003	2.74 (1.39;5.37)
Unemployed	33 (15.6%)	179 (84.4%)		
Employed	13 (6.3%)	193 (93.7%)		
Income			χ^2 =1.075 p=0.300	
≤ RM 600	36 (12%)	264 (88%)		
> RM 600	10 (8.5%)	108 (91.5%)		
Living arrangement *			χ^2 =5.746 p=0.017	2.32 (1.15;4.69)
Alone	13 (19.4%)	54 (80.6%)		
Family	33 (9.4%)	318 (90.6%)		
Disability			χ^2 =1.607 p=0.205	
Dependent	3 (21.4%)	11 (78.6%)		
Independent	43 (10.6%)	361 (89.4%)		
BMI			χ^2 =0.831 p=0.843	
Under nutrition	10 (10.5%)	85 (89.5%)		
Normal	24 (11.2%)	191 (88.8%)		
Over weight	8 (9.6%)	75 (90.4%)		
obese	4 (16%)	21 (84%)		
Hypertension			χ^2 =0.359 p=0.549	
Yes	27 (11.8%)	201 (88.2%)		
No	19 (10%)	171 (90%)		

*statistically significant

Table III: Logistic regression to determine the significant predictive variables for cognitive impairment among the elderly respondents in 22 villages in north Malaysia

Risk factors	Regression Coefficient	Standard error	Wald	p value	Adjusted Odd Ratio	95 % CI
Sex	-0.321	0.351	0.839	0.360	0.72	0.37;1.44
Male						
Female						
Marital status	-0.348	0.383	0.823	0.364	1.42	0.67;3.00
Unmarried						
Married						
Occupation*	0.830	0.360	5.313	0.021	2.29	1.13;4.64
Unemployed						
Employed						
BMI	-0.045	1.193	0.055	0.815	0.96	0.66;1.39
Malnutrition						
Normal						
Living arrangement	0.307	0.419	0.537	0.464	1.36	0.59;1.39
Alone						
Family						

*statistically significant

interaction between couples which is one of the most intense forms of social and intellectual stimulation that helps avoid the disease. However even in married couples once cognitive impairment sets in the quality of the relationship tends to deteriorate [27].

Studies have suggested that individuals with consistent physical activity [28], mentally demanding work and in higher managerial positions [29] have a positive cognitive status in later life. In this study those unemployed were at a higher risk of being cognitively impaired. Studies conducted in France [30] and Taiwan [31] found that people in lower class of occupations are also at a higher risk of being cognitively impaired. Possible explanations for the association of occupation and cognitive impairment could be due to the higher exposure to toxic exposures, the level of psychosocial stress levels in different occupations and the level of mental stimulation required in the job.

CONCLUSION

Early detection of cognitive impairment will help the patient and the families to prepare and plan for the potential complications of this illness. In 2007 the Ministry of Health of Malaysia had started a cognitive screening programme at primary care centres using ECAQ and Mini Mental State Examination (MMSE) and patients suspected of dementia are advised to refer to geriatric psychiatrist, geriatrician or memory clinic for a more comprehensive assessment [32].

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