PREVALENCE OF DEMENTIA AMONG ELDERLY IN TAIBAN SUB-DISTRICT OF SAMUTPRAKARN PROVINCE, THAILAND

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ABSTRACT: A cross-sectional study was conducted from June - July 2011 with the objectives to examine prevalence of dementia among elderly, to understand the factors associated with dementia and to assess the activities of daily living (ADL) of the elderly population in Taiban sub-district of Muang Samutprakarn district, Samutprakran province, Thailand. A sample of 323 subjects was recruited by simple random sampling and structured questionnaire was used by the researcher to collect data by face to face interviews. The contents of the questionnaire were validated by experts and the reliability was assessed using Cronbach's alpha co-efficient. The questionnaire had three parts: 1) demographic factors 2) evaluation of functional ability of elderly on activities of daily living (ADL) using BI index and 3) cognitive assessment to determine dementia status using Chula Mental Test (CMT) which consisted of 16 questions. Apart from assessing the prevalence of dementia, factors associated with dementia status were analyzed using Chi-square test. The study showed that prevalence of dementia among the elderly in Taiban sub-district was 11.1% (36 subjects with dementia) and mostly in the older age group (age > 80 years), graduated from primary school, read barely literate; write barely literate, living with their spouse, moderate personal relation, unemployed. The study showed that factors associated with dementia among elderly people were age, education level, reading and writing ability, working status, alcohol and family history of dementia. To promote health among elderly with no dementia or with risk of dementia, they should be educated and advised on prevention of cognitive disability by many organizations. Also appropriate services should be provided such as improving health care team, supporting the community to promote exercise for all age, health check up at least once a year and emphasizing the members in family and community to take care of the elderly especially those with disability and dementia.

Keywords: Dementia, Elderly, Prevalence, Activities of Daily living (ADL), Dependency

INTRODUCTION

Human life expectancy has dramatically increased across the globe and Thailand is one of the many countries that showed rapid growth in the number of elderly and this has affected the structure of the population, dependency ratio and has caused strain on the health care system. The report from Thailand's Office of National Statistics showed that in the year 2006 there was approximately 5.9 million elderly people in the country and by 2010 the elderly population had increased to 7.63 million, the central region of Thailand alone accounted for 456,000 [1]. The statistics also shows that by 2010 – 2020 the elderly population will increase approximately by 5% every year whereas for other age groups it is expected to be no more than 0.5% [1]. Moreover, the World Health Organization also stated that the elderly population, 60 years old and over, is anticipated to increase from 8.7% in 2000 to 10.8% in 2010, to 15.2% in 2020, and to 30% in 2050 [2]. However, if taken on the proportion of people aged 65 and over, Thailand maybe compared with other countries such as Japan, South Korea or Singapore when they had comparable levels of ageing. Thailand is expected to double its number over the 20-year period and this will be happening at much

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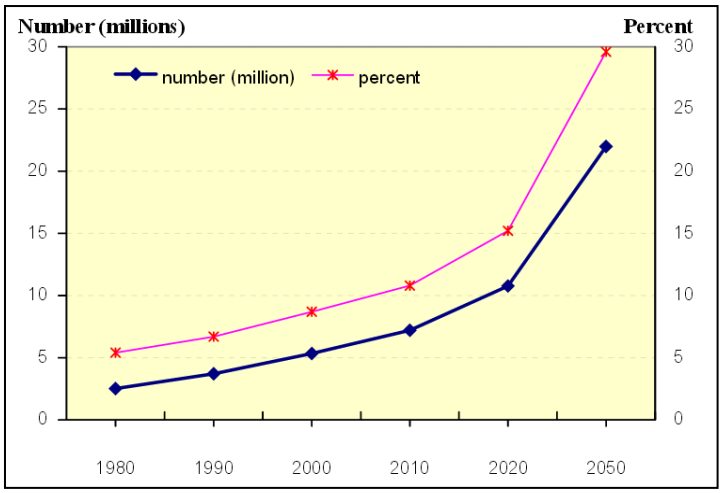

Figure 1 Linear graph of total number and percent of the older population in Thailand, 1980 – 2050 [2]

lower levels of per capita GDP than in the developed countries (Figure 1). There is a need to give ongoing attention to all the issues due to dramatic increase in ageing population in order to avoid a strain or collapse in the healthcare system.

The elderly called Phu Sung Ayu in Thai, experience many different challenges in old age both physical and mental, particularly with cognition. Some of the elderly people face progressive cognitive deterioration leading to memory loss and subsequently leading to dependency even for daily functioning. Dementia, regardless of its cause has been recognized as one of the most important problems among the elderly worldwide. The dementia can be divided into six types according to the cause: dementia of the Alzheimer's type, vascular dementia, dementia due to general medical conditions, substance-induced persisting dementia, dementia due to multiple etiologies and dementia not otherwise specified [3]. In Thailand the prevalence of dementia is 1.8 - 10.2% in the age group 55 years and above [4] and another study from Mahidol University shows that dementia in the age brackets of 60 - 69 years is only around 1% but increases to more than 30 % at the age of 90 years and over [5]. In the next 20 years the number of elderly with dementia is expected to increase to 450,200 people and to a million in the future [5]. The report from Samutprakarn provincial health office showed that there were about 32,110 elderly people in 2011, however there are no studies to show the prevalence of dementia in this population and the associated factors. Therefore, the rationale of this research was to assess the prevalence of dementia among the elderly in Taiban sub-district, Muang Samutprakarn district, Samutprakarn province, Thailand. The aims and objectives of the study was to understand the prevalence and burden of dementia in the community, to understand the risk factors for dementia in the elderly and identify basic activities of daily living of elderly people in the Taiban sub-district of Muang Samutprakan province. The findings may provide more information about the prevalence of dementia and it will be a platform to formulate better care for the elderly, design health promotion activities for the elderly in order to promote better and enhance the quality of geriatric primary care.

METHODOLOGY

Research design and sample

A cross-sectional study was used to describe the dementia prevalence among the elderly in Taiban sub-district, Maung Samutprakan district, Samutprakran province, Thailand (age 60 and over). The inclusion criteria were: age 60 years and over having no severe physical disabilities that may affect the testing process such as ability to speak and no hearing problems, and are willing to participate in the research. Patients with hearing disability, mental disorders and people unwilling to participate in the study were excluded from the study. The study population included both male and female elderly subjects from a total of 1,664 people in the list from the Department of Provincial administration, sample size was calculated based on the study by Yamane in 1973 and formula $n= N/1+N(e)^2$ (where N=1664 & e=0.05) and a sample size of 323 was obtained. A simple random sampling was used from the list of households in the sub-district and the list of subjects was drawn from the population after informed consent and ethical approval was obtained from the Ethical

Table 1 Socio-demographic characteristics of participants (n = 323)

Variables	No of subjects	%
Socio-demographic		
Age		
60-69 years	191	59.1
70-79 years	98	30.4
More than 80 years	34	10.5
Median=67, Mean=69.2		
Gender		
Male	131	40.5
Female	192	59.5
Economic level		
No education	55	17.1
Basic primary school (Prathom 4)	194	60.1
Completed primary school or higher (Prathom 6)	18	5.6
Junior high school	22	6.8
Senior high school	24	7.4
Diploma	5	1.5
Bachelor's degree or higher	5	1.5
Reading ability		
Sufficient ability	175	54.2
Barely literate	109	33.7
Illiterate	39	12.1
Writing ability		
Sufficient ability	164	50.8
Barely literate	121	37.5
Illiterate	38	11.7
Living status		
Alone	9	2.8
With spouse	284	87.9
With family and relatives	30	9.3
Relationship of care taker		
Very poor	4	1.2
Poor	27	8.4
Moderate personal relation	128	39.6
Strong personal attachment	164	50.8
Working status		
Employed	94	29.1
Unemployed	229	70.9
Income source		
From work	80	24.8
From family	243	75.2
Income sufficient		
Enough for daily consumption savings	114	35.3
Enough for daily consumption only	157	48.6
Not enough	52	16.1
Personal health problem		
Yes	291	90.1
No	32	9.9
Personal disease or sickness		
Hearing	32	9.9
Vision	35	10.8
Muscular and skeletal	101	31.3
Dizziness	52	16.1
Sleep disorder	26	8.0
Hypertension	44	13.6
Diabetes mellitus	26	8.1
Hemiplegia	7	2.2
History of drinking alcohol		
Yes	44	13.6
No	279	86.4
Smoking history		
Yes	41	12.7
No	282	87.3

Table 2 Number and percent population according to their ability to perform the basic activities of daily living (ADL)

Activities	Level of Ability											
	Independent		Need minimal help with ADL		Partially dependent		Very dependent		Dependent		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Bowels	168	52.1	73	22.6	51	15.8	15	4.6	16	4.9	323	100
Bladder	169	52.3	72	22.4	52	16.1	14	4.3	16	4.9	323	100
Grooming	175	54.2	61	18.9	58	17.8	12	3.8	17	5.3	323	100
Toilet use	158	48.9	65	20.1	67	20.8	17	5.3	16	4.9	323	100
Feeding	173	53.5	67	20.7	61	18.9	13	4.1	9	2.8	323	100
Transfer	169	52.3	75	23.2	53	16.4	14	4.3	12	3.8	323	100
Mobility	167	51.7	78	24.1	55	17.1	15	4.6	8	2.5	323	100
Dressing	175	54.2	74	22.9	53	16.4	17	5.3	4	1.2	323	100
Stairs	159	49.2	77	23.8	52	16.1	17	5.3	18	5.6	323	100
Bathing	169	52.3	85	26.3	53	16.4	10	3.2	6	1.8	323	100

committee for human research, Health Sciences Group, Chulalongkorn University. Between January and April 2011, data were collected by the researchers by means of a questionnaire which consisted of 3 parts: 1) Socio demographic characteristics 2) Activities of Daily living (ADL) - functional aspects of daily routine which was scored using the Barthel index (BI) and classified into independent (score of 80-100), needs minimal help with ADL (60-79), partially dependent (40-59), very dependent (20-39) and totally dependent (<20). Information was obtained from subjects, care taker and by direct observation, and the Barthel's index (BI) calculated for each activity 3) Cognitive assessment (Dementia) using the Chula Mental Test (CMT) with 13 items and was scored and total maximum score was 19, minimum was 0 and score of less than 15 was defined as cognitive impairment. The reliability of the BI and CMT was tested and the Cronbach's reliability coefficient was good at 0.98. Data were checked for completeness and data analysis was done using SPSS for windows version 17. Descriptive statistics was used for the demographic data, Chi square was used to find factors associated with dementia and a p-value of < 0.05 was considered significant.

RESULTS

The average age of the population was 67 years with a females about 60%, many having completed basic primary school (Prathom 4; 60.1%), no education (17.1%), while 7.4% only completed senior high school. However, 54.2% were able to read sufficiently while 33.7% were able to read somewhat and 12.1% unable to read. The writing ability of the elderly population found 50.8% with sufficient writing abilities while 37.5% were semi illiterate and 11.7% had a minimum ability to write (Table 1).

Table 3 Percentage of elderly with dementia in study population (n = 323)

Cognitive ability	Number	%
Normal	287	88.9
Dementia	36	11.1

The basic activities of daily living (ADL) were divided into ten activities (Table 2) and the researcher used strict standards to separate the elderly population into two groups, normal and dementia. The basic activities of daily living of elderly people in Taiban sub-district, Muang Samutprakan district, Samutprakran province, Thailand were sorted into ten activities including bowel and bladder function, grooming, toilet use, feeding, transfer, mobility, dressing, stairs and bathing. The result showed that 54.2% of elderly can perform ADL like washing their face, combing hair and dressing up. About 53.5% were able to eat with no assistance and 52.3% were able to control bladder function including transfer and bathing without any assistance from a care taker.

The level of cognitive ability was determined using the Chula Mental Test (CMT). It was found that 36 elderly subjects scored less than 15 points in the CMT and therefore classified as having dementia. Thereby the prevalence of dementia in the study population was 11.1% (Table 3).

The results of the relationship between dementia and determinants of dementia among elderly, showed that the highest level of dependency was found in the age of 80 years and over at 50%. The age group 70-79 years resulted in 33.3% dependency and the 60-69 years range was at 16.7%. As the population was divided by education, reading ability and writing ability related to dementia, the relationship between education and the dependence in dementia sufferers have found that there were 72.3% of those

Table 4 Factors related to dementia among elderly in Taiban sub district, Samutprakhan province

Factors	Dementia	No dementia	*p-value*
Age			
60-69 years	6(16.7)	185(64.4)	
70-79 years	12(33.3)	86(30.0)	<0.001*
More than 80 years	18 (50.0)	16(5.6)	
Gender			
Male	16(44.5)	105(36.6)	0.235
Female	20(55.5)	182(63.4)	
Education level			
No education	10(27.7)	45(15.7)	0.020*
Education	26(72.3)	242(84.3)	
Reading ability			
Sufficient ability	-	164(57.1)	
Barely literate	18(50.0)	103(35.9)	0.031*
Illiterate	15(50.0)	20(7.0)	
Writing ability			
Sufficient ability	-	164(57.2)	
Barely literate	18(50.0)	103(35.8)	0.048*
Illiterate	18(50.0)	20(7.0)	
Living arrangement			
With spouse	30(83.3)	263(91.6)	0.085
With family and relatives	6(16.7)	24(8.4)	
Relationship of care taker			
Moderate personal relation	28(77.8)	100(34.8)	0.460
Strong personal attachment	8(22.2)	187(65.2)	
Working status			
Employed	4(11.1)	76(26.5)	0.036*
Unemployed	32(88.8)	211(73.5)	
Income source			
From work	4(11.1)	76(26.5)	
From family	32(88.8)	211(73.5)	
Income sufficient			
Enough for daily consumption savings	-	114(39.7)	
Enough for daily consumption only	30(83.3)	127(44.2)	0.156
Not enough	6(16.7)	46(16.1)	
Personal health problem			
Yes	36(100)	255(88.8)	0.236
No	-	32(11.2)	
Personal disease or sickness			
Hearing	3(8.4)	29(10.2)	0.265
Vision	3(8.4)	32(11.1)	0.335
Muscular and skeletal	2(5.6)	108(37.6)	0.154
Dizziness	5(13.8)	37(12.9)	0.223
Sleep disorder	7(19.5)	20(7.0)	0.160
Hypertension	6(16.7)	38(13.2)	0.326
Diabetes mellitus	5(13.8)	21(7.3)	0.198
History of drinking alcohol			
Yes	28(77.7)	16(5.6)	0.033*
No	8(22.3)	278(96.9)	
Smoking history			
Yes	30(83.3)	15(5.2)	0.245
No	6(16.7)	272(94.8)	
Family history diagnosis of dementia			
Yes	4(11.2)	5(1.7)	0.044*
No	32(88.8)	282(98.3)	
Assessing activities of daily living (ADL- BI index)			
Partially dependent	6(16.8)	282(98.2)	
Very dependent	14(38.8)	3(1.1)	0.021*
Dependent	16(44.4)	2(0.7)	

dependent who graduated from primary school and 27.7% had no education. For the relationship between reading ability and dependence in dementia sufferers, it was found that 50% of those dependent were unable to read and semi illiterate and 50% who could read and write had the same dependency rate.

The strongest relationship was found between dementia and subject living with their spouse at 83.3% and 16.7 % lived with their family and relatives that regarding to the relationship between care taker and dependence in dementia 77.8% had a moderate personal relation while 22.2% of those dependent had a strong personal attachment.

For population factors separated by working status, income source, and sufficient income related to dementia, 88.8% of those dependent were unemployed and 11.1% were employed. However, the strongest relationship was found between dementia and working status, while income source and sufficient income were found to be statistically insignificant in relation to dementia. For population factors separated by personal disease or sickness, alcohol history, smoking history, family history diagnosis and assessing activity of daily living related to dementia the results have showed that the strongest relationship was found between dependency on dementia with hemiplegia at 13.8% and alcohol history at 77.7%. Therefore, 88.8% found no family history diagnosis of dementia and 44.4% were dependent regarding assessing activity of daily living but both had strong relationship to dementia.

DISCUSSION

The study revealed that dementia prevalence among the elderly people in Taiban sub-district, Maung Samutprakan district, Samutprakran province was 11.1% and this was comparable to the results in urban and rural communities in Thailand with 27.6%, 33-37% and 32.8% respectively [6] in Ao Nang with 1.1% of the population showed dementia [7]. In Salaya sub-district, Nakornparom province the result was 4.8% [8]. In Klong Toey district of Bangkok, 1.8% of the population showed dementia [9] and 3.2% in Roi-et province [10]. Over half of the subjects with dementia were 80 years and over and gender was not statistically related to the level of dependency in dementia and gender was not associated with dementia and Alzheimer's disease onset [11].

The results using the Chula Mental Test (CMT) as the instrument, showed that the factors associated with dementia of elderly people in Taiban Sub-District (Table 4), were age, education level, work status, income, reading and writing ability, living arrangements, relation of care taker, working status, personal disease, alcohol and smoking history and family history diagnosis of dementia and the results were similar to the study by Buakaew [7]. Also the study findings was in line with the study of Pendlebury et al. [12] that medial temporal lobe atrophy, female sex, and a family history of dementia were strongly associated with pre-stroke dementia.

The findings for dependency were comparable to the study of Naka [13] that most of the subjects (77.5%) were independent in managing daily living activities, 21.9% of subjects were partially dependent and only 0.6% of them were totally dependent. There was statistically significant relationships between the level of abilities to manage daily living, and some demographic variables such as age ($p< 0.01$), health status ($p< 0.01$), and income ($p< 0.05$)

From the results, it can be concluded that the studies about the basic activities of daily living of elderly people such as daily living or dressing.

However the elderly people in Taiban sub-district, Muang Samutprakan district, Samutprakran province, Thailand and with other regions as already mentioned, there are differences in the environment, lifestyle and geography and all these will affect the results. More specifically, from the family oriented lifestyle are all positive factors contributing to those with dementia. This means that the activity theory has received a great deal of criticism excluding elders' physical well-being, past lifestyle, and personality attributes. We found that the elderly people in Taiban sub-district, with dementia lived with their family, had unlimited caretaking and strong relationships with their caretaker and is in line with earlier studies by Eliopoulous [14]. This is especially with large family sizes and may be a factor that affects dementia, reducing the abilities of the elderly. Some symptoms of elderly people who suffer dementia could be higher levels of aggressiveness and anger. Therefore further studies in this district should be conducted to get a clearer picture on the relationship between caretaker and dementia.

From the above mentioned discussion we can conclude that the factors associated with dementia of elderly people are age, education level, reading and writing ability, alcohol history and family history of dementia. These are important to analyze the elderly with dementia. For example the elderly who cannot read or write will be more likely to exhibit dementia and this relationship can be explained by brain capacity and pre-morbid ability

as continued development of the brain and higher understanding will result in fewer incidences of dementia. Further country wide research on dementia should be considered to understand the prevalence, risk factors and associated factors so as to formulate strategies to reduce the burden of dementia. In order to promote health among elderly without dementia or with risk of dementia, programs should be formulated to prevent cognitive disability. Also appropriate services should be provided such as improving health care working as a team, community support to promote exercise for all age, health check-ups at least once a year and emphasizing the role of members in family and community to take care of the elderly with disability and dementia. All these can make a difference in reducing the burden of dementia in the society.

LIMITATIONS

The study was done in rural areas of Taiban sub-district and therefore may not be representative of elderly in other urban areas or elderly living in the city. Some of the elderly have abnormalities such as hearing loss, unconscious, confusion and problem with communication and were excluded from dementia screening so there may be under reporting of actual data. The difference in conduct of the survey by different researchers may have caused some data collection errors and need to be considered. Larger studies involving many districts need to be done to understand the true prevalence of dementia in the population.

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References

1. Prasartkul P, Vapattanawong P. Elderly Thai population. Journal of Population and Social Studies. 2006; 14: 33-7.
2. World Health Organization [WHO]. Older population and health system: a profile on Thailand. [cited 2012 Dec 12]. Available from: http://www.who.int/entity/ageing/projects/intra/phase_one/alc_intra1_cp_thailand.pdf
3. Opasanon N. A study of the Wechsler me memory scale-third edition abbreviated in the elderly dementia patients. [Master's thesis]. Bangkok: Mahidol University; 2008.
4. Vinkers DJ, Gussekloo J, Stek ML, Westendorp RG, Vander Mast RC. Temporal relation between depression and cognitive impairment in old age: prospective population based study. BMJ. 2004; 329(7471): 881.
5. Chansirikarnjana S. Thai elderly with dementia. Bangkok: Department of Mental Health, Thailand; 2005.
6. Kanokrat S, Sucheera P, Monkol L, Jariya C, Wilasinee C, Keerati B. Depression and dementia in Thai elderly in urban and rural communities. Siriraj Hospital Gazette. 1999; 51(4): 232-43.
7. Buakaew R. Assessing functional abilities among elderly in Ao Nang Krabi province. [Master's thesis]. Bangkok: College of Public Health Sciences, Chulalongkorn University; 2003.
8. Kangsanarak A, Srikiatkhachorn A, Kotchabhabi N. Epidemiology of dementia inThai elderly: a study in a suburban community. Royal Thai Air Force Gazatte. 1992; 39:19-29.
9. Phanthumchida K, Jitapunkul S, Sithi-Amorn C, Bunnag S, Ebralim S. Prevalence of dementia in an urban slum population in Thailand: validity of screening methods. Inter J Geriatr Psy Chiatr; 1991; 6: 639-46.
10. Sowanna O. Prevalence and associated factors of dementia in elderly. [Master's thesis]. Bangkok: Mahidol University; 1998.
11. Kukull WA, Higdon R, Bowen JD, McCormick WC, Teri L, Schellenberg GD, & et al. Dementia and alzheimer disease incidence: a prospective cohort study. Arch Neurol. 2002; 59(11):1737-46.
12. Pendlebury ST, Rothwell PM. Prevalence, incidence, and factors associated with pre-stroke and post stroke dementia: a systematic review and meta-analysis. Lancet Neurol. 2009; 8(11): 1006-18.
13. Naka K. Lifestyle and self-care of the elderly in rural community's South. [Doctoral dissertation]. Bangkok : Mahidol University, 1999. In: Kumarnjan W. Quality of life among the elderly in the upper southern region [Master's thesis]. Changmai: Faculty of Nursing Science, Changmai University; 2000.
14. Eliopoulos C. Gerontological nursing. 7th ed. Philadelphia: Lippincott Williams & Wilkins; 2010.