Prevalence, Associated Factors of Dementia among the elderly in the Bangkok urban area : a case study in Bang Phlat District

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ABSTRACT

This cross-sectional study were to examine the prevalence and associated factors of dementia among the elderly living in Bang Phlat District, Bangkok. The study used a multi-stage sampling. The total samples were 398 elders. The measurements were divided into two parts: 1. General characteristics information, associated factors of dementia including personal factors, health factors, behaviors factors, psychological factors, and activity daily living assessment (Barthel Activity of Daily Living index: ADL index). 2. Mental assessment Thai version (Mini-Mental State Examination: MMSE Thai version 2002). Statistical analysis included frequency, mean, percentage, standard deviation and Chi-square test. The result showed that the prevalence of dementia among the elderly was at 21.1%. Factors associated with dementia were personal factors (education, occupation after retirement, income, and ADL), psychological factors (depression), and health factors (a family history of dementia). Health personnel can apply this study including the process of screening, activity planning, and findings of the study

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to the elderly in the community. With an emphasis of health promotion and a preliminary prevention, this can reduce the incidence of dementia among the elderly.

Keywords: Elderly, Dementia, Prevalence, Factors associated with dementia

1. Introduction

World Health Organization defines "Aging Society" as a country or society with a population aged over 60 years old accounting for 10% of the total elderly population (World Health Organization, 2009). Thailand is facing rapidly growing population of elderly people. The country has become aging society with the elderly population accounting for 10.2% of total population since 2004. The number of elderly population is steadily increasing each year. The number of aging population has reached 10.7% in the year of 2007 to 11.36% in the year of 2009 respectively. In 2013, the total population in Thailand was 64,623,000 with the total number of elderly population at 9,517,000 accumulating for 14.73% (Mahidol Population Gazette, 2013). As the number of elderly people is increasing, the average life expectancy will be higher. In 2009, the average life expectancy of males and females were 69.5% and 76.3%, and in 2013, it has increased to 71.1% and 78.1% respectively (Mahidol Population Gazette, 2013). The average life expectancy of the elderly population is increasing due to the increasing number of elderly. Hengsuko (2014) mentioned that due to advances of medical and public health system, numbers of elderly are rising. The trend is similar to other countries in the world. As population has increased longevity, the problem of healthcare affordability has arisen. Some elderly have good health conditions; some have illnesses range from mild to severe; and some are disabled. Health care needed among the elderly from family, society and a country should be taken into account. As elderly in Thailand have increased longevity, their health problems including chronic diseases are also increasing. It is found that Thai elderly have chronic diseases 70-80% of total elderly population. Common chronic diseases found among elderly are hypertension, diabetes, heart disease, respiratory system, neurological diseases, orthopedics surgery, and dementia (Ebersole, Hess and Luggen, 2004).

Dementia is a set of symptoms that incline mental ability; and the symptoms will be carried out gradually (Munden and Goldberg, 2003). It often causes by many diseases that affect the brain. Common cause of dementia is Alzheimer's disease followed by cerebrovascular diseases (Muangpaisan, 2013). As a result, patients with dementia would have these decreased self-ability signs: perception, cognitive function, memory, using language, making decision, social skills, and behavioral symptoms (Dettmore, Kolanowski and Boustani, 2009; Mitty and Flores, 2007). The impacts of dementia on elderly are classified into four categories: 1. Physical, 2. Behavioral, 3. Mental, and 4. Societal. Elderly may experience physical impaired such as decreased information processing ability, difficulties in helping themselves or doing daily activities, forgetfulness and impaired mobility (Muangpaisan, 2013). Elderly experience behavior problems such as agitation behavior, anxiety, delusion, and social isolation (Thongwachira, 2010). In term of psychological impacts, elderly may feel discouraged, hopeless and dependency. They have low self-esteem; and they lack of confidence of their abilities (Kumbuatong, 2010). In term of social roles and society function, elderly may not be interested in social roles. They do not want to participate in social activity. They lose their social status and confidence to join activity within his/her society (Kumsaun, 2011). With the impacts of dementia, severity of the disease is increasing more among disabled elderly. The elderly cannot help themselves; and they need to be taken care by their relatives and family. They have to rely on others for helping them with daily activities; which this puts burdens on relatives and family, resulting in a long term financial problem.

From the literature reviews both in Thailand and international research, it is found that the prevalence and associated factors of dementia are caused by multiple factors. The preliminary screening of dementia is very important

in health service. To focus on the problem and to reduce the incidence of dementia, health promoting on knowledge and prevention should be taken into account. Nurses, academics and health personnel are major role in providing knowledge and services to people. There should be integration in teaching by introducing nursing students to the community; so that they can learn, serve and provide health services to people in Bangkok. By experiencing the actual conditions and visiting the elderly in the community, this motivates nursing students to learn, to practice and to focus for higher level of skills based on their hand-on experience. The studied community areas should be close to the institution such as Bang Phlat District because of Bang Phlat District is urban area of Bangkok and there is an increase in the elderly population 10.9% (Mahidol Population Gazette, 2013), which is an aging society but there was no survey of the prevalence of dementia, associated factors and knowledge information of dementia among the elderly, caregiver and healthcare worker in Bang Phlat District, Bangkok. Researcher realized the importance of finding of the prevalence and associated factors of dementia among the elderly including the severity of the disease so that the outcomes in providing health care for elderly within the community would be better. In addition, researcher would like to integrate teaching technique to nursing student, Faculty of Nurse, Suan Dusit University to be used to care for the elderly in the future.

2. The purposes of the study

1) To examine the prevalence of dementia among the elderly living in Bang Phlat District, Bangkok.

2) To examine the factors associated with dementia among the elderly people.

Research Agreement

Dementia identified in this research only derived from the results of the assessment tests including personal history, Barthel Activity of Daily Living assessment, mental assessment (Thai Geriatric Depression Scale), and the evaluation of the performance of the brain with MMSE-Thai 2002. The elderly people diagnosed with dementia should receive physical and mental examination from the medical experts. This research only assessed primary dysfunction of the brain.

3. Methodology

The populations of the study were 19,032 elderly people, aged 60 years and above living in Bang Phlat District, Bangkok. The sample size was calculated level of accuracy 0.05 using Yamane formula (1973). The totals of samples were 398 elderly people using multi-stage sampling to select the samples. The researcher prepared the list of community in the Bang Phlat District including Bang Phlat, Bang Aor, Bang Bumhru, and Bang Yeekhan. The researcher randomly selected each sub–district in the total of 50% of communities. Household was selected using systematic random sampling from the list of registered household in the community.

The researcher clarified the purpose of the research and received the approval of the research ethics by The Ethics Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Suan Dusit University. The study process was explained to the participants before study. Elderly agreed to participate in the study. Information obtained from the elderly was kept confidential; and the results would be displayed as a research.

Measurement and Tools were divided into three parts:

Part 1: General characteristics and associated factors of dementia among the elderly people

Part 1.1: General Characteristic information included 15 questions.

- Personal factors (gender, age, nationality, religion, marital status, education, occupation, and income.

- Health factors (illnesses and diseases, medication, and a family history of dementia).

- Behaviors factors (dietary intake, smoking, drinking, drug and substance use, and exercise).

Part 1.2: Mental assessments included the measurement of depression among the elderly in Thailand (Thai geriatric depression scale (TGDS)). It is a tool developed by "Train the Brain Forum Committee". It is a Thai version for the standard depression screen test and. The validity was high and reliability was 0.93 (Yaiyong and Lueboonthavatchai, 2011). The total score of TGDS ranges from 0-30 points; and the answer for this test is true or false.

Part 1.3: Barthel Daily Activity Living (ADL) Assessment. This assessment is used to measure performance in daily activity of elderly. It is a tool modified and developed by Jitapunkul, Kamolratanakul, Chandraprasert and Bunnag. Barthel ADL had construct validity and suitability for assessing disability in the Thai elderly population and the Alpha Cronbach should be 0.79. (1994). .It contains 10 questions; and the total score of ADL ranges from 0-20 points.

Part 2: The Mini-Mental State Examination: MMSE-Thai Version 2002 is commonly used for screening cognitive function. The instrument derives from Institute of Geriatric Medicine, The Medical Department, and Ministry of Public Health. MMSE-Thai 2002 had a sensitivity of 68.5% and a specificity

of 88% (Senanarong, Assavisaraporn, Sivasiriyanonds, et al, 2001). The instrument contains 6 parts of assessments including orientation (time and place), registration (remembering), attention and calculation, language, and recall. It contains 11 questions; and score ranges from 0-30 points.

In term of validity, researcher checked validity of the contents by checking with the experts. Five experts on elderly and mental health reviewed the contents of the questionnaires before researcher used them with the samples. Researcher also found the Index of Item Objective Congruence (IOC). In term of reliability, and researcher tested the Conbrach's Alpha Coefficient; and the score should be .80 or higher to retain an item in a scale. Researcher conducted a tryout with 30 elderly people out of the samples, which concluded of similar characteristics to find reliability. Researcher reviewed and revised for better improvements of the questionnaires before using them in the field.

Researcher prepared list of household and selected them from four districts. The data collection was done from December 2015 to February 2016 with the help of research assistants. The samples of 398 elderly people were interviewed using questionnaires. Within 4 sub-districts, Bang Phlat District was randomly selected as planned.

Data Analysis : Descriptive statistics including frequency, mean and percentage were used to analyze general descriptions. Frequency was used to analyze the prevalence of dementia among the elderly. Mean, frequency and percentage were used to describe the factors associated to dementia among the elderly. Chi-square test was used to find the correlation between variables including personal factors, psychological factors, health factors, and behaviors factors.

4. Results

The results of the study on general information and factors associated to dementia among the elderly people were as follows: personal factors, psychological factors, health factors and behavioral factors as shown in Table 1.

Table 1: The number and percentage of samples receiving primary assessment : Classified by factors associated (n=398)

Factors	With Dementia		Without Dementia	
	n	%	n	%
Sex				
Male	19	4.8	85	21.4
Female	65	16.3	229	57.5
Age (years)				
60-69 years old	33	8.3	176	44.2
70-79 years old	37	9.3	109	27.4
80-89 years old	14	3.5	28	7.0
90 years old and over	0	0.0	1	0.3
Marital status				
Single	9	2.3	39	9.8
Married	40	10.0	188	47.2
Widowed	31	7.8	72	18.1
Divorced	4	1.0	15	3.8
Education				
No education	14	3.5	5	1.3
Primary school	62	15.6	158	39.7
Secondary school	5	1.3	101	25.3
Bachelor degree or higher	3	0.7	50	12.6
Occupation after retirement				
Not working	50	12.6	143	35.9
Working	34	8.5	171	43.0

Table 1: The number and percentage of samples receiving primary assessment : Classified by factors associated (n=398) (cont.)

Factors	With Dementia		Without Dementia	
	n	%	n	%
Income				
0-1,000	37	9.3	88	22.1
1,001-5,000	24	6.0	74	18.6
5,001-10,000	16	4.0	74	18.6
10,001 Baht and over	7	1.8	78	19.6
Activity of Daily Living				
Low	1	0.3	3	0.8
Moderate	4	1.0	2	0.5
High	79	19.8	309	77.6
Depression				
No	65	16.3	282	70.9
Yes	19	4.8	32	8.0
A family history of dementia				
No	80	20.1	285	71.6
Yes	4	1.0	29	7.3
Disease				
No	12	3.0	60	15.1
Yes	72	18.1	254	63.8
Medicine				
No	17	4.3	75	18.8
Yes	67	16.8	239	60.1
Sex				
Male	19	4.8	85	21.4
Female	65	16.3	229	57.5
Age (years)				
60-69 years old	33	8.3	176	44.2
70-79 years old	37	9.3	109	27.4
80-89 years old	14	3.5	28	7.0
90 years old and over	0	0.0	1	0.3

Table 1: The number and percentage of samples receiving primary assessment : Classified by factors associated (n=398) (cont.)

Factors	With Dementia		Without Dementia	
	n	%	n	%
Marital status				
Single	9	2.3	39	9.8
Married	40	10.0	188	47.2
Widowed	31	7.8	72	18.1
Divorced	4	1.0	15	3.8
Health behavior				
Good	57	14.3	201	50.5
Fair	27	6.8	113	28.4
Poor	0	0.0	0	0.0

Table 1 shown general information of the sample who were e valuated the risk of dementia. 84 elderly (21.1%) were at risk for dementia (male 4.8%, female 16.3%). The most common dementia was aged 70-79 years old as 9.3% and the highest status was marital status (10.0%), followed by the widowed, single and divorced. The majority of dementia in the elderly studied at primary level were 15.6%, followed by non-educated. And 12.6% after retired was non-working. 9.3% elderly who were most at risk for dementia income from 0-1,000 baht/month, and high self-dependent ability were 19.8%. Depression was found in elderly at high risk for dementia, 4.8%, including family history of cerebral problems of 1.0%.

The primary screening the risk of dementia using Mini-Mental State Examination: MMSE-Thai Version 2002 of the Institute of Geriatric Medicine, Department of Medical Services Ministry of Public Health showed out of 398 elderly people, 21.1% were at risk of dementia. Severity of dementia is classified as shown in the Table 2.

Table 2:The number and percentage of samples receiving primary assessment : Classified by severity and sex (n=398)

Level	Male (N=104)	Female (N=294)	Total (N=398)
Normal	85 (81.7%)	229 (77.9%)	314 (78.9%)
Dementia	19 (18.3%)	65 (22.1%)	84 (21.1%)
Mild dementia	6 (5.8%)	30 (10.2%)	36 (9.0%)
Moderate dementia	9 (8.7%)	31 (10.5%)	40 (10.1%)
Severe dementia	4 (3.8%)	4 (1.4%)	8 (2.0%)

Table 2 showed that 398 elderly people were evaluated the risk of dementia. 84 elders found having a risk of dementia (21.1%). The severity of dementia was classified into three levels. It found that numbers of 36 elders had mild dementia (9.0%) (male 5.8%, female 10.2%) ; 40 elders had moderate dementia (10.1%), (male 8.7%, female 10.5%) ; and 8 elders had severe dementia (2.0%), (male 3.8%, female 1.4%).

Associated factors to dementia including personal factors, psychological factors, health factors, and behavior factors are shown in the table 3.

Table 3: The relationship between the various factors and the incidence of dementia among the elderly (n=398)

Factors	With Dementia		Without Dementia		X^2	p-value
	n	%	n	%		
Education					.239	.028*
No education	14	73.7	5	26.3		
Primary school	62	28.2	158	71.8		
Secondary school	5	4.7	101	95.3		
Bachelor degree or higher	3	5.7	50	94.3		
Occupation after retirement					.331	.002**
Not working	50	25.9	143	74.1		
Working	34	16.6	171	83.4		
Income					.319	.003**
0-1,000	37	29.6	88	70.4		
1,001-5,000	24	24.5	74	75.5		
5,001-10,000	16	17.8	74	82.2		
10,001 Baht and over	7	8.2	78	91.8		
Activity of Daily Living					.494	.000**
Low	1	25.0	3	75.0		
Moderate	4	66.7	2	33.3		
High	79	20.4	309	79.6		
Depression					-.324	.003**
Mild depression	13	36.1	23	63.9		
Moderate depression	6	54.5	5	45.5		
Severe depression	0	0.0	4	100.0		
A family history of dementia					.081	.047*
No	80	21.9	285	78.1		
Yes	4	12.1	29	87.9		

* p< 0.05 (Correlation is significant at the 0.05 level (2-tailed))

** p< 0.01 (Correlation is significant at the 0.01 level (2-tailed))

From table 3, it showed that there were positive correlations between personal factors including education, occupation after retirement, income, activity daily living and dementia. There was a negative correlation between depression and dementia among the elderly. There was a positive correlation between a family history of dementia and dementia; but there was no significant relationship between behavior factors and dementia.

5. Discussion

According to the study of the prevalence, associated factors of dementia among 398 elderly people living in Bang Phlat District, Bangkok, it showed that the prevalence of dementia among the elderly was at 21.1% using Mini-Mental State Examination: MMSE-Thai Version 2002 as assessment tool. In Thailand, the research found elders with dementia ranges from 2-10% of total elderly population; and the trend is increasing and It is also found that the incidence of dementia is higher at an earlier age (Muangpaisan, 2013; Senanarong, et al, 2013). In Thailand, there were many surveys of dementia. There was a study of factors associated with dementia among the elderly in Kanchanaburi Province; and it found that the prevalence of dementia among the elderly was at 29% (Loykorn, 1999). In 2008, the study of factors associated with dementia among elderly people in Tambon Paor, Amphoe Lansak, Utai Thani Province showed the prevalence of dementia among elderly was 18.8% (Laoin & Prakobtanyasiri, 2007). In 2009, the prevalence study among elderly living in Amphoe Muang, Khonkaen Province showed dementia among elderly at 27% (Guolong, 2009). In 2011, the prevalence of dementia among the elderly at Tumbon Numrad, Amphur Moung Kai, Pare Province was at 18.2% (Kumsaun, 2011). The prevalence and associated factors of dementia among elderly showed elders living in Tambon Orapim Amphoe Konburi, Nakonractchasima Province was 12.7% (Lertkratoke, Nanthamongkolchai, & Pitikultang, 2013). The prevalence and associated factors of dementia studied at Bang Kroy Hospital, Nonthaburi province showed 12.67% had dementia (Silpaanan, 2014). All of the above research used the MMSE assessment for dementia screening in the elderly.

To explore dementia in Asia, Kim's research (2012) studied the prevalence of dementia in South Korea using Korean version of the Mini-Mental Status Exam (MMSE-KC) among elderly people aged 65 years; it found that the prevalence of dementia was at 20.5%. Jia, et al. (2004) showed the prevalence of dementia among Chinese living in urban and rural area at 9.85%; and it found that the Chinese living in urban area were more likely to have dementia than the Chinese living in an urban area. There are differences of the prevalence of dementia among elderly depending on duration of data collection, study area, geography, environment, economic conditions, and society.

This study, 398 samples were screened their cognitive function using (The Mini-Mental State Examination Thai version 2002. The tool derived from Institute of Geriatric Medicine, The Medical Department, and Ministry of Public Health. 84 samples (21.1%) had risk of having dementia. The literature review found the incidence of dementia 2-10%. The incidence of dementia is quite high. However, it was found to be consistent with many research. This may be due to differences in the tools used to assess dementia and the differences in contexts in which the community collects data.

Factors associated with dementia among elderly are classified in the following:

1. Personal factors: education, occupation after retirement, income, and activity daily living.

1.1 Education: the results showed majority of participants finished high school followed by no education, secondary school and bachelor/ or higher respectively. There was a significant relationship between education level and dementia among the elderly. This is consistent with many studies; in

which having less education has been associated with higher risk of dementia (Sowanna, 1998; Loykorn, 1999; Suebwonglee, 2001; Laoin & Prakobtanyasiri, 2007; Kawitu, Siri, Sujirarat, & Chakrbhandu Na Ayutaya, 2013; Lertkratoke, Nanthamongkolchai, & Pitikultang, 2013; Silpaanan, 2014). Education helps elderly with their cognitive learning. It stimulates their brains to learn, to think, to analyze, and to solve problem. It develops analytical skills and communication skills among elderly. Brain has a mechanical process which make elders with education to remember better than those who do not receive education; and having education causes the delay of dementia (Suebwonglee, 2001)

1.2 Occupation after retirement: It was found that majority of participants had no occupation after retirement. And the results showed that there was a significant relationship between occupation after retirement and dementia among the elderly. This is similar to the study of dementia among the elderly in Tambon Paor, Amphoe Lansak, Utai Thani Province (Laoin & Prakobtanyasiri, 2007). It found that occupation and social participation could delay the symptoms of dementia; this is because brain cell is still exercising in term of learning, remembering and solving problem. But if elders do not exercise their cognitive learning, it can put their brain into an idle mode. This may cause brain cell atrophy which is associated with dementia (Muangpaisan, 2013).

1.3 Income: it was found that participants with dementia majority of them had income between 0-1,000 baht. The analysis showed there was a significant relationship between income and dementia which it is similar to the study of dementia among the elderly living in Utai Thani Province (Laoin & Prakobtanyasiri, 2007). The study of dementia in Kanchanaburi province and Nakhonsawan province found that elderly with lower income resulted from not having education or having less education. Moreover, lower income

could have the effects on brain development of the elderly which it could lead to higher risk of dementia (Loykorn, 1999; Suebwonglee, 2001).

1.4 Activity daily living (ADL): majority of participants with dementia had high score of activity daily living; and it found that there was a significant relationship between activity daily living with dementia. This is consistent with the study of dementia in Kanchanaburi (Loykorn, 1999). The prevalence and associated factors of dementia affected the risk of having dementia among the elderly at Tambon Numrad, Amphoe Moung Kai, Phrae Province (Kumsaun, 2011) and the study of dementia at Lampang Provicne (Kawitu, Siri, Sujirarat, & Chakrbhandu Na Ayutaya, 2013). This study found significant relationship between activity daily living and dementia. Activity daily living is basic activities for people to perform in everyday life, for instance, eating, walking, moving, bathing, and dressing. These processes stimulate brain to think, to analyze and to perform behaviors. If elders cannot help themselves with these basic activities, this may be result from dysfunction of the brain (Muangpaisan, 2013).

2. Psychological factors: majority of participants did not show sign of depression. Nevertheless, there was a significant relationship between depression and dementia among the elderly. This is consistent with the study in Khonkan Province (Guolong, 2009). Because depression causes people to behave themselves apart from society. They think negatively; and they feel discouraged and hopeless. The process of thinking does not function properly; and this many cause dementia.

3. Health factor: majority of participants did not have family history of dementia; but they had family history of Alzheimer's followed with Parkinson. There was a significant relationship between a family history of dementia and dementia among the elderly. This is consistent with the study of dementia in Lampang Province (Kawitu, Siri, Sujirarat, & Chakrbhandu Na Ayutaya, 2013).

6. Suggestions

1. There should be a study of prevalence and associated factors with the incidence of dementia in other areas in order to compare the similarities and differences of each community. To find the prevalence and factor associated with the dementia among the elderly population in the country; so that the information can be trustworthy; and it can represent elderly population in Thailand.

2. To development of tools for dementia screening and use of screening in Thailand. The development of tools suitable for the elderly in Thailand who are not educated and in the elderly with disabilities such as read-write but not visible or visible, read-write but hemiplegia, etc.

3. Health personnel use the research results to improve surveillance system to prevent the incidence of dementia in the community.

4. Health personnel can apply research results to older people in the community. To plan community activities, promote the self-care of the elderly with emphasis on health promotion. And primary prevention to reduce the incidence of dementia in the elderly.

5. Health personnel can apply research results to plan for health education program for elderly, caregiver and people in community and should be provided them.

6. Further study of prevalence among dementia by using the other markers with TMSE, MoCA, CMT or modified IQCODE.

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