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

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A Thesis Submitted in Partial Fulfillment of the Requirements

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การศึกษาความชุกของภาวะสมองเสื่อมในผู้สูงอายุ ตำบลท้ายบ้าน จังหวัดสมุทรปราการ

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การวิจัยเชิงสำรวจที่จัดทำตั้งแต่เดือนมิถุนายน - กรกฎาคม ปีค.ศ. 2011 โดยมีวัตถุประสงค์เพื่อตรวจสอบอัตราความชุกภาวะสมองเสื่อมในผู้สูงอายุ กำหนดปัจจัยที่เกี่ยวข้องกับภาวะสมองเสื่อมในผู้สูงอายุ ปัจจัยที่เกี่ยวข้องกับกิจกรรมพื้นฐานในชีวิตประจำวันของผู้สูงอายุ และกำหนดปัจจัยที่เกี่ยวข้องกับเครื่องมือกิจกรรมที่ใช้ในประเมินการดำรงชีวิตประจำวันของผู้สูงอายุในตำบลท้ายบ้าน อำเภอเมืองสมุทรปราการ จังหวัดสมุทรปราการ, ประเทศไทย กลุ่มตัวอย่างจาก 323 คนได้รับเลือกโดยวิธีการสุ่มอย่างง่าย คำถามจากแบบสัมภาษณ์มีการประเมินความเที่ยงตรงและความถูกต้องของเนื้อหาโดยผู้เชี่ยวชาญ และความน่าเชื่อถือโดยทดสอบใช้อัลฟาครอนบาค จากการสัมภาษณ์ได้ดำเนินการโดยผู้วิจัย ที่มีเครื่องมือประกอบด้วย 3 ส่วนคือ 1) แบบสอบถามเกี่ยวกับปัจจัยทางด้านประชากรศาสตร์ของผู้สูงอายุ 2) แบบสอบถามที่เกี่ยวข้องกับกิจกรรมการปฏิบัติที่ประเมินความสามารถในการทำงานของผู้สูงอายุในกิจวัตรประจำวันและ 3) แบบสอบถามที่เกี่ยวข้องกับการประเมินความรู้ความเข้าใจเกี่ยวกับสภาวะสมองเสื่อม ที่ประกอบไปด้วย 16 ตัวเลือก ลักษณะปัจจัยที่เกี่ยวข้องกับภาวะสมองเสื่อมถูกวิเคราะห์ด้วยสถิติที่เฉพาะเจาะจง สถิติคือร้อยละค่าเฉลี่ย ค่าส่วนเบี่ยงเบนมาตรฐาน และทดสอบค่าซีแสควร์ ความชุกของภาวะสมองเสื่อมเป็นร้อยละ 11.1 จากผู้สูงอายุจำนวน 36 คน และยังพบในอายุที่เพิ่มขึ้น จบการศึกษาจากโรงเรียนประถมศึกษา อ่านและเขียนหนังสือแทบไม่ได้ อาศัยอยู่กับคู่สมรส ความสัมพันธ์ส่วนบุคคลของพวกเขาอยู่ในระดับปานกลาง มีการว่างงานในผู้ที่เป็นอัมพาตครึ่งซีก เพื่อเป็นการส่งเสริมสุขภาพของผู้สูงอายุโดยเฉพาะผู้สูงอายุที่มีภาวะสมองเสื่อมหรือไม่มีความเสี่ยงสูงของภาวะสมองเสื่อมที่พวกเขาควรได้รับการศึกษา และให้คำแนะนำเกี่ยวกับการป้องกันความพิการทางปัญญาจากหลายองค์กร ควรให้บริการที่เหมาะสมเช่น การปรับปรุงทีมการดูแลสุขภาพ การสนับสนุนและส่งเสริมชุมชนในการออกกำลังกายเพื่อทุกวัย การตรวจสุขภาพอย่างน้อยหนึ่งครั้งต่อปี และเน้นสมาชิกในครอบครัวและชุมชนที่จะดูแลผู้สูงอายุโดยเฉพาะอย่างยิ่งผู้ที่พิการและสมองเสื่อม

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต.....
ปีการศึกษา 2555 ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.....

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PANNISA DOUNGKAEW: DEMENTIA PREVALENCE AMONG THE ELDERLY IN TAIBAN SUB-DISTRICT, SAMUTPRAKARN PROVINCE (ADVISOR: SURASAK TANEEPANICHSKUL,M.D.), 102 pp.

The survey research conducted from June - July 2011 with the objectives to examine the dementia prevalence rate of elderly people, determine the factors associated with dementia of elderly people, determine the factors associated with basic activities of daily living of elderly people and determine the factors associated with instrument activities of daily living of elderly people in Taiban Sub-District, Mueang Samutprakarn District, Samutprakran Province, Thailand. Sampling group of 323 people was selected by simple random sampling method. Interview questionnaires were assessed on their validity and accuracy of contents by experts and their reliability by using Cronbach alpha co-efficiency test. The interview was conducted by the researcher. The materials consist of 3 parts: 1) the questionnaire relates to demographic factors of elderly. 2) The questionnaire relates to practical activities which evaluate functional ability of elderly on activities of daily living and 3) the questionnaire relates to cognitive assessment on dementia status and it is consist of 16 choices. The characteristics associated factors with dementia status were analyzed with specific statistic. The statistic were percent, mean, SD, and Chi-square test. The prevalence of dementia was 11.1 percent with 36 elderly people and also found in higher age, graduated from primary school, read barely literate, write barely literate, living with their spouse, moderate personal relation, unemployed with hemiplegia. To promote health among elderly especially elderly with no dementia or high risk of dementia, they should be educated and advised on prevention of cognitive disability from many organizations. Also should provide appropriate service such as improving health care team, supporting the community to promote exercise to all age, health check up at least one time per year and emphasize the members in family and community to take care the elderly especially those who were disability and dementia.

Field of
Field of Study : Public Health Student's Signature……
Acadimic Year: 2012 Advisor's Signature……..……..

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CONTENTS

Page

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

ABBREVEATIONS

AD	:	Alzheimer's disease
ADL	:	Activities Daily Living
APOE4	:	Apolipoprotein E4
BADL	:	Basic Activities of Daily Living
BI	:	Barthel Index
BPSD	:	Behavioural and Psychological Symptoms
CAPD	:	Continuous Ambulatory Peritoneal Dialysis
CMT	:	Chula Mental Test
DNA	:	Deoxyribonucleic Acid
ESRD	:	End Stage Renal Disease
GBD	:	Global Burden of Disease
GDP	:	Gross Domestic Product
HD	:	Hemodialysis
HIC	:	High Income Countries
LAMIC	:	Low And Middle Income Countries
MCI	:	Mild Cognitive Impairment
M-MMSE	:	Mini-Mental State Examination
MMSE-T	:	Multiple Myeloma SET Thai Version
mTOR	:	Target of Rapamicin
NSAIDs	:	Non-Steroidal Anti-Inflammatory Drugs

RNA	:	Ribonucleic Acid
SE	:	Southeast Asia
SD	:	Standard Deviation
TOR-driven aging	:	Target of Rapamycin Driven Aging
UN	:	United Nations
WHO	:	World Health Organization

CHAPTER I

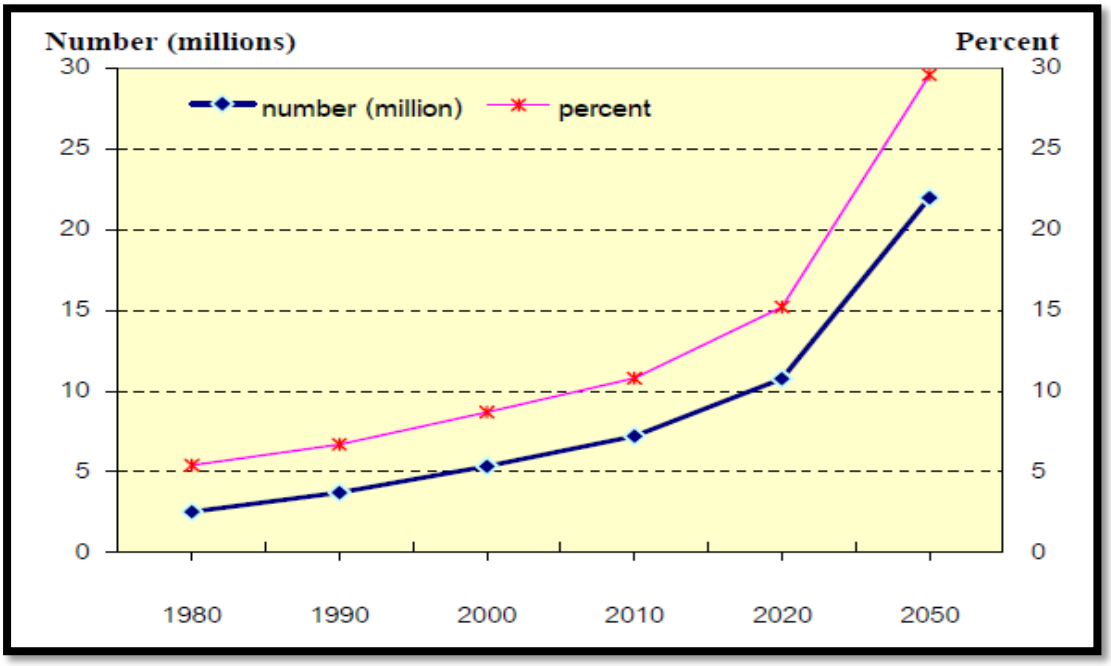
INTRODUCTION

Background and Rationale

Human life expectancy has increased dramatically over the past century across the globe. Not surprisingly, Thailand is one of the countries that rapidly grew in numbers for the elderly and longevity increased which effected the Thai population structure, dependent ratio and health services systems. The report from Thailand's Office of National Statistics showed that there are approximately 5.9 million elderly people in the country in 2006 and from 2010 it had already increased to 7,639,000 people (11.36) and the central region of Thailand was 456,000 people (9.93). The statistics also shown that by 2010 – 2020 the elderly population will increase approximately by 5.0 percent per year and if compared to other age groups, the growth rates are no more than 0.5 percent (Pramote, P, and Patama, V, 2006).

Moreover, the World Health Organization (World Health Organization [WHO], 2012) also stated that the elderly population from 60 years old and over is anticipated to increase from 8.7 percent in 2000 to 10.8 percent in the year 2010, 15.2 percent in the year 2020, and 30 percent in the year 2050. This mean that the number of older persons will continue to rise, from approximately 5.3 million at present to 7.2 million in 2010 and will reach 11 million by 2020 as figure 1 below.

Figure 1: Linear graph of total number and percent of the older population in Thailand, 1980 - 2050



Source: Calculated from data provided by the United Nations, 1999b cited in World Health Organization, 2012: 23.

As illustrated in Figure 1 above, based on the latest projections from the United Nations, the growth rate of the Thai elderly population is over 3 percent per year and this is a relatively high rate; and if the growth rate continues at 3–3.6 percent per year, the size of the older population will double in about 19-23 years. From this data Thailand will become an ageing society within the next 10 years, according to the United Nations' definition. However, if taken on the proportion of people aged 65+ in Thailand compares with other countries such as Japan, South Korea or Singapore when they had comparable levels of ageing. Thailand is expected to double over the 20-year period 2010–2030. This will be happening at much lower levels of

per capita GDP than in those countries. There is clearly a need to give ongoing attention to all the issues raised by ageing, while avoiding a doomsday approach as shown in the table 1 from the following:

Table 1: Trends in percentage of population aged 65+

Country	2005	2010	2020	2030
Japan	19.9	22.6	28.5	30.8
South Korea	9.3	11.0	15.4	23.2
Singapore	8.5	10.2	17.9	27.5
Thailand	7.8	8.7	12.4	17.4
China	7.6	8.2	11.7	15.9
Philippines	3.9	4.3	5.7	7.6
USA	12.4	13.0	16.1	19.8
Germany	18.9	20.5	23.0	28.2

Source: World population Prospects: The 2008 Revision (United Nations (UN), 2009).

As illustrated in table 1 above, UN (2009) explains about this table that the reason why Thailand is far behind Japan in its ageing process and well behind Korea and Singapore is because they experienced sustained fertility declines earlier but it is also far ahead of the Philippines where fertility decline have been slow. But interestingly, its trend regarding the proportion of elderly tracks very closely to that in China. It is therefore not surprising that in both Thailand and China, ageing is considered to be a very important issue.

More specifically, in 1982 at the World Assembly on Aging held in Australia it was defined the word "elderly" referred to people over 60 years of age but the WHO increased this to people over 65 years old. In Thailand, the elderly are called "Khon Thao Khon Kae," which implies an older person who possesses the traditional knowledge. Since the assembly, the Thai government has used the word "Phu Sung Ayu" (Samakhom Sapha Phu Sung Ayu Haeng Prathet Thai, 1999: 5-7) as the official word to refer to a person over 60.

The word Phu Sung Ayu in Thai means that a person over 60 years of age and owing to the various changes in the period of life both physical and mental, many difficulties are expected to occur such as in the nervous system. This transformation in elderly people often causes cognitive deterioration including memory loss which may cause problems with memory and this problem will be more severe in people with dementia. The prevalence of dementia symptoms is around 10 percent in people aged 65 years (Nattaporn, O, 2008). The incidence rate increases with age and dementia will always represent a significant public health challenge for Thai society and one that is only likely to increase as the population ages. Concerning people who have dementia, it is not only suffering from problems with memory loss but the symptoms also affect their daily lives, capacities and emotions and these are because dementia typically interprets itself as a neurodegenerative disease that causes cognitive impairments such as memory, orientation and speech and is easy to misdiagnose as depression so it is often underestimated.

Dementia, regardless of its cause has been recognized to be one of the most important and common problems among the elderly worldwide. The criteria of the dementia syndrome can be divided into six subtypes: 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 (Nattaporn, O, 2008). The prevalence of dementia has been increasing gradually throughout the world (Banerjee, 2003) especially because of the trend to increased life expectancy and the most common dementia is Alzheimers disease that occurs from degenerative processes but some dementias are reversible and the conditions are treatable if the symptoms can be detected early. Moreover, dementia is a syndrome of acquired cognitive decline that affects multiple intellectual functions and produces occupational and social disabilities and is not a feature of normal aging. To put it simply, dementia is a result of degenerative brain disorders that seriously undermine a person's ability to carry out daily activities. The prevalence of dementia increases with age, leading to community health problems as it is a high cost disease that affects families, caretakers, medical resources and the economy.

Vinkers (2004) stated that the prevalence of dementia in Thailand is 1.8 - 10.2% in the age group 55 years and above. Concerning the aging trend, Thailand will be an elderly society in just under a decade. This is because elderly people are highly susceptive to certain groups of diseases compared with other age groups which translate to higher health care service demand and use and lower quality of life and physical function. Dementia is a clinical syndrome characterized by acquired loss of cognitive and emotional abilities severe enough to interfere with daily functioning and the quality of life. This means that once the elderly reach this state of dementia there are many problems and tasks that both the elderly and their families have to face and cope with. **Samutprakan** is one of the central provinces (Changwat) of Thailand and this province is part of the Bangkok Metropolitan Region. The report from

Samutprakarn Provincial showed that there are approximately 32,110 elderly people as of 2011 but have little data on the prevalence of dementia on this group of elderly people. Sirintorn Chansirikarnjana, head of geriatric medicine, faculty of medicine Ramathibodi hospital, Department of medicine of Mahidol University (Sirintorn, C, 2005) stated that the Thai elderly who suffer from dementia in the age brackets of 60 - 69 years is only around 1% but it is more than 30 % at the age of 90 years and over. From the year 2005, Thailand has had an increase in the prevalence of dementia to approximately 229,100 people and this will increase to 450,200 people in the next 20 years and it will be more than a million people in the next 50 years.

As the background and rationale from the above mentioned, there is no research conducted on the prevalence of dementia among the elderly in Taiban Sub-District, Mueang Samutprakarn District, Samutprakarn Province, Thailand along with social equality, effectiveness of health care and successful aging needs, more social concerns, health promotion programs and efforts and needs for policies targeted towards old age groups are launched to improve the health of elderly, especially mental health which causes the worse outcome along with physical disease and increased suicidal rates. This is why the researcher is interested in the study on the prevalence of dementia among the elderly in Taiban Sub-District, Mueang Samutprakan District, Samutprakarn Province, Thailand. From this study the researcher will be monitoring the elderly who suffer from dementia in order to understand the risk factors and the rationale of those suffering from dementia among the elderly in the community. This study result may provide more information about the prevalence of dementia and it will also be a guide on health promotion to the elderly, introducing the proper care to the elderly in the community, to promote the

quality of life of the elderly and to enhance the quality of geriatric primary care and to reduce morbidity and mortality in late life.

Research Questions

1. What is the dementia prevalence rate of elderly people in Taiban Sub- District, Maung Samutprakan District, Samutprakran Province, Thailand?

2. What are the factors associated with dementia of elderly people in Taiban Sub- District, Maung Samutprakan District, Samutprakran Province, Thailand?

3. What are the basic activities of daily living of elderly people in Taiban Sub- District, Maung Samutprakan District, Samutprakran Province, Thailand?

Research Objectives

1. To examine the dementia prevalence rate of elderly people in Taiban Sub-District, Mueang Samutprakarn District, Samutprakran Province, Thailand.

2. To determine the factors associated with dementia of elderly people in Taiban Sub-District, Mueang Samutprakarn District, Samutprakran Province, Thailand.

3. To identify basic activities of daily living of elderly people in Taiban Sub-District, Mueang Samutprakarn District, Samutprakran Province, Thailand.

Scope of the Study

1. Population

The population of this research were 1,664 elderly people, both male and female living in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand in 2011 and with the following criteria:

The inclusion criteria were:

1.1 Age of 60 years and over.

1.2 Having no severe physical disabilities that may affect the testing process such as ability to speak and no hearing problems.

1.3 Are willing to participate in the research.

2. Variables of the study

2.1 Independent variables

2.1.1 Demographic factors include age, gender, education level, work status, income, reading and writing ability, living arrangement, relation of care takers, personal disease, alcohol and smoking history and family history of dementia.

2.1.2 Activities of daily living include bowel and bladder function, grooming, toilet use, feeding, transfer, mobility, dressing and stairs and bathing.

2.2 Dependent variables

Dementia Status.

Operation Definitions

1. Demographic factors refer to the general information of the elderly people in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand that include the following:

- Age refers to how old the interviewee is at the time of the interview.
- Gender refers to male and female**.**
- Education level refers to the highest year of education of the elderly. It was divided into no education, primary education, secondary education and higher

than secondary education.

- Work status refers to current working status**.**
- Income refers to revenue adequacy of the elderly.
- Reading ability refers to the level of reading ability of elderly.
- Writing ability refers to level of the writing ability of the elderly.
- Living arrangement refer to the family member who lives with the elderly in the same house.
- Relation of care taker refers to the level of relation between care taker and elderly.
- Personal disease refers to personal disease which is of long duration and generally slows progression of the elderly**.**
- Alcohol history refers to alcohol assumption of the elderly.
- Smoking history refers to tobacco use of the elderly.
- Family history diagnosis of dementia refers to genetic factors which contribute to dementia risk**.**

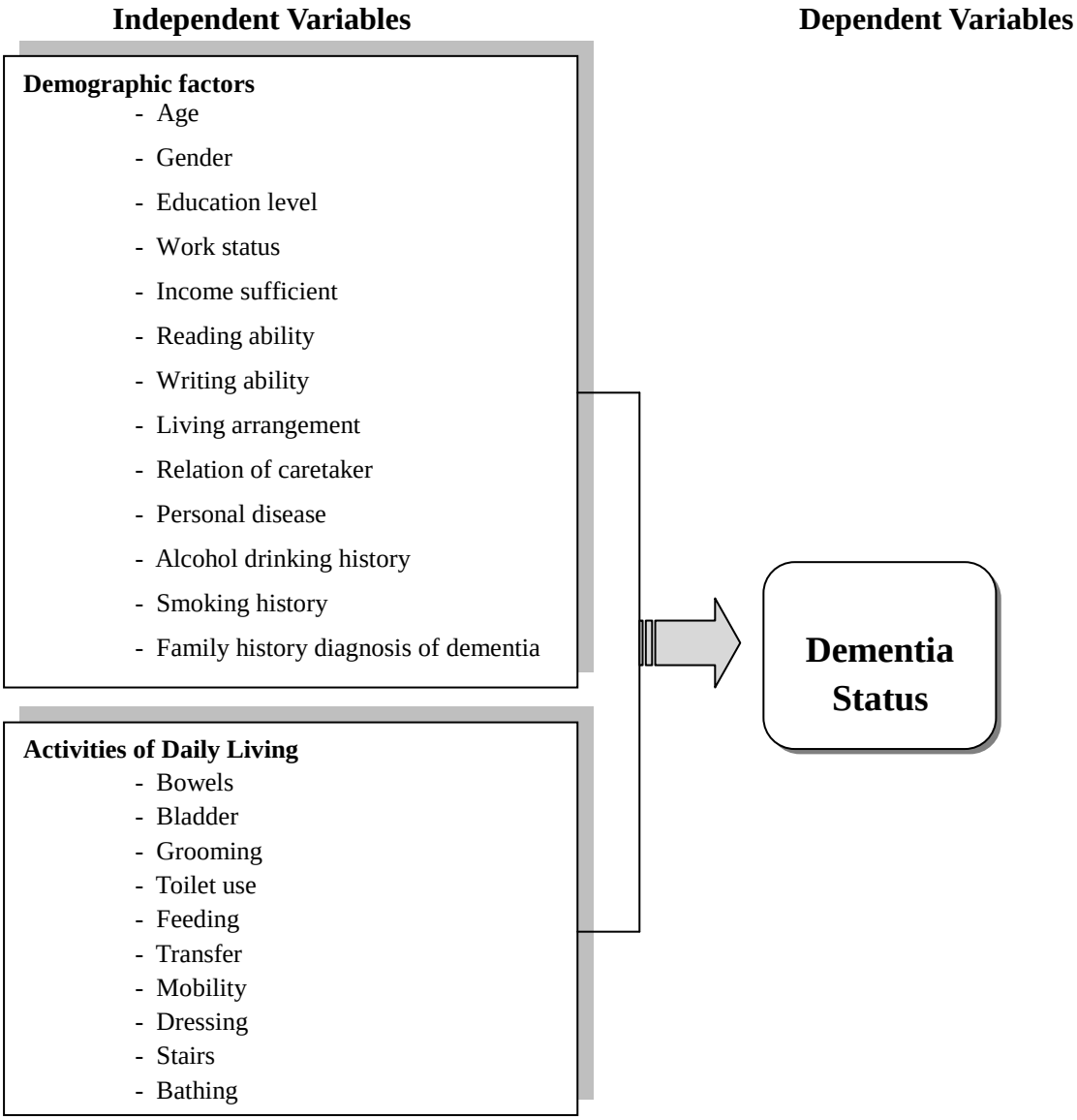
2. Activities of daily living refers to activities of daily living of self care of the elderly people in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province which are skills needed in typical daily self care. These activities include bowel and bladder function, grooming, toilet use, feeding, transfer, mobility, dressing and stairs and bathing so that the researcher can examine various activities in each category to determine the patient's skill level. The degree of ability to perform these was assessed by the BI Barthel Index.

3. Dementia refers to the individual’s ability of orientation, recall, attention,

calculation, language, manipulation, constructional and praxis on dementia which were assessed by the Chula Mental Test (CMT) (Jitapunkul, 1998). The CMT yields scores of 0 –19 and a score lower than 15 indicates cognitive impairment.

Conceptual Framework

Figure 2: Conception Framework



Expected Benefit of the Study

The results of this research will be used to improve health care service to provide appropriate service for the elderly in the community which are medical treatment, health promotion, and rehabilitation.

CHAPTER II

LITERATURE REVIEW

The objectives of this research are to examine the dementia prevalence rate of elderly people, determine the factors associated with dementia of elderly people and identify basic activities of daily living of elderly people in Taiban Sub-District, Mueang Samutprakarn District, Samutprakran Province, Thailand. In this chapter, relevant theories and concepts based on a view of the literature are presented, in the following areas:

1. Concepts/ Theories of the Elderly (Aging)
2. Concepts / Theories of the Health Status
3. Dementia
4. Demographic Factors
5. Chula Mental Test (CMT)
6. Concept of Activities Daily Living (ADL)
7. Relevant Research

Concepts/ Theories of the Elderly (Aging)

1. Definition of aging

In the present time aging is could defined as accumulation of molecular damage, leading to a functional decline (Mikhail, V, and Blagosklonny, 2009). Aging is not a decline recently reviewed and is not caused by damage instead; cellular aging is hyper-functional response that can cause organ damage (Blagosklonny, M, V,

2008). Examples include stroke due to high blood pressure and renal failure due to high glucose (diabetes type) 2) Neither high pressure nor high glucose is a decline because in aging humans, high glucose results from insulin-resistance in liver, fat and muscle cells caused by over-activation of mTOR. Aging is a quasi-program, an aimless continuation of developmental programs (Blagosklonny, M, V, 2006). And TOR-driven aging is a continuation of TOR-driven growth (Avruch J et al, 2006).

Lodovico, B. (2007) stated that aging is a loss of entropy and fractality. Loss of entropy means a progressive reduction in an individual's functional reserve, whereas loss of fractality implies a progressive reduction in the ability to coordinate different activity and negotiate the environment. However, the example of loss of fractality with aging is that the increased incidence of falls in the absence of specific neurologic or muscular deficits (Lipsitz, L, A, 2004).

More specifically, aging is a multifactorial process but the various pathways that lead to aging merge at a common crossroad. A consistent finding in older individuals is a chronic and progressive inflammation that correlates with functional decline and death as well as a number of geriatric syndromes (Ferrucci, L et al, 2005).

From the definitions of aging from the above mentioned it could be concluded that the aging is the involving of a progressive loss of entropy and fractality that can reduce the tolerance of stress or the increased incidence of falls in the absence of specific neurologic or muscular deficits.

2. The changes in the aging process

There is nobody age or growing appreciation in the same way or at the same rate. There are also many of the changes that occur from aging result from a gradual

loss and from these losses regularly begin in early adulthood. However, the ability of our organs to adjust and maintain health, the actual loss is not experienced until it is fairly extensive. Most organs appear to lose function at about one percent a year and from this is beginning around age 30. The majority of these changes are not seen until after age 70 because the biggest difference in the rate of aging, the changes in the aging process and life span, and organ efficiency lies in the presence of disease and/or the ability of the body to adapt to external stress (Leading Age Wisconsin, 2012) as shown from the figure 3 below.

Figure: 3 The changes in the aging process and life span

Source: Modern Medical Guide., (n.d) and Health and Fitness. (2012).

As illustrated in figure 3 above, Modern Medical Guide., (n.d) stated that the length of life is often into the 70s or the upward limit of the life span can be as high as 120 years. Specifically, an individual is more prone to have problems with the various functions of the body and to develop any number of chronic or fatal diseases during the latter half of life. The cardiovascular, digestive, excretory, nervous, reproductive

and urinary systems are particularly affected. The most common diseases of aging include Alzheimer's, arthritis, cancer, diabetes, depression, and heart disease.

Furthermore, concerning to aging and changes however the passage of time can be made a lot of changes occurred upon the elders and are as follows:

2.1 Physical aging

Physical aging is survival curves for human over the centuries have been interpreted to indicates that although mean survival is affected by situations such as nutrition, wars, accidents, and other environmental factors, the maximum life span across the centuries appears to be relatively constant at approximately 100 years and can be high as 120 years (Plazek, D, J, and Frund, Z, N, Jr, 2003).

Sutsawat A. (2004) stated that there are the theory may be defined as a cluster of conclusion in search of premise and provide anchors for thinking and guideline for examining data. There are a lot of changes in body function as follow:

2.1.1 Hearing, this declines particular in relation to the highest pitched tones.

2.1.2 The proportion of fat to muscle, this may increase by as much as 30%. The total padding of body fat is usually directly under the skin thins out and accumulates around the stomach and the ability to excrete fats is impaired, and therefore the storage of fats increases, including cholesterol and fat-soluble nutrients.

2.1.3 The amount of water in the body decreases, this decreases the absorption of water-soluble nutrients and there is less saliva and other lubricating fluids.

2.1.4 The liver and the kidneys cannot function as efficiently, this affecting the elimination of wastes.

2.1.5 A decrease in the ease of digestion, with a decrease in stomach acid production.

2.1.6 A loss of muscle strength and coordinating, with an accompanying loss of mobility, agility, and flexibility.

2.1.7 A decline in sexual hormones and sexual functioning.

2.1.8 A decrease in the sensations of taste and smell.

2.1.9 Changes in the cardiovascular and respiratory systems, leading to decreased oxygen and nutrients throughout the body.

2.1.10 Decreased functioning of the nervous system so that nerve impulses are not transmitted, as efficiently, reflexes are not as sharp, and memory and learning are diminished.

2.1.11 A decrease in bone strength and density.

2.1.12 Hormone levels, which gradually decline. The thyroid and sexual hormones are particularly affected.

2.1.13 Declining visual abilities. Age-related changes may lead to disease such as macular degeneration.

2.1.14 A compromised ability to produce vitamin D from sunlight.

2.1.15 A reduction in protein formation leading to shrinkage in muscle mass and decreased bone formation, possibly leading to osteoporosis.

2.1.16 Programmed senescence, or aging clock, theory. This is the aging of the cells of each individual is programmed into the genes, and there are a preset number of possible rejuvenations in the life of a given cell. When cells die at a rate faster than they are replaced, organs do not function property, and they are soon unable to maintain the functions necessary for life.

2.1.17 Genetic theory. This is human cells that maintain their own seed of destruction at the level of the chromosomes.

2.1.18 Connective tissue or cross-linking theory. Changes in the make-up of the connective tissue alter the stability of body structures, causing a loss of elasticity and functioning, and leading to symptoms of aging.

2.1.19 Free-radical theory. The most commonly held theory of aging; it is based on the fact that ongoing chemical reactions of the cells produce free radicals. In the presence of oxygen, these free radicals cause the cells of the body to break down. As time goes on, more cells die or lose the ability to function, and the body soon ceases to function as a whole.

2.1.20 Immunological theory. There are changes in the immune system as it begins to wear out, and the body is more prone to infections and tissue damage, which may finally cause death. Also, as the system breaks down, the body is more apt to have autoimmune reactions, in which the body's own cells are mistaken for foreign material and are destroyed or damaged by the immune system.

From the physical aging as the above mentioned conceive that there are several theories as to why the aging body loses functioning. This means it may be that several factors work together or that one particular factor is at work more than others in a given individual.

2.2 Psychological aging

Psychological aging is characterized primary by cognitive changes and personality and this means type of aging that a person will experience which may or may not match their actual aging**.**

2.2.1 Cognitive change

Andrew, Scharlach and Robinson (cited in Sutsawat A, 2004) expressed that on cognitive changes related with aging as the human brain has documented dramatic decreases in brain size and efficiency throughout human lives and this beginning virtually from the time of birth. However, these anatomical and physiological declines, this is because studies have found evidence of only limited decrements in actual intellectual functioning associated with the aging process.

2.2.2 Intelligence

Generally, the word intelligence can be thought of as including a range of abilities that allow people to make sense of their experiences including the ability to comprehend new information such as the ability to think abstractly, the ability to make rational decisions, spatial ability, numerical ability and verbal fluency. Some abilities such as the ability to think abstractly are heavily biologically determined and are relatively independent of particular applications, reflecting what has been called fluid intelligence. Other intellectual abilities such as verbal fluency are more apart to reflect the knowledge and skills a person has gained through life experience, or crystallized intelligence.

2.2.3 Learning and Memory

Andrew, Scharlach and Robinson (cited in Sutsawat A, 2004) disclosed about learning and memory are that most persons experience a modest increase in memory problems as they get older, particularly with regard to the ability to remember relatively recent experiences. Both in the ability to accumulate new information and in the ability found decreased to retrieve existing information from

memory storage, although there is little decline in the ability to store new information once it is learned.

Nevertheless, the physiological aging from the above can express as about some of changes in old age that could think of as normal are modifiable, preventable and related to socially influenced lifestyle choices and cultural. Consequently, the stage of aging can be differenced at any time.

3. Theories of elderly or aging

The evolutionary theory of aging can be explained and based on natural selection because of the theory proposes that aging occurs. This is because extrinsic mortality reduces the relative size of cohorts of older individuals, causing the potential genetic contribution of older cohorts to future generations to fall. Therefore, any gene increasing survival or fecundity is more strongly selected for when its phenotypic effects occur at younger ages, and conversely, any gene decreasing survival or fecundity is less strongly selected against when its phenotypic effects occur at greater ages. As an outcome, age-specific phenotypic effects tend to evolve whereby genes for increased survival or fecundity have an effect at younger ages and genes for decreased survival or fecundity have an effect at greater ages, so explaining the occurrence of aging (Andrew, F, G, Bourke, 2007).

More specifically, over the past several decades there are many 300 or more aging theories have been presented in the literature; however, not all have stood up to scrutiny and in-depth scholarly investigation (Aitken, M, and Rudolph, M, 2010). From this reason the researcher will be described only some of the theories that related or closed information to this research and there are as following.

Aitken, M, and Rudolph, M. (2010) stated that there are the major biological theories that attempt to explain the individual differences in aging can be fitted into one of two categories: **genetic aging**, which presumes that aging is predetermined or programmed, and **nongenetic aging**, which presumes that aging events occur randomly and accumulate with time. Four genetic aging theories are programmed aging, somatic mutation, free radical, and neuroendocrine theories. A nongenetic theory is the wear and tear theory. By contrast, one or multiple theories may explain the aging process and characteristics as a wide range of factors that may affect aging such as genetics, random events, environment, lifestyle, and/or habits. Two categories are as following:

3.1 Genetic theories

3.1.1 Programmed aging

The programmed aging is the assumption of the programmed aging theories is that the human body has an inherited internal genetic clock that considers the beginning of the aging process. This genetic clock may manifest as a predetermined or limited number of cell divisions, called the Hayflick limit and this also known as replicative senescence or cellular senescence (Kirkwood, T, B, L, 2005). The Hayflick limit does not affect all cells in the body as germ cells that called sperm or egg, and cells in some tumors or cancer and seem to divide infinitely (Campisi, J and d'Adda, D.F., (2007). The theory of cellular aging explains why many older adults have one or multiple conditions related to decreased or impaired client factors such as sensory, neuromusculoskeletal, cardiovascular, respiratory, digestive, metabolic, and reproductive. From all of these that is why difficult to find

any of these impairments in a young adult. The perception that cellular senescence is not programmed aging of the whole person explains why such conditions are not universal among older adults (Aitken, M, and Rudolph, M, 2010).

3.1.2 Somatic mutation theory

This somatic mutation theory is stochastic or random chromosomal changes occur as an outcome of miscoding, translation errors, chemical reactions, irradiation, and replication of errors; these mutations result in changes in the ribonucleic acid (RNA) deoxyribonucleic acid (DNA) code sequences. Additionally, changes of the genetic material within a cell can accumulate if the alterations are not repaired when the code is being transcribed or reading process to make the building blocks of proteins.

3.1.3 Free radical theory

Concerning to the free radical theory is the free radical theory of aging stemmed from the study of unstable atoms in living cells and the damage they caused as they tried to stabilize. These Free Radicals are highly reactive because of the unpaired electron(s) that seek to be paired but there are the damage cells, proteins, lipids, and DNA by altering their structures. Free radicals occur naturally in the body whenever metallic ions, enzymes, or cellular materials combine with oxygen and are also introduced into the body through toxins, pollutants, and tobacco smoke.

3.1.4 Neuroendocrine theory

The neuroendocrine theory proposes that the central nervous system is the aging pacemaker of the body. Alteration of metabolism or reproductive function affects the life span. Also the hypothalamus is predicted to be one possible starting

point for neuroendocrine-related changes because it influences the regulation of the metabolic and reproductive systems (Finch, C.E, and Ruvkun, G, 2001).

3.2 Social theories of aging

Social theories of again are that the roles and social habits of individuals in society which is the explanation of the changes in social relationships that occurs in late adulthood. Therefore, there are many social theories of aging that can be briefed explain and are as the following:

3.2.1 Disengagement Theory

Disengagement theory can be occurred when people remove from roles or activities and reduce their activity levels or involvement (Mabry, B, J, and Bengtson, V, L, 2005). When completing an interest checklist with the COTA, an elder might indicate former activities and roles with various social clubs or organizations that they found meaningful American Occupational Therapy Association (2008). Therefore, when asked for the reason for withdrawal from these activities, the elder may affirm that it was because of age.

3.2.2 Activity Theory

This theory was proposed as an alternative view of the disengagement theory to explain the psychosocial process of aging (Franklin, N, C, and Tate, C, A, 2009). Havighurst, Neugarten, and Tobin (Havighurst, R, Neugarten, B, and Tobin, S, 1963 cited in Aitken, M, and Rudolph, M, 2010) expressed an activity theory of aging, which held that unless constrained by poor health or disability, elders have the same psychological and social needs as people of middle age. Hochschild (Hochschild, A, R, 1975 cited in Aitken, M, and Rudolph, M, 2010) presented that the

changing of activities was the result of changed meaning in the activities that can be seen through the life span (Moody, H, R, 2010).

3.2.3 Continuity Theory

The premise of the continuity theory is that elders adapt to changes by using strategies to maintain continuity in their lives, both internal and external. Internal continuity refers to the strategy of forming personal links between new experiences and memories of previous ones. Moreover, external continuity refers to interacting with familiar people and living in familiar environments (Atchley, R, and Barusch, A, S, 2004) and concerning this theory, elders should continue to live in their own homes if possible, however if this is not possible, the family should attempt to locate housing for the elder in the same general area to maintain friendships and familiar environments. For these reasons many elders continue to be independent as long as they are in familiar surroundings and some families have noted that once they moved their elder family member from a familiar area, the elder was confused and disoriented (Tabloski, P, A, 2006).

3.2.4 Life Span/Life Course Theory

The life span or life course theory is a recent approach to human development by theorists interested in the social and behavioral processes of aging. Specifically, life course is defined by Elder, Johnson, and Crosnoe (Elder, G, H, Johnson, M, K, and Crosnoe, R, 2004) as an age-graded that in order by socially that defined roles and events and can be enacted over historical time and place. More specifically, this theory was influenced by the age stratification model, which emphasizes the significant variations in elders, depending on the characteristics of their birth

cohort. Some researchers believe that this is not actually a theory, but rather a conceptual framework for conducting research and interpreting data.

3.2.5 Erikson's Theory of Human Development

Erik Erikson's theory of human development is over the life span and this is one of the most influential descriptions of psychological change (Moody, H, R, 2010). Erikson's framework addresses the developmental tasks at each stage of the life cycle and the stage most commonly identified with aging is that of integrity versus despair. Concerning to this stage, the elder comes to terms with the gradual deterioration of the body but at the same time may reflect on the acquisition of wisdom associated with life experiences and ego integrity involves the elders' ability to see life as meaningful and to accept both positive and negative personality traits without feeling threatened.

3.2.6 Peck's Stages of Psychological Development

Robert Peck (Peck, R, 1968 cited in Aitken, M, and Rudolph, M, 2010) supposed that Erikson's eighth stage, integrity versus despair, was proposed to represent in a global or nonspecific way all of the psychological crises and crisis solutions of the last forty or fifty years of life. However, he suggested that it might be more accurate and useful to take a closer look at the second half of life and divide it into several different psychological stages and adjustments. He also proposed four stages that occur in middle age and three stages in old age and he avoided establishing a chronological period for these stages, suggesting instead that they might occur in different time sequences for different individuals.

3.2.7 Exchange Theory

This exchange theory is as originally developed by Homans (Homans, G, 1961 cited in Aitken, M, and Rudolph, M, 2010) presumes that people attempt to maximize their rewards and minimize their costs in interactions with others and the major attempts to use exchange theory in work with elders are attributed to Dowd. Elders are viewed from the perspective of their ongoing interactions with a number of persons. Concerning to continuing interaction is based on what the elder perceives as rewarding or costly and elders tend to continue with interactions that are beneficial and withdraw from those perceived as having no benefit. Therefore, rewards could be defined in material or nonmaterial terms and could be included such components as assistance, money, information, affection, approval, property, skill, respect, compliance, and conformity but costs are defined as an expenditure of any of these.

3.2.8 Thriving: A Holistic Life Span Theory

In many years that gerontologists have become concerned with failure to thrive in elders, which is a sharp decline for no real physical or illness-related reason and a nursing research group was brought together to explore the phenomenon. However, the group broadened its vision from the syndrome failure to thrive to a more holistic life span concept called thriving. This theory examines three interacting factors in a continuum: the person, the human environment, and the nonhuman environment. Additionally, critical to thriving are social connectedness, ability to find meaning in life and to attach to one's environment, adaptation to physical patterns, and positive cognitive/affective function (Haight, B et al, 2002).

Furtherer more, Eliopoulos, C. (2010) stated that there are multifactorial processes that can affect how we age and multiple theories to explain these processes.

These means all these theories are biological, psychological, spiritual, and sociological in nature and therefore, aging is such a complex phenomenon and there will be nobody can satisfy.

Not only Eliopoulos stated about all those theories that a multifactorial processes but Vicki, N. (2003) also stated in the similar perspectives and are from the following:

3.1 Psychosocial aging can be described as a result of the disuse of previously acquired skills, random wear & tear, a change in the ability to adapt due environmental variables, loss of internal & external resources, genetic influences over the life span.

3.2 Social scientists agree that genetics (heredity) is a major factor in determining the length of human life, although environment plays an important role in modifying the expected life span.

3.3 The bottom line of Psychosocial Theory: as people grow older, their behavior changes, their social interactions change, and the activities in which they engage change.

Not surprisingly, Hanighurst (cited in Vicki, N, 2003) stated that for the older people they must meet some tasks to progress some adjust themselves as old age they should adjust to declining health & physical strength, adjust to retirement & reduced income, adjust to the death of a spouse or family members, adjust to living arrangements different from what they are accustomed and adjust to pleasures of aging such as increased leisure time & playing with grandchildren.

In contrast, Stadtman, E. (2002) stated that in recent times there will be more of modern theories regarding aging and many scientific researchers have put forth several theories of aging that show a common modality. These modern aging theories

generally fall into two camps: structural damage theories and programmed obsolescence theories. Structural damage theories are concerned with the molecular damage that accumulates inside cells over time. Programmed obsolescence theories engage the concept that aging and death are the inevitable consequence of the workings of an internal biological clock, programmed at conception that decides when cells can no longer operate and reproduce at a rate sufficient to maintain health.

From all of the theories of the elderly or aging as above mentioned, it could be concluded that there none of the theories proposed can claim sufficient evidence to account for the aging effects that are witnessed & experienced in humans. Nobody knows why we age but we do know that longevity has increased and by that the possibility that the aging process has slowed. Additionally, the common theme in all the theories is changes in things such as molecules, cells and organ systems which continue to live. Therefore, when it is considered in earlier life it is referred to and discussed as development and later in life when changes are considered that this can be referred to as aging.

Dementia

Suparus, W et al. (2008) stated that dementia is a syndrome of acquired cognitive decline that affects multiple intellectual functions that produces occupational and social disabilities and is not a feature of normal aging.

At the same year, Ratikorn Buakaew (2008) stated that dementia is the development of multiple cognitive deficits manifested by both memory impairment and one (or more) of the following cognitive disturbance such as aphasia, apraxia, agnosia, and disturbance. The dementia syndrome will be divided into six subtypes as

Dementia of the Alzheirmer's type, Vascular Dementia, Dementia due to general medical conditions, Substance-Induced persisting Dementia, Dementia due to Multiple Etiologies and Dementia not otherwise specified.

In Later years, Martin, P, and Jim, J. (2009) acknowledged that dementia is a syndrome due to disease of the brain, characterized by a progressive, global deterioration in intellect including memory, learning, orientation, language, comprehension and judgment; and it is one of the major causes of disability in late-life. It mostly affects older people, but, according to different estimates, between 2% and 10% of all cases start before the age of 65 years and after this the prevalence doubles with every five year increment in age.

However, there is the relationship between brain pathology and dementia syndrome which is linked to a very large number of underlying brain pathologies. The commonest are Alzheimer's disease, vascular dementia, dementia with Lewy bodies and frontotemporal dementia. The characteristic symptoms and neuropatholgical findings are summarised in figure 4 as the following:

Figure 4: The characteristics of dementia subtypes

Dementia subtype	Early, characteristic symptoms	Neuropathology	Proportion of dementia cases
Alzheimer's disease (AD) *	Impaired memory, apathy and depression Gradual onset	Cortical amyloid plaques and neurofibrillary tangles	50-75%
Vascular dementia (VaD) *	Similar to AD, but memory less affected, and mood fluctuations more prominent Physical frailty Stepwise onset	Cerebrovascular disease Single infarcts in critical regions, or more diffuse multi-infarct disease	20-30%
Dementia with Lewy Bodies (DLB)	Marked fluctuation in cognitive ability Visual hallucinations Parkinsonism (tremor and rigidity)	Cortical Lewy bodies (alpha-synuclein)	<5%
Frontotemporal dementia (FTD)	Personality changes Mood changes Disinhibition Language difficulties	No single pathology – damage limited to frontal and temporal lobes	5-10%

* Post mortem studies suggest that many people with dementia have mixed Alzheimer's disease and vascular dementia pathology, and that this 'mixed dementia' is underdiagnosed

Source: Martin, P, and Jim, J. (2009: 14).

1. Clinical features – the importance of behavioural and psychological symptoms of dementia.

When making a diagnosis, clinicians focus their assessments on impairment of memory and other cognitive functions, and loss of independent living skills. For carers, it is the behavioural and psychological symptoms (BPSD) linked to dementia that are most relevant and impact most on the quality of life. Behavioral problems include agitation, aggression, calling out, sleep disturbance, wandering and apathy. Common psychological symptoms include anxiety, depression, delusions and hallucinations. Most studies indicate that BPSD are an important cause of carer strain (Ferri, CP et al, 2005) and a common reason for institutionalisation as the family's coping reserves become exhausted (World Health Organisation, 2004 & 2008). Admittedly, BPSD occur most commonly in the middle stage of dementia.

The word dementia is original from two Latin words which are De meaning away and Mentis meaning mind. Dementia is the loss or damage of a person's cognitive or intellectual function without impairment in consciousness. Typically, memory impairment is an early and prominent feature of dementia, particularly in Alzheimer's and Dementia which also affects perception, concentration, judgment including problem-solving ability and decision making. More specifically, language and ability to orient oneself in space are associated with personality change. All of these functions become progressively affected as the disease advances. People who suffer from dementia eventually are unable to take care of themselves and require round-the-clock care (Bengtson, V, L et al. 2009). Forgetfulness can happen at any age. Isolated incidents of temporary memory loss or other temporary cognitive impairments are not considered dementia. Aging is not necessarily associated with

cognitive decline, though minor memory loss can occur as a normal part of aging. These normal changes are distinguishable from dementia by the minor nature and the fact that they do not interfere with the patient's social life or occupational ability. Therefore, Dementia develops when the parts of the brain involved with learning, memory, decision making and language are affected by any of various neurological, vascular, infections, or metabolic diseases (Ratikorn, B, 2003).

Furthermore, Dementia can be affected people of any age, but is most common in older people. One in five people over 80 has a form of dementia and one in 20 people over 65 have a form of dementia. Researchers are still working to find out more about the different types of dementia, and whether any have a genetic link. It is thought that many factors, including age, genetic background, medical history and lifestyle, can combine to lead to the onset of dementia. Dementia is a progressive condition. This means that the symptoms become more severe over time. Understanding how this progression happens can be useful in helping someone with dementia anticipate and plan for change. The way each person experiences dementia and the rate of their decline will depend on many factors. Not surprisingly, it is not just on which type of dementia they have, but also on their physical make-up, their emotional resilience and the support that is available to them.

2. Typically symptoms

2.1 Loss of memory – for example, forgetting the way home from the shops, or being unable to remember names and places.

2.2 Mood changes – these happen particularly when the parts of the brain which control emotion are affected by disease. People with dementia may feel sad,

angry or frightened as a result.

2.3 Communication problems – a decline in the ability to talk, read and write.

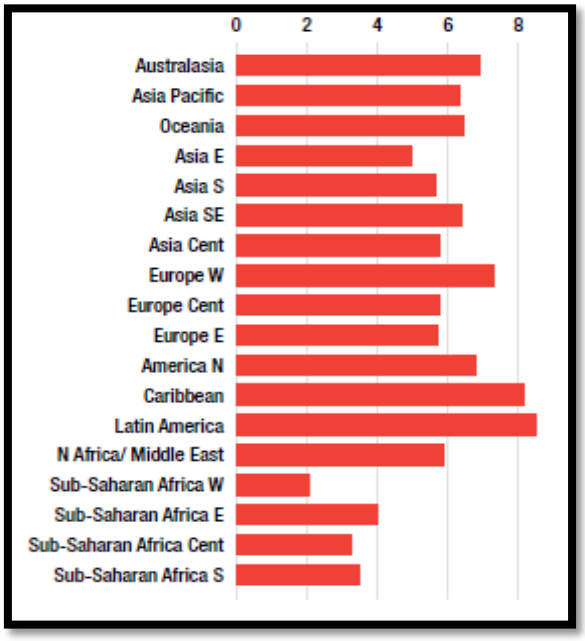
Demographic Factors

While the causes (aetiology) of dementia are not always completely understood, certain risk factors are known and some of the examples as the following:

1. Age

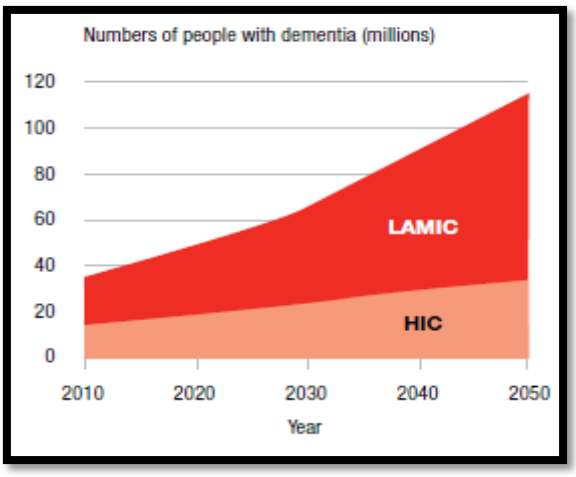
Age is the most well accepted risk factor, with the likelihood of dementia increasing from around 1 in a 1000 for people under 65, to 1% for people in their sixties to nearly 25% for people 85 years and over. Suparus, W et al (2008) stated that in Thailand, studies show that the prevalence of dementia is 1.8-10.2% in the age group 55 years and above. The prevalence of mild dementia symptoms in people aged 45-64 years was not represented in this group. If early onset can be discovered for this group, before it surfaces at age 65 and over, the social and financial cost saving are very important for caregivers, patients, and governments. Concerning the sample summary of estimated prevalence for all those aged 60 years and over, figure 5 shows the standards of the Western European population structure that can be compared directly between the 21 GBD regions and Thailand is one of the countries in Southeast Asia or Asia SE in the same figure and the figure 6 is the growth in numbers of people with dementia in high income countries (HIC) and low and middle income countries (LAMIC) are from the following:

Figure: 5 Estimated prevalence of dementia for those aged 60 and over, standardized to Western Europe population, by GBD region (%)



Source: Martin, P, and Jim, J. (2009: 38).

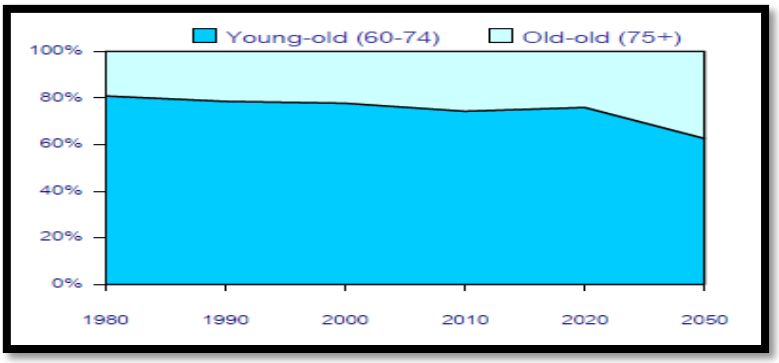
Figure: 6 The growth in numbers of people with dementia in high income countries (HIC) and low and middle income countries (LAMIC)



Source: Martin, P & Jim, J. (2009: 38).

More specifically, WHO also stated in more details that not only is the overall share of the population of the elderly increasing, but the older population itself is also ageing as evidenced by an increase in the percentage of older persons who are aged 75 years old and over as shown from the figure 7 is in the following.

Figure 7: Characteristics of the young olds and the old olds – Area graph 100% stack.



Source: Calculated from data provided by the United Nations, 1999b Cited in World Health Organization, (2012: 24)

2. Family history

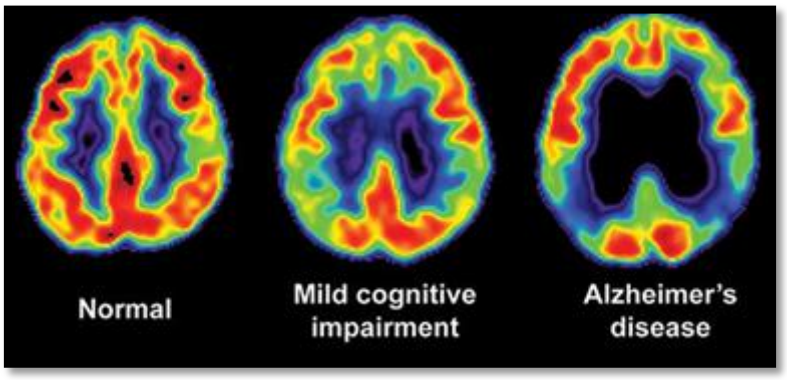
Genetic factors contribute to dementia risk. Younger onset familial Alzheimer.s disease is a relatively rare autosomal dominant condition.

3. Gender

Over the age of 80, women are at slightly higher risk of Alzheimer's disease while men may be at higher risk of vascular dementia. The Boston University School of Medicine Multi-Institutional Research in Alzheimer's Genetic Epidemiology study showed that by age 93, female risk is 13% higher than male risk. However, there are examples of reducing glucose metabolism in temporal and parietal regions in Alzheimer's

disease and mild cognitive impairment as shown in figure 8 from the following.

Figures 8: The reducing glucose metabolism in temporal and parietal regions in Alzheimer's disease and mild cognitive impairment.



Source: Nasiya, A. (2010)

As illustrated in figure 8 above, Nasiya, A. (2010) presented that there are only 1/3 of patients with dementia who have the diagnosis documented in their medical record; dementia is often first diagnosed in the hospital when a patient is not able to compensate for his or her memory loss in an unfamiliar environment.

4. Cardiovascular risk factors

Stroke-related and atherogenic causes contribute to vascular dementia and there is increasing evidence that they also contribute to Alzheimer's disease. These include high blood pressure (severe systolic hypertension), narrowing of the arteries (atherosclerosis), irregular heartbeat (atrial fibrillation), ischaemic (coronary) heart disease and attacks (myocardial infarction), diabetes, high saturated fat and LDL cholesterol intake and smoking. Coronary artery bypass graft surgery may contribute to vascular dementia.

5. Education and employment

One of the important findings in the research is that higher levels of education or a lifetime of mental activity may increase the brain reserve. Other studies suggest that specific occupational exposures may increase AD risk, such as manual work and exposure to organic solvents or electromagnetic fields, for example in occupations such as carpentry, electrician, machinist, sheet metal worker, typist or welder. If further research strengthens this evidence, and the link is not just socioeconomic, there would be further rationale for preventive workplace measures.

6. Other possible risk factors

Concerning other possible risk factors which can be included are depression, diabetes, high levels of homocysteine (an amino acid) in blood, previous thyroid diseases, head trauma for example from motor vehicle accidents or boxing; and excessive alcohol intake. There has been some evidence of lower prevalence rates for Alzheimer.s disease in some developing countries and in rural areas, although the evidence regarding ethnic and cultural influences is unclear.

7. Possible protective factors

For possible protective factors is one that may reduce the risk of developing Alzheimer’s disease.

8. Pharmacotherapies

The Pharmacotherapies are not treatment studies but many researchers have demonstrated that the use of anti-inflammatory drugs such as in treating arthritis

including Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) and statins are the most widely used cholesterol-lowering drugs and may reduce Alzheimer's disease risk or delay its onset. Oestrogen was thought to have a protective effect until the Women's Health Initiative Memory Study, a large US trial, demonstrated an increased risk of Alzheimer's disease in women aged 65 or more taking hormone replacement therapy compared to those on placebos.

9. Diet

Especially high intakes of antioxidants from food. This mean that vitamins E and C for example may guard against Alzheimer's disease and from this other studies have identified nutrition to play a part.

From all of the above Demographic factors it could be concluded that there are many factors that could affect or cause dementia in the elderly. This is because as long as the growth in numbers of people with dementia are getting higher the causes of dementia are not always completely understood and more research is required to get better results. This mean that high dementia incidence rates in old age, particularly when cognitively impaired, emphasize the need to further study cognitive impairment and dementia in this rapidly expanding age group.

Chula Mental Test

Chula Mental Test (CMT) has been developed aiming to reduce the effect from illiteracy. It has also tested the value of searching for the patients with deteriorated mental states among other population groups in, hospitals and elsewhere in the society. The value of the analysis is 15 (under 15 means wide mental deterioration).

However, the validity of the CMT was tested by comparison with a neurologist's independent diagnosis of dementia.

Jitapunkul, S et al, 1999) stated that the CMT is a 13 item cognitive impairment screening assessment of cognitive function of illiterate older adults with reading and writing difficulties and considered to be a practical test for evaluating cognitive impairment in older Thai adults.

Furthermore, the CMT at its optimal threshold had the best combination of sensitivity (100%) and specificity (90%) for detection of dementia. Test–retest repeatability and internal consistency were high. Translated versions of the CMT may have value in other south and Southeast Asian countries. Therefore, this study will use CMT with scores under 15 and dependence in basic activities of daily living at least one activity such as eating, face washing, changing from bed to sitting, toilet use, dressing and bathing. Therefore, this study will use the CMT with scores under 15 and dependence doing basic activities of daily living at least one activity such as eating, face washing, changing from bed to sitting, toilet use, dressing and bathing.

Reason for using CMT

There are many research instruments or tools but each one has its own benefitual and using for some particular method. Some of the research instruments that are not suitable for this research are as from the following.

1. Thai Mental State Examination (TMSE) is one of the research instruments that have been developed for screening the dementia condition for Thai people by the Train the Brain Forum committee and it is neuropsychiatric assessment. This is a quick and sensitive instrument, reliable and applicable neuropsychiatric test (40);

TMSE as a standard diagnostic test and a mini mental state test for dementia which consists of six basic subtest concerning orientation (6 points), registration (3 points), attention (5 points), calculation (3 points), language (10 points) and recall (3 points) (Poungvarin, N et al, 1996). However, the score from each subtest will have to be calculated to get a full score of the test at 30 points and the cut-off point will be 23 as considered having the dementia syndrome. It was most valid for detecting grossly cognitive impairment or dementia for a short time-duration. This suggests that TMSE score may be influenced by an education level surpassing 24. This cutoff point was not sensitive enough to detect for mild cognitive impairment in the population. To compare it with CMT, the TMSE is not suitable for this study because it is more suitable for neuropsychiatric conditions that only concentrate on orientation, registration, attention, calculation, language and recall only. Also the TMSE is 30 points with a high sensitive, and the mean total score for normal Thai elderly (age over 50) is at 27.38 which SD = 2.02 points. This means the cut-off point for the diagnosis of normal healthy Thai elderly for TMSE is a score over 23 points (Mean Minuses 2 SD) and CMT is quicker responses than TMSE and from the study (Jitapunkul, 1996) found that TMSE was complicated for Thai elderly.

2. Mini-Mental State Examination (MMSE) is one of the research instruments that have a brief 30-point questionnaire test. It also includes simple questions and problems in a number of areas: the time and place of the test, repeating lists of words, arithmetic such as the serial sevens, language use and comprehension, and basic motor skills. It is used to screen for cognitive impairment and commonly used in medicine to screen for dementia and used to estimate the severity of cognitive impairment and to follow the course of cognitive changes in an individual over time, thus making it an effective way to document

an individual's response to treatment. In about 10 minutes it samples functions including arithmetic, memory and orientation. This test is not a mental status examination. The standard MMSE form which is currently published by Psychological Assessment Resources is based on its original 1975 conceptualization, with minor subsequent modifications by the authors (Mathuranath, P, S et al, 2007). Because the CMT used for searching the patients with deteriorated mental states of the prevalence of Dementia among the elderly in Taiban Sub-District, Mueang Samutprakarn District, Samutprakarn Province, therefore, the MMSE is unsuitable because it has the serial languages with no Thai and not meant for a mental status examination.

Concept of Activities Daily Living (ADL)

Wisconsin Alzheimer's Institute (2004) stated that Activities of Daily Living (ADL) are the things we do every day to function in normal life. Concerning a dementia patient, many of these are difficult or impossible to do and it often becomes necessary for the dementia caregiver to assist their loved ones with activities or to complete them for the dementia patient. However, basic activities of daily living are those skills needed in typical daily self care and an evaluation would, in part, consist of bathing, dressing, feeding, and toileting. The evaluator would examine various activities in each category to determine the patient's skill and afterward it can be determined what and if any changes will be necessary to allow the patient to function as independently as possible. It is important for the dementia caregiver to know what kind of symptoms the dementia patient is experiencing. Therefore, one way to do this is to evaluate Activities of Daily Living (ADL's.) because it can help us to know what to expect as the dementia progresses.

Generally, activities necessary for self-care, including transferring, dressing, grooming, feeding, going to the bathroom, and maintaining sphincter continence. Evaluating ADL's can help to make these kinds of arrangements. Having an understanding of Activities of Daily Living can help in the dementia caregiver's discussion with the patient's physicians. An evaluation of ADL's can also help in making insurance decisions. Many healthcare policies will only cover Medical Care that is necessary to care and treat or aid in the recovery of an illness or injury. But a dementia patient may require what is referred to as Custodial Care—care that helps the patient to function in everyday life. Knowing the kinds of and amounts of care that your loved one needs or may need in the future and can help you to get the right kind of coverage and to best use the benefits of various policies the patient may carry. Knowing how well recipients can accomplish Activities of Daily Living is an important factor in deciding what kind of long term care may be appropriate for them. Knowing their level of functioning can make decisions such as when or if to place them in a nursing home or if it is practical to continue with home care. Insurance will sometimes cover the cost of nursing home care for a patient who is unable to perform two or more of the basic ADL's. ADL's fall into the following categories:

1. **Basic (self-care needed for independent living)**

    1.1 Ability to eat and drink

    1.2 Ability to dress oneself (including choosing own clothing)

    1.3 Ability to care for personal hygiene (including such as bathing and toileting)

1.4 Ability to be mobile (walking, getting into and out of a chair, moving from wheelchair to bed, etc.)

2. ADL Assessment Tool

Barthel Index, the Barthel Index (BI) was first introduced by Mahoney and Barhtel in 1965 and is now extensively used in rehabilitation. It was initially developed to measure functional ability before and after treatment and to assess the amount of nursing care needed. It is extremely popular and is one of the oldest and most widely used tests measurement scale used in elderly care. ADL scales (activities of daily living) have many scales implied (McDowell, I, and Ncwell, 1996 cited in Ratikorn, B, 2003) such as the pulse, Barthel Index, Index of independence in activities of daily living, Kenny self-care Evaluation and the Functional Status Rating System. Most of the rating scales have been developed based on populations of chronically ill and aging persons, although some have been based on particular disabilities. These general scales provide a measure of overall function. The existence of so many scales implies that each of them focuses on different aspects of ADL measurement. From literature review, the Barthel Index is considered to be the best of the ADL (Shah, S, Vanclay, F, and Cooper, B, n.d. cited in Ratikorn, B, 2003) measurement scales and used widely. However there are some scales that are more sensitive to small changes in functional independence than the Barthel Index. The modified scoring of the Barthel Index achieved greater sensitivity or affecting the implementation time and therefore, the reliability coefficient for the modified scoring of the Barthel Index was 0.90, compared to 0.87 for the original scoring.

Relevant Research

Walter, A et al. (2012). Trends in the incidence and prevalence of Alzheimer's disease, dementia, and cognitive impairment in the United States.

The research aimed is for analyses which include their possible utility to understand determinants and risk factors for these endpoints and to better anticipate the quantity and type of social and healthcare needs of America's older citizens in upcoming years. In particular, these analyses explored the notion that recent improvements in cardiovascular and cerebro vascular disease risks might be reflected in changes in dementia rates. The research found that from the Health and Retirement Study, a national survey although a marginal decline was observed in the Minnesota cohort, no clinically significant trends were apparent in the community studies. A significant reduction in cognitive impairment measured by neuropsychological testing was identified in the national survey. Given the current understanding of the likely importance of ischemic cerebrovascular disease and allied risk factors contributing to dementia and aging-related cognitive decline, it seems reasonable to remain cautiously optimistic while continuing to work toward a full understanding of all factors determining the occurrence of dementia. This means cautious optimism appears justified.

Christopher, F, Sid, F and Mary, S. (2011). Resources for people with dementia: The Alzheimer Society and beyond.

The research is aimed to summarize services provided by the Alzheimer Society and discuss other supports and resources available for the management of people with dementia. The research found that early diagnosis of dementia has been

shown to be of benefit to patients and caregivers. Referral to the Alzheimer Society can help with nonpharmacologic management of dementia at the time of diagnosis and at any time during the course of the illness. Services include education about dementia, caregiver support, coordination of community services, and a variety of written resources for patients and caregivers. When available, the First Link program can assist with referral by minimizing the need for patients or caregivers to contact their local society branches. Other resources, including respite care and technological approaches to managing wandering, are discussed. In conclusion, the Alzheimer Society is an important part of dementia management, and family physicians should always consider referral at the time of diagnosis, regardless of the severity of the condition. First Link, when it is available, can facilitate referral. Resources such as respite care and day programs should be considered when available.

Carrie, B et al. (2011). Incidence of dementia in oldest-old with amnestic MCI and other cognitive impairments.

The research is aimed to examine the incidence of dementia among the oldest-old people with normal cognition and different types of cognitive impairment. The research found that the average age of all participants at baseline was 93.3 years, 66.6% were women, and 45.5% had at least a college degree. Thedementia incidence was highest for participants with aMCI (31.4% per year) and OCI (39.9% per year). Participants with aMCI had an incidence of 14.1% per year, and participants with normal cognition had an incidence of 8.4% per year. Dementia incidence was associated with increasing age in both normal and cognitively impaired participants; however, an APOE4 allele was associated with a higher dementia incidence only in

participants with baseline cognitive impairment. The conclusion, the risk of developing dementia in the oldest-old is high and increases to higher rates when cognitive impairment is present. Similar to results of studies in younger elderly individuals, cognitive impairment and increasing age were related to increased dementia incidence. High dementia incidence rates in the oldest-old individuals, particularly when cognitively impaired, emphasize the need to further study cognitive impairment and dementia in this rapidly expanding age group.

Xiaowei, S, Arnold, M and Kenneth R. (2011). Nontraditional risk factors combine to predict Alzheimer disease and dementia.

The research aims to investigate whether dementia risk can be estimated using only health deficits not known to predict dementia. The research found that the FI-NTRF was closely correlated with age ($r^2 > 0.96$, $p < 0.001$). The incidence of AD and dementia increased exponentially with the FI-NTRF ($r^2 > 0.75$, $p < 0.001$ over 10 years). Adjusted for age, sex, education, and baseline cognition, the odds ratio of dementia increased by 3.2% ($p = 0.021$) for each deficit (that was not known to predict dementia) accumulated, outperforming the individual cognitive risk factors. The FI-NTRF discriminated against people with AD and all-cause dementia from those who were cognitively healthy with an area under the receiver operating characteristic curve of 0.66 ± 0.03. In conclusion, the comprehensive re-evaluation of a well-characterized cohort showed that age-associated decline in health status, in addition to traditional risk factors, is a risk factor for AD and dementia. General health may be an important confounder to consider in dementia risk factor evaluation. If a diverse range of deficits is associated with dementia, then improving general health might reduce dementia risk.

Jitapunkul, S, Chansirikanjana, S, and Thamarpirat, J. (2009). Undiagnosed dementia and value of serial cognitive impairment screening in developing countries: a population-based study.

The research aims to examine the prevalence of undiagnosed dementia and validity of the Chula Mental Test (CMT) as well as the value of serial administration of the CMT and its score evolution over 2 years. The research found that of 420 subjects, 23 had dementia, of which 22 (95.6%) were undiagnosed. The prevalence (95% confidence interval) of dementia and undiagnosed dementia were 5.5% (3.3-7.7%) and 5.3% (4.1-6.3%), respectively. With original cut-off (15/14) of the CMT, the sensitivity and specificity were 0.74 and 0.86, respectively. The best cut-off found in this study was 16/15 which provided better sensitivity (0.91) but worse specificity (0.76) than those of the original cut-off. Pattern of cognitive evolution was heterogeneous. The heterogeneous change was substantial in subjects with mild low CMT score. Cognitive evolution pattern showed that serial administration of the CMT could reduce workload of primary care physicians and might be useful in a screening protocol. The prevalence of undiagnosed dementia in community-dwelling Thai older persons was high. The CMT was valid for use in a community. Heterogeneous evolution of cognitive function and value of serial cognitive impairment screening was found.

Guolong, L. (2009). Depression, cognitive impairment and 5 chronic conditions among the community dwelling elderly in a community of Khon Kaen: a primary care base descriptive study.

The research aims to explore the prevalence of depression, cognitive

impairments and 5 chronic conditions (i.e. diabetes mellitus, hypertension, chronic obstructive pulmonary disease, ischemic heart disease and chronic pain symptoms) among the elderly community residents (age ≥ 60) in an urban primary care unit of Khon Kaen. The research found that the response rate was 97.1%. There were 87 (43.5%) males and 113 (56.5%) females. Their median age was 68.0 ± 10.0 years (range: 60 – 96 years). The prevalence of depression and cognitive impairment were 21.0% (95% CI: 15.3%, 26.7%) and dementia 27% (95%CI: 20.8%, 33.2%) respectively. The prevalence of diabetes mellitus was 25.0% (95%CI: 19.0%, 31.0%), of hypertension was 47% (95%CI: 40.0%, 54.0%), of ischemic heart disease was 5.5% (95%CI: 2.3%, 8.7%), of COPD was 2.5% (95%CI: 0.3%, 4.7%), and chronic pain symptoms (duration 6 months or above) was 30% (95%CI: 23.6%, 36.4%). Age, ischemic heart disease, cognitive impairment, life crisis were associated with depression.

Sarah, T, P, and Peter, M, R. (2009). Prevalence, incidence, and factors associated with pre-stroke and post-stroke dementia: a systematic review and meta-analysis.

The research aims to undertake this systematic review to assess the heterogeneity in the reported rates and to identify risk factors for pre-stroke and post-stroke dementia. The research found that the pooled prevalence of pre-stroke dementia was higher (14・4%, 95% CI 12・0–16・8) in hospital-based studies than in population-based studies (9・1%, 6・9–11・3). Although post-stroke (≤1 year) dementia rates were heterogeneous overall, 93% of the variance was explained by study methods and case mix; the rates ranged from 7・4% (4・8–10・0) in

population-based studies of first-ever strokes in which pre-stroke dementia was excluded to 41・3% (29・6–53・1) in hospital-based studies of recurrent strokes in which pre-stroke dementia was included. The cumulative incidence of dementia after the first year was little greater (3・0%, 1・3–4・7) per year in hospital-based studies than expected on the basis of recurrent stroke alone. Medial temporal lobe atrophy, female sex, and a family history of dementia were strongly associated with pre-stroke dementia, whereas the characteristics and complications of the stroke and the presence of multiple lesions in time and place were more strongly associated with post-stroke dementia.

Suparus, W et al. (2008). Prevalence of Dementia among population age over 45 years in Chiang Mai, Thailand.

The research aimed is to determine the prevalence of dementia in Thai people aged 45 years and above. The research found that among the 35 people with dementia, the mean age was 67.9 + 8.9 years (45-88 years). The prevalence of dementia among the study participants was 2.35%. In the present study, Alzheimer's disease was the most common type of dementia diagnosed (75.0%) and vascular dementia was the second most commonly diagnosed (12.5%). The conclusion, the prevalence of dementia in Chiang Mai was 2.35%, which does not differ from the previous study. Alzheimer's disease was the most common type of dementia diagnosed.

Pasiri, S et al. (2005) Dementia and depression in End Stage Renal Disease: comparison between Hemodialysis and Continuous Ambulatory Peritoneal Dialysis.

The research aims to determine the prevalence, risk factors of dementia and depression in end stage renal disease (ESRD) of people who was treated with hemodialysis (HD) compared with those who had continuous ambulatory peritoneal dialysis (CAPD). The research found that both prevalence of dementia and depression in ESRD on continuous dialysis were 6.7 %. In the HD group had 8.3% prevalence of dementia and 6.7% of depression, whereas there was 3.3% of dementia and 6.7% of depression in the CAPD group. The severity of depression in the present study was mild to moderate (6.7%) and no major depression was seen. The significant risk factors for dementia were age ≥ 60 years (p=0.003), Education < 10 years (p=0.037) and female sex (p=0.036). The significant risk factor for depression was female sex (p=0.036). There was no significance different on prevalence of dementia and depression comparison between the HD and CAPD group. The conclusion, prevalence of dementia and depression in the overall dialysis in ESRD was 6.7% (with 8.3%, 6.7% among the HD group and 3.3%, 6.7% among CAPD group). There was no significant difference on prevalence of dementia and depression comparison between the HD and CAPD group.

Sutsawat, A. (2004). Health status and factors related to health status of the elderly in Papayom District, Patthalung Province.

The research aims to study health status, health behavior, social support and accessibility in health services of the elderly in Papayom district, Patthalung Province, Thailand. The research found that the majority of the respondents were females to the ratio of males: females 1:2 in the age group of 60-69 years old, married life, with primary education in agricultural occupations. Their income from their children. The average ages

of the parents were 71.8 and 77.6 years old respectively. Their health behavior on average was 91.3%, social supports at a high level at 90.2%, accessibility in health services at state hospitals. The convenience in their traveling and satisfaction from the services were at 96.9%. As for their overall health status, it was at 47.1% which means female's health status was better than the male's. The chronic diseases were mainly found to be were hypertension, diabetes mellitus, heart disease. The acute disease was back and waist pain The individual health problems were sight 47.7%, in chewing 44.9%, in sleeping pattern 24.3% and in hearing 18%. The study of the factors in health status in term of the statistically significant value 0.05 was applied to age groups, level of education, ability in reading and writing, in their occupations, types of jobs, need in taking care, the relationship in the family, level of health behavior, social supports, illnesses, types of diseases, and choices in using health welfare benefits.

Ratikorn, B. (2003). Assessing functional abilities among elderly in Ao Nang, Krabi Province.

The research aims to assess functional abilities among the elderly in Ao Nang, and determine the factors associated with functional abilities. The research found that the total population is 375 people**,** 45.9% are male and 54.1% are female. The age range averaged from 60 to 97, with the average being 68 years old. It shows that the proportion of the physical disabilities which is total dependence in performing basic activities of daily living (BADL) was 0.3 percent and for instrumental activities of daily living (IADL) was 3.2 percent. The proportion of dependents in one or more activities in BADL was 23.2 percent and for IADL was 29.9 percent. The factors associated with BADL ($P<0.05$) were age, education, literacy, inability to read, living status, period of care taking, working status,

source of income and having a disease with hemiplegia or immobility. The factors associated with IADL were age, literacy, inability to read, period of care taking, strength of the care taking from the relative, working status, source of income and problem with vision. The prevalence of dementia was 1.1 percent and also found in the higher age group , no education, literacy, inability to read, living alone, minimal care taking, out of work and having disease with hemiplegia. To promote health among the elderly, many organizations should provide appropriate services such as improving health care teams, supporting the community to promote exercise to all ages, health check up at least once per year and to emphasize to the members in their families and community to take care of the elderly especially those who have disability and dementia.

Manoch, T. (2001). Depression and Dementia in Thai Community dwelling elderly in Bangkok.

The research aims to survey the prevalence of depression and dementia among the elderly Thai community dwelling in Bangkok. The research found that the prevalence of depression was 35.1% and for dementia was 27.3%. Among the various demographic data, householder, sources of income, income satisfaction, the presence of physical illness, health status exercise being consultant were correlated with depression at the 0.01 level and age sex marital status perceived adequacy of support from offspring being a member of network were also positively correlated with depression at the 0.05 level. Employment and number of family members were not significantly related to depression ($p>0.05$). Significant relationships were found between age presences of physical illness health status being consulted and dementia $p<0.01$ and a positive relationship was found between depression and dementia contingency coefficient = 0.286.

Jitapunkul, S, Worakul, P, and Kiatprakoth J. (2000). Validity of clinical use of the clock-drawing test in Thai elderly patients with memory problems.

The research aims to determine the validity of the clock-drawing test (CDT) and Chula mental test (CMT). The research found that the Chula Mental Test (CMT) people were asked to draw a clock on a preprinted 12 centimeters circle showing the time of 11:10. Clocks were scored using the Chula Clock-drawing Scoring System (CCSS). Ten subjects voluntarily participated and completed the WAIS test. The best cutoff score of the CMT and the CDT using diagnosis of dementia as a gold standard were 15 and 7 respectively. Sensitivity and specificity for detecting dementia by the CDT were 100 per cent and 94.1 per cent respectively. Sensitivity and specificity for detecting dementia by the CMT were 83.3 per cent 91.7 per cent. The likelihood ratio (95% confidence interval) of the CMT and the CDT were 10 (3.3-30.4) and 17 (4.4-65.2) respectively. There was a good correlation of the CDT score and the CMT score with the WAIS score. Although the CDT was better than the CMT in literate patients, the CDT had limitation of use among illiterate patients but not the CMT. The benefits of simultaneously application on dementia screening were shown. This study showed that the CDT was a valuable, brief method of dementia screening in elderly Thai patients with memory problems.

Senanarong, V et al. (1998). Comparative study of Thai Mini-Mental State Examination and Chula Mental Test, Siriraj Hospital Gazette.

The research aims to conducted a comparative study between these 2 tests in 82 Thai elderly admitted to Siriraj Hospital. The research found that Mini-Mental State Examination (TMSE) and Chula Mental Test (CMT) have been widely used in Thailand.

Both of them are screening tests for cognitive impairment. However there are some differences in subsets of the test. The authors found a significant relationship between these 2 tests (correlation coefficient 0.78, chi-square test $p< 0.05$). They are best fitted in a reciprocating hyperbola curve [CMT = TMSE/ (0.03444× TMSE + 0.6287)].

Jitapunkul, S et al. (1996), Chula Mental Test: a screening test for elderly people in less developed countries.

The research aims to revised instrument, the Chula Mental Test (CMT). The research found that an initial instrument was derived from a review of existing instruments, selecting those items not requiring reading and writing ability. The 36 items obtained were then used with elderly people aged 60+ years who had no evidence of psychiatric, behavioural or psychological disturbance. Subjects were drawn from rural and urban clinical settings and a random sample from a Bangkok slum. Thirteen items showed no relationship with educational attainment and were then considered by an expert panel for utility and domain of cognition coverage. The revised instrument, the Chula Mental Test (CMT), was then applied to 212 residents of an old people's home in Bangkok. The validity of the CMT was tested by comparison with a neurologist's independent diagnosis of dementia. Comparisons were made with the Mini-Mental State Examination and the Abbreviated Mental Test. The CMT at its optimal threshold had the best combination of sensitivity (100%) and specificity (90%) for detection of dementia. Test–retest repeatability and internal consistency were high. Translated versions of the CMT may have value in other south and Southeast Asian countries.

CHAPTER III

RESEARCH METHODOLOGY

Research Design

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 factors and the activities of daily living associated with dementia of these elderly people.

Population and Sample

The study population was both male and female elderly people in Taiban Sub-District, Maung Samutprakan District, Samutprakran Province, Thailand. There were 1,664 people (Department of Provincial Administration, 2009). The researcher determined the inclusion criteria as follows:

1. The inclusion criteria were:

1.1 Age 60 years and over.

1.2 Having no severe physical disabilities that may affect the testing process such as able to speak with no hearing problems.

1.3 Are willing to participate in the research.

The method of sample size determination for the population was according to Yamanae (Yamané, T, 1973) as follows:

$n = N / 1 + Ne^2$

When, N = Known population size and equals 1,664

n = Sample size

e = 0.05

Instead $n = \frac{1,664}{1+1,664(.05)^2}$

$= \frac{1,664}{1+1,664(0.0025)}$

$= \frac{1,664}{5.16}$

$= 323$

Based on sample size calculation, the number of samples used in this research was 323. Simple Random Sampling was applied in this study.

For sample selection, the researcher selected samples with simple random sampling.

The researcher used a simple random sampling technique to select representative district which is Taiban Sub-District, Maung Samutprakan District, Samutprakran Province, Thailand included assistance researchers of the Taiban Sub-District. Then randomly selected from households and by means of simple random draw until the number of samples required of elderly age of 60 years and over. The sample group is the elderly people living in the household at random.

2. The exclusion criteria were:

2.1 Elderly people having health problems that caused communication problems with the interviewers such as unable to speak and with hearing problems and mental health disorders.

2.2 Elderly people who were not willing to be interviewed or participate in the research.

3. Ethical consideration

The study was approved by Ethical committee in Human research of Health Science Group. The certificate of approval was number CDA NO.094/2554

Measurement Methods

In quantitative data

Building the questionnaire for data collection from the target population consisted of 3 parts:

1.1 Part 1: The questionnaire relates to demographic factors of elderly consists of age, gender, education level, work status, income sufficient, reading ability, writing ability, living arrangement, relation of care taker, personal disease, alcohol history, smoking history and family history diagnosis of dementia.

1.2 Part 2: The questionnaire relates to practical activities which evaluate functional ability of elderly on activities of daily living.

The BI scoring is based on a rating scale that is completed by an observer. It covers bowels, bladder, grooming, toilet use, feeding, transfer, mobility, dressing, stairs and bathing. A total of 10 activities are scored and the values are then added to

give a total score to indicate greater dependency. According to Sinoff and Ore scoring on the BI can be interpreted as follow:

Score of 80-100	refers to independent
Score of 60-79	refers to needs minimal help with ADL
Score of 40-59	refers to partially dependent
Score of 20-39	refers to very dependent
Score of <20	refers to totally dependent

The BI measures what the patient actually does rather than what they can do. Information is obtained via verbal reports from the elderly, care taker, staff, and by direct observation of some activities.

1.3 Part 3: The questionnaire relates to cognitive assessment on dementia status and it consists of 16 choices.

- Maximum score is 19 and the minimum is 0
- Score lower than 15 indicates cognitive impairment.

Assessing the Quality of Instrument

1. Reliability of BI and CMT

The reliability of the instruments were calculated by using Cronbach's alpha coefficients as following:

Barthel Index (BI) is sensitive and it has concurrent and predictive validity and reliability. It has good inter-rater, test-retest and reported or observed reliability, the internal consistency of the BI is extremely high with a Cronbach's alpha coefficient of

0.98. Intra-observer and inter-observer reliability are high with a Pearson's score ranging from 0.89 to 0.99.

2. Data collection

2.1 The researcher submitted letters of request from the Dean of Faculty of Graduate Studies, Chulalongkorn University, to the Directors of the Provincial Health Office in Samutprakarn Province, the director of Community Hospitals and the Directors of the District Health Offices for permission to collect the data.

2.2 The researcher described the objectives, the characteristics of the sample, clarified the meaning of all the interview questions and the steps of data collected to the research assistants.

2.3 The researcher contacted and coordinated with the chiefs of the health centers or health officers in hospitals, community leaders and village health volunteers to find out the addresses of the respondents.

2.4 The researcher trained the assistance researchers and collected the data from the respondents in each village in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province by interviewing them at the respondent's homes. The researcher checked for completeness of the questionnaires after the interview.

2.5 Data Collection was conducted by the researcher, starting from January to April 2011. However, the data collection continued until the information from 323 cases were obtained. The questionnaires were then verified for data analysis.

3. Data analysis

The demographic instrument included 11 items and 10 items belonging to

basic activities of daily living each activity has four levels of severity of disability, independence, needing supervision, needing assistance and dependence for assessing dementia factors. For assessing dementia status the researcher used the Chula Mental Test which consists of thirteen items and a total score of 19 was used for this The researcher established the prevalence of dementia classified by the cut point score in the Chula Mental Test as less than a score of 15.

4. Statistical analysis

After reviewing for completeness, the data were encoded and processed for statistical analysis using SPSS for windows version 16.0. The data were described in mean and standard deviation (SD) or percent (%) and Chi-Square. P value < 0.05 was statistically significantly different.

5. Limitations of the research

The respondents are the elderly in the rural area. The research results may not be able to represent as a reference for the elderly who live in the city or other areas. Some of the elderly have abnormalities such as hearing loss, unconscious, confusion and problem with communication that exclude from screening dementia. To have many assistance researchers may cause of controlling problems during data collecting.

CHAPTER IV

RESEARCH RESULTS

The data analysis and descriptive research on the prevalence of dementia among the elderly in Taiban Sub-District, Mueang Samutprakan District, Samutprakarn Province with the object to examine the dementia prevalence rate of elderly people, determine the factors associated with dementia of elderly people and identify basic activities of daily living of elderly people in Taiban Sub-District, Mueang Samutprakarn District, Samutprakran Province, Thailand. The research was conducted among 323 of the elderly in Taiban Sub-District, Mueang Samutprakan District, Samutprakarn Province, Thailand during June-July, 2011. The data collection was performed by the researcher with a specified tool which was referred as a questionnaire. The questionnaire was verified by the researcher on content validity and completion. The data analysis was conducted with descriptive statistics such as percentage, average and chi-square to find the prevalence of dementia among the elderly in Taiban Sub-District, Mueang Samutprakan District, Samutprakarn Province. The results will be displayed in 4 sections and are as following:

Section 1. Demographic socio- demographic characteristic of the elderly.

Section 2. Assessment of activity of daily living.

Section 3. Assessing dementia.

Section 4. The study of the relationship between prevalence of dementia and determinants of dementia among elderly.

Section 1. Demographic characteristic of the elderly

It consists of age, gender, education level, work status, sufficient income, reading ability, writing ability, living arrangements, relation of care taker, personal disease, alcohol history, smoking history and family history diagnosis of dementia. All of this information will be shown in Table 2 - 7.

The average age of population shown was 67 years. The mean average of the ages was 69.2 years. The population consisted of 59.5% female and 40.5% male (Table 2).

Table 2: Number and Percents of population separated by age and gender

Socio-demographic	Number	Percent
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		
Minimum=60 Years, Maximum =100		
Gender		
Male	131	40.5
Female	192	59.5

The education levels of population surveyed showed 60.1% finishing only basic primary school (Prathom 4) while 17.1% received no education at all. Only 7.4% completed senior high school. Concerning the study of reading ability it showed 54.2%

were able to read sufficiently, 33.7% were barely literate and 12.1% were illiterate. The writing ability of the elderly population found 50.8% with sufficient writing abilities, 37.5% were semi illiterate and 11.7% with minimum ability to write (Table 3).

Table 3: Number and percent of population separated by education, reading and writing abilities

Socio-demographic	Number	Percent
Education levels		
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

The living status of the elderly population found that 87.9 % still lived with their spouse, 9.3% lived with family and relatives and 2.8% lived alone. The relationship of the care taker to the elderly found 50.8% of the population had a care taker with a strong personal attachment, 39.6% had only a moderate personal

relationship and 8.4% had a poor relationship. Moreover, 1.2% of the population felt ignored by their care taker (Table 4).

Table 4: Number and percent of population separated by living status and relationship of care taker

Socio-demographic	Number	Percent
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 of the elderly people found that 70.9% were unemployed, while 29.1% were still working. Concerning income source of the elderly, 75.2% received money from their family and 24.8% received money from their work While 48.6% had sufficient income for daily consumption , 35.3% of the elderly people have enough income savings for daily consumption and 16.1% did not have enough income for daily living (Table 5).

Table 5: Number and percent of population separate by working status, income source and income sufficient

Socio-demographic	Number	Percent
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

Perception on health problems of the elderly showed 90.1% were afflicted with a major ailment, while 9.9 % of the population was free from major health problems. From this latter group it was found that 31.3% experienced muscular and skeletal ailments, 16.1% experienced dizziness, 13.6% had hypertension, 10.8% had problems with vision. Concerning hearing problems it was found that 9.90%, 8.1% were diabetes mellitus, 8.0% complained of sleep disorders and another 2.2 % were hemiplegia (Table 6).

Table 6: Number and percent of population separated by health problem and personal disease or sickness

Socio-demographic	Number	Percent
Personal health problem		
Yes	291	90.1
No	32	9.9
Personal disease or sickness		
Hearing	32	9.90
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

Alcohol history found that 86.4% people had an alcohol history and 87.3 % had no smoking history (Table 7).

Table 7: Number and percent of population separated by history of drinking alcohol and smoking history

Socio-demographic	Number	Percent
History of drinking alcohol		
Yes	44	13.6
No	279	86.4
Smoking history		
Yes	41	12.7
No	282	87.3

Family history diagnosis of dementia found that 2.8% of the population had a family history diagnosis of dementia (Table 8).

Table 8: Number and percent of population separated by family history diagnosis of dementia.

Socio-demographic	Number	Percent
Yes	9	2.8
No	314	97.2

Section 2. Assessing activity of daily living

The research evaluates the basic activities of daily living and the details are show in table 8.

The basic activities of the elderly people in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand are sorted in to ten activities which the elderly can perform by themselves. 54.2% of the population were able to wash their

face and comb their hair (grooming) and also dress (Dressing), 53.5% were able to eat (Feeding) and 52.3% of the population were able to control bladder function (Bladder) including transfer (Transfer) and bathing (Bathing) without any assistance from their care taker (Table 9).

Table 9: Number and percent population separated by basic activities of daily living (BADL) and their level of ability to perform.

Activities	Level of Ability											
	Independence		Need minimal help with ADL		Partially dependent		Very dependent		Totally Dependence		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

Section 3. Assessing dementia status

The researcher used strict standards to separate the elderly population in to two groups, normal and dementia, the test used was a register on their state of mind

on a 15 point scale, with 15 being the highest score. The result of this evaluation found 36 elderly people with Dementia (11.1%) scored less than 15 points (Table 10)

Table 10: Number and percent of the elderly who suffer from dementia in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand

Cognitive ability	Number	Percent
Normal	287	88.9
Dementia	36	11.1

Section 4. The study of the factors associated with dementia among elderly in Taiban Sub-District, Mueang Samutprakarn District, Samutprakarn Province, Thailand

The study of the relationship between dementia among elderly in Taiban Sub-District, Mueang Samutprakan District, Samutprakarn Province, Thailand was demonstrated in Table 11.

Table 11: Factors related to dementia among elderly in Taiban Sub-District, Mueang Samutprakarn District, Samutprakarn Province, Thailand

Factors	Dementia	No Dementia	p- value
Age			
60 – 69 Years	6 (16.7)	185 (64.4)	<0.001*
70- 79 Years	12 (33.3)	86 (30.0)	
More than 80 Years	18 (50.0)	16 (5.6)	
Gender			
Male	16 (44.5)	105 (36.6)	
Female	20 (55.5)	182 (63.4)	0.235
Education levels			
No education	10 (27.7)	45 (15.7)	
education	26 (72.3)	242 (84.3)	0.020*
Reading ability			
Sufficient ability	-	164 (57.1)	0.031*
Barely literate	18 (50.0)	103 (35.9)	
Illiterate	18 (50.0)	20 (7.0)	
Writing ability			
Sufficient ability	-	164 (57.2)	0.048*
Barely literate	18 (50.0)	103 (35.8)	
Illiterate	18 (50.0)	20 (7.0)	

Table 11 (Cont)

Factors	Dementia	No Dementia	p- value
Living arrangement			
With spouse	30 (83.3)	263 (91.6)	
With family and relatives	6 (16.7)	24 (8.4)	0.085
Relationship of care taker			
Moderate personal relation	28 (77.8)	100 (34.8)	
Strong personal attachment	8 (22.2)	187 (65.2)	0.460
Working status			
Employed	4 (11.1)	90 (31.4)	
Unemployed	32 (88.8)	197 (68.6)	0.036*
Income source			
From work	4 (11.1)	76 (26.5)	
From family	32 (88.8)	211(73.5)	0.365
Income sufficient			
- Enough for daily consumption savings	-	114 (39.7)	0.156
- Enough for daily consumption only	30 (83.3)	127 (44.2)	
- Not enough	6 (16.7)	46 (16.1)	
Personal health problem			
Yes	36 (100)	255 (88.8)	0.236
No	-	32 (11.2)	

Table 11 (Cont)

Factors	Dementia	No Dementia	p- value
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
Hemiplegia	5 (13.8)	2 (0.7)	<0.001*
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)	
No	32 (88.8)	282 (98.3)	0.044*

Table 11 (Cont)

Factors	Dementia	No Dementia	p- value
Assessing activity of daily living			
Partially dependent	6 (16.8)	282 (98.2)	
Very dependent	14 (38.8)	3 (1.1)	
Dependent	16 (44.4)	2 (0.7)	0.021*

Population factors from the above (Table 11) have found that 72.3% of those dependent graduated from primary school and 27.7% had no education. Concerning the relationship between reading ability and dependence in dementia it was found that 50.0% of those dependent were unable to read or semi illiterate. The relationship between dementia and writing ability found that 50.0% of those dependent were unable to write or semi illiterate. The strongest relationship was found between dementia and living with their spouse at 83.3% and 16.7% who lived with their family and relatives. The relationship between the care taker and the dementia sufferer found that 77.8% of those dependent had a moderate personal relation, while 22.2% had a strong personal attachment. The strongest relationships were found between dementia and working status. However, 88.8% of those dependent were unemployed and 11.1% were employed and income source and income were found to be statistically insignificant in relation to dependence in dementia. The strongest relationships were found between dependency on dementia with hemiplegia (13.8%) and alcohol history (77.7%). It was also found that no family history diagnosis of dementia at 88.8% and 44.4% dependent assessing activity of daily living.

CHAPTER V

CONCLUSION, DISCUSSION AND RECOMMENDATIONS

Conclusion

The research titled prevalence of dementia among the elderly in Taiban Sub-District, Mueang Samutprakan District, Samutprakarn Province, Thailand was done in the form of a survey research with the objective to examine the dementia prevalence rate of elderly people, determine the factors associated with dementia of elderly people and identify basic activities of daily living of elderly people in Taiban Sub-District, Mueang Samutprakarn District, Samutprakran Province, Thailand. Sample groups was from both male and female elderly persons in Taiban Sub-District, Maung Samutprakan District, Samutprakran Province, Thailand for a total number of 323 people. The material consists of 3 parts: 1) the questionnaire relates to demographic factors of the elderly. 2) The questionnaire relates to practical activities which evaluate functional ability of elderly on activities of daily living 3) the questionnaire relates to cognitive assessment on dementia status and it consists of 16 choices. The questionnaires were assessed on their reliability and accuracy of contents by experts and use the recognized tools “the Chula Mental Test (CMT)”. These tools were used to screen physical ability and cognitive ability with the objective of the research being described with the use of statistical tools of average, percentage, standard deviation and chi-squares test. Therefore, the respondents are the elderly in the rural areas. The research results may

not be able to represent as a reference for the elderly who live in the city or other areas.

Section 1. Characteristics of the elderly

The average age of the population shown was 67 years with the majority of the population being female, finishing only basic primary school (Prathom 4) 60.1 percent, no education at 17.1 percent and 7.4 percent only completed senior high school. However, 54.2 percent were able to read sufficiently while 33.7 percent were able to read a little and 12.1 percent unable to read. The writing ability of the elderly population found 50.8 percent with sufficient writing abilities while 37.5 percent were semi illiterate and 11.7 percent had a minimum ability to write.

As for the research on the living status of the elderly population it was found that 87.9 percent still lived with their spouse but 9.3 percent lived with their family and relatives and only 2.8 percent lived alone. 50.8 percent of the population had a caretaker with a strong personal attachment while 39.6 percent had only a moderate personal relationship, 8.4 percent had a poor relationship and 1.2 percent were ignored by their care taker.

Concerning the elderly working status there were 70.9 percent unemployed but 29.1 percent were still working. Not surprisingly, there were 75.2 percent who received money from their family and only 24.8 percent received money from their work. From this income, 48.6 percent of the elderly had sufficient money for daily consumption, 35.3 percent have enough income sufficient for daily consumption savings and 16.1 percent did not have enough income for daily living.

The majority of the elderly population were afflicted with a major ailment which was at 90.1 percent, 9.9 percent were free from major health problems. Of those who exhibited health problems, the major complaint was found to be muscular and skeletal ailments at 31.3 percent, 16.1 percent experienced dizziness, 13.6 percent had hypertension and 10.8 percent had vision problems. Concerning hearing problems it has found that 9.90 percent, 8.1 percent were diabetes mellitus, 8.0 percent complained of sleep disorders and hemiplegia at 2.2 percent. However, the elderly people had 86.4 percent alcohol consumption history but 87.3 percent had no smoking history.

Finally, concerning the family history diagnosis of dementia it has found that 2.8 percent of the population had a family history diagnosis of dementia.

Section 2. Assessing of activity of daily living.

The basic activities of the elderly people in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand are sorted into ten activities which the elderly can perform by themselves. However, the result has found that 54.2 percent of the population were able to wash their face, comb their hair and dress. 53.5 percent were able to eat with no assistance and 52.3 percent were able to control bladder function including transfer and bathing without any assistance from a care taker.

Section 3. Assessing dementia.

The researcher used strict standards to separate the elderly population into two groups, normal and dementia. The level of cognitive ability was determined using

the CMT test. It was found that 36 elderly people had Dementia at 11.1 percent and scored less than 15 points.

Section 4. The study of the factors associated with dementia among elderly in Taiban Sub-District, Mueang Samutprakarn District, Samutprakarn Province, Thailand.

From the results of the relationship between the prevalence of dementia and determinants of dementia among elderly, the highest level of dependency were found in the age of 80 years and over at 50.0 percent. The age bracket of 70-79 years resulted in 33.3 percent dependency and the 60-69 years age range at 16.7 percent. Concerning gender, the result showed this was not statistically related to the level of dependency in dementia.

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 was 72.3 percent of those dependent who graduated from primary school and 27.7 percent had no education. For the relationship between reading ability and dependence in dementia sufferers found that 50.0 percent of those dependent were unable to read and semi illiterate and 50.0 percent who could read and write had the same dependency rate.

From the study on the population factors we have separated by family living arrangement and strength of care taker's personal relationship related to dementia. The strongest relationship was found between dementia and with their spouse at 83.3 percent and 16.7 percent lived with their family and relatives, 77.8 percent found that the relationship between care taker and dependence in dementia had a moderate

personal relation while 22.2 percent of those dependent had a strong personal attachment.

Population factors separated by working status, income source and sufficient income related to dementia, 88.8 percent of those dependent were unemployed and 11.1 percent 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 dependence in dementia.

Furthermore, on 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 percent and alcohol history at 77.7 percent. Therefore, 88.8 percent found no family history diagnosis of dementia and 44.4 percent were dependent regarding assessing activity of daily living but both had the strongest relationship to dementia.

Discussion

The result of the prevalence of dementia among the elderly in Taiban sub-district, Mueang Samutprakarn district, Samutprakarn province, Thailand will be described below following the structure of the research questionnaires.

1. The result of this research showed that the dementia prevalence rate of elderly people in Taiban Sub- District, Maung Samutprakan District, Samutprakran Province, Thailand was 36 elderly people with Dementia at 11.1 percent among 323 elderly people and scored less than 15 points and 50.0 percent were found in the ages 80 years

and over. Furthermore, gender was not statistically related to the level of dependency in dementia and it was in line with the study of Kukull, WA et al. (2002) that the result showed gender was not associated with dementia and Alzheimers disease onset. However, from the result of the rate of elderly people with Dementia in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand was at 11.1 percent , this compares to the results in Urban and Rural Communities in Thailand which were 27.6%,33-37% and 32.8% respectively (Kanokrat, S. 1999), in Ao Nang is 1.1% of the population showed (Ratikorn, B. 2003). In Tambon Salaya, Nakornparom Province the result was 4.8% (Kangsanarak, A, Srikiatkhachorn, A, and Kotchabhabi, N. 1992). In Klong Toey, Bangkok 1.8% of the population showed dementia (Phanthumchida, K et al. 1991) and 3.2% in Roiet province (Chantamoon, E, 1993).

The study of the research was also in line with the study of Suparus, W et al. (2008) that the results showed that among the 35 people with dementia the mean age was 67.9 + 8.9 years (45-88 years) among the population aged over 45 years in Chiang Mai, Thailand was 2.35 percent. Moreover, Guolong, L. (2009) showed the prevalence of dementia was 27 percent among 206 elderly community residents (age $\geq$ 60) in an urban primary care unit of Khon Kaen and Ratikorn, B. (2003) that the prevalence of dementia was 1.1 percent among 375 elderly in Ao Nang Krabi province with the higher age group. This means even though the results of this research due to the small size in the population, it shows that the greater the age then the greater the incidence of dementia; and these have been confirmed by Sowanna, O. (1998) and Chantamoon, E. (1993) who found the deterioration in brain cell replacement in persons over the age of 35, although other body functions can be normal however with., the advance in

age, people can adjust their body functions to suit their needs, but this is not possible to do with cognitive ability.

From the results of the above mentioned it can be concluded and discussed that the difference in the results of this research compared with other regions or with other research results could be that even the sample groups sizes are different it has the same meaning even though the patients are in a higher age bracket. This means in dept discussion this could also be considered regarding the difference in medical technology between regions, as also will occur between the Chronological differences in the studies which can affect the results. Additionally, differences in the environment, geography and lifestyle will all affect the results. However, this study only found a minimum of those with dementia. Lower pollution from factories and chemicals and the family oriented lifestyle are all positive factor contributing to those with dementia. Therefore, the risk of developing dementia will always occur with old age and this means with people living longer, the risk of dementia will be extremely high as well and from this conclusion, it agrees with Carrie, B et al. (2011).

2. The result of this research from using the Chula Mental Test (CMT) as the instrument showed that the factors associated with dementia of elderly people in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand were age, education level, work status, income, reading and writing ability, living arrangements, relation of care taker, personal disease, alcohol and smoking history and family history diagnosis of dementia and the result was in line with the study of Ratikorn, B. (2003) that the prevalence of dementia found in the higher age groups with no education, literacy, inability to read, living alone, unlimited care taking, out of

work and having the disease hemiplegia. Also the study of the research was in line with the study of Sarah, T, P, and Peter, M,R. (2009) that medial temporal lobe atrophy, female sex, and a family history of dementia were strongly associated with pre-stroke dementia and Carrie, B et al. (2011) that the current understanding of the likely importance of ischemic cerebrovascular disease and allied risk factors contributing to dementia and aging-related cognitive decline and it is reasonable to remain cautiously optimistic while continuing to work toward a full understanding of all factors determining the occurrence of dementia. Moreover, the study of the research was in line with the study of Ratikorn, B. (2003) and Jitapunkul, S et al. (1999) which showed that those who studied higher levels of neocortical synaptic density, which reinforces the findings that education can improve cognitive abilities. In contrast, elderly people who cannot read or write were more likely to exhibit dementia and this relationship can be explained by brain capacity and premorbid ability as continued development of the brain and higher understanding and awareness will result in fewer incidences of dementia. The results of the study of Ratikorn, B. (2003) and Jitapunkul, S et al. (1999) also showed that cognitive abilities of the unemployed were lower as they have fewer chances to develop the elderly abilities and the source of income coming from the family at subsistence level only propagates the abilities to remain in a state of dementia.

From the results of the above mentioned it can be concluded and discussed that the factors associated with dementia of elderly people such as age, education level, work status, income, reading and writing ability, alcohol and smoking history and family history are important to analyze the elderly with dementia. For example; the elderly who cannot read or write will be more likely to exhibit dementia. This relationship can be explained by brain capacity and premorbid ability as continued

development of the brain and higher understanding will result in fewer incidences of dementia. Also the elderly who studied higher levels of neocortical synaptic density will find that education can improve cognitive abilities. Also the elderly with dementia will exhibit the greatest occurrence of hemiplegia therefore this condition makes them dependent on performing activities in daily living and from this conclusion we can agree with Walter A et al. (2012) and Manoch, T. (2001) that among the various demographic data, householder, sources of income, income satisfaction, the presence of physical illness, health status exercise being consultant were correlated with depression and dementia in the elderly Thai community dwelling in Bangkok.

3. From the basic activities of daily living of elderly people in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand were sorted into ten activities included bowel and bladder function, grooming, toilet use, feeding, transfer, mobility, dressing, stairs and bathing and the result showed that the elderly can perform by themselves. 54.2 percent of the population were able to wash their face, comb their hair and dress. 53.5 percent were able to eat with no assistance and 52.3 percent were able to control bladder function including transfer and bathing without any assistance from a care taker. The study of the research was in line with the study of Naka, K. (1999) cited in Kumarnjan, W. (2000) that the most subjects (77.5%) were totally independent in managing daily living activities, 21.9% of subjects were partially dependent and only 0.6% of them were totally dependent. There are 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) and Arias-Merino, ED et al. (2012) and Kim Lim, B, Ec et al. (2005) that no independent association was found for good long distance eyesight, being a caregiver, living alone, age of leaving school, employment status, fear of falling, or perception of neighborhood safety and this means health problems were frequently reported to be barriers to physical activity and about half of older adults reported adequate physical activity. Overall risk factors were found for dependency: being a woman, being ≥75 years old, low education level, having at least one chronic disease, cognitive impairment, depression, previous history of disability, and having been a lifelong housewife.

The study of the research was also in line with the study of Ratikorn, B. (2003) that the proportion of the physical disabilities which is total dependence in basic activities of daily living (BADL) and for instrumental activities of daily living (IADL) and the study was in line with the stated from Hanighurst (cited in Vicki, N, 2003) that for older people they must meet some tasks to progress and adjust to declining health & physical strength, adjust to retirement & reduced income, adjust to the death of a spouse or family members, adjust to living arrangements different from what they are accustomed and adjust to pleasures of aging such as increased leisure & playing with grandchildren. Also the study of the research was in line with the study of Walter, A, R et al. (2012) that given the current understanding of the likely importance of ischemic cerebrovascular disease and allied risk factors contributing to dementia and aging-related cognitive decline.

From the results of the above mentioned it can be concluded and discussed 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, Mueang 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 in that it excludes elders' physical well-being, past lifestyle, and personality attributes. The researchers found that the elderly people in Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand who have exhibited dementia lived with their family, had unlimited caretaking and strong relationships with their caretaker. 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 the Taiban Sub-District, Mueang Samutprakan District, Samutprakran Province, Thailand should be made to get a clearer picture which agrees with Eliopoulos, C. (2010).

Recommendations

1. For research

Further research on dementia would have to be a countrywide survey to determine the national prevalence of dementia. Other researches would have to focus on risk factors of dementia as well as protective factors.

2. For intervention

From this study, there are many factors associated with dementia such as age, education level, working status, income level, alcohol consumption, smoking and so on. The education programs for the elderly to prevent dementia have to be

implemented. Promote campaigns to stop or prevent alcohol and tobacco abuse in the elderly. The intervention of these programs would provide a study on their effectiveness to prevent dementia. Producing a program to prevent risk factors in aging especially to encourage elderly to do suitable activities such as physical exercise for example; aerobic exercises, walking, jogging, swimming and biking will significantly reduce the risk of dementia.

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APPENDICE

Appendix 1

Questionnaire (In Thai)

ส่วนที่ 1 แบบสัมภาษณ์ข้อมูลทั่วไป

<u>คำชี้แจง</u> : ให้ผู้สัมภาษณ์ถามผู้สูงอายุ แต่ละข้อเกี่ยวกับข้อมูลทั่วไป และโปรดทำเครื่องหมาย ✓ ในหน้าข้อความหรือเติมคำในช่องว่างตามที่ผู้สูงอายุตอบแบบสัมภาษณ์ตามความเป็นจริง

1. อายุ……..ปี
2. เพศ

   1( ) ชาย 2( ) หญิง
3. ระดับการศึกษา

   1( ) ไม่ได้เรียน 2( ) ประถมศึกษาตอนต้น (ป.4)

   3( ) ประถมศึกษาตอนปลาย 4( ) มัธยมศึกษาตอนต้น

   5( ) มัธยมศึกษาตอนปลาย 6( ) อนุปริญญาหรือเทียบเท่า

   7( ) ปริญญาตรี 8( ) สูงกว่าปริญญาตรี
4. ปัจจุบันท่านยังทำงานอยู่หรือไม่

   1 ( ) ไม่ทำ 2( ) ทำ
5. ความเพียงพอของรายได้

   1( ) เพียงพอและเหลือเก็บ 2( ) เพียงพอ แต่ไม่เหลือเก็บ

   3( ) ไม่เพียงพอ
6. ความสามารถในการอ่าน

   1( ) อ่านได้ สบาย/คล่อง 2( ) อ่านได้ค่อนข้างลำบาก

   3( ) อ่านไม่ออก
7. ความสามารถในการเขียน

   1( ) เขียนได้ สบาย/คล่อง 2( ) เขียนได้ค่อนข้างลำบาก

   3( ) เขียนไม่ได้

8. ปัจจุบันท่านอาศัยอยู่กับใคร

1( ) อยู่ตามลำพัง 2( ) คู่สมรสและ/บุตร

3( ) ญาติ 4. อื่นๆ (ระบุ)……..

9. ลูกหลาน หรือญาติพี่น้องของท่านแสดงความเอาใจใส่ห่วงใยท่านมากน้อยเพียงใด

1( ) ไม่เอาใจใส่เลย 2( ) เอาใจใส่น้อย

3( ) เอาใจใส่พอสมควร 4( ) เอาใจใส่มาก

10. ท่านมีปัญหาทางสุขภาพร่างกายหรือไม่

1( ) ไม่มี 2 ( ) มี

11. ปัญหาสุขภาพกายของท่าน คือ (ตอบได้มากกว่า 1 ข้อ)

1( ) การได้ยิน 2( ) การมองเห็น

3( ) ปวดข้อ กล้ามเนื้อ 4( ) วิงเวียนศีรษะ

5 ( ) นอนไม่หลับ 6( ) ความดันโลหิตสูง

7( ) เบาหวาน 8( ) อัมพฤกษ์/อัมพาต

9( ) อื่นๆ.....

12. ท่านมีประวัติการดื่มสุราหรือไม่

1( ) ใช่ 2( ) ไม่ใช่

13. ท่านมีประวัติการสูบบุหรี่หรือไม่

1( ) ใช่ 2( ) ไม่ใช่

14. คนในครอบครัวของท่านมีประวัติเป็นโรคสมองเสื่อมหรือไม่

1( ) มี 2( ) ไม่มี

สวนที่ 2 ข้อคำถามเพื่อประเมินสมรรถภาพเข้าปฏิบัติการขั้นพื้นฐานของผู้สูงอายุ โดยใช้ดัชนีบารเธล เอดีแอล (Barthel ADL index)

<u>คำชี้แจง</u> : ให้ผู้สัมภาษณ์ถามผู้สูงอายุแต่ละข้อเกี่ยวกับกิจกรรมที่ผู้สูงอายุทำได้จริงและโปรดทำเครื่องหมาย หน้าข้อความตามที่ผู้สูงอายุทำได้

1. ผู้สูงอายุรับประทานอาหาร ด้วยตนเองได้หรือไม่
    0( ) ไม่สามารถตักอาหารเข้าปากได้ต้องมีคนป้อนให้
    5( ) ตักอาหารได้ แต่ต้องมีคนช่วย เช่น ช่วยใช้ช้อน
    10( ) ตักอาหารและชวยตนเองได้เป็นปกติ
2. ผู้สูงอายุล้างหน้า หวีผม โกนหนวด ด้วยตนเองหรือไม่
    0( ) ทำไม่ได้ ต้องมีคนช่วย
    5( ) ทำได้เอง (รวมทั้งที่ทำได้เองถ้าเตรียมอุปกรณ์ไว้ให้)
3. ผู้สูงอายุลุกจากที่นอนหรือจากเตียงไปยังเกาอี้หรือไม่
    0( ) ไม่ได้ลุก (นอนอยู่ตลอดหรือต้องใช้คนอุ้มเพื่อเคลื่อนย้าย)
    5( ) ลุก แต่ต้องมีคนคอยดูแลหรือช่วยผยุง 2 คน
    10( ) ลุกแต่ต้องมีคนคอยดูแลเพื่อความปลอดภัย
    15( ) ลุกได้ด้วยตนเองและไม่ต้องมีคนคอยดูแลหรือช่วยผยุง
4. ผู้สูงอายุใช้ห้องสุขาเพื่ออุจจาระ ปัสสาวะหรือไม่
    0( ) ช่วยตัวเองไม่ได้
    5( ) ทำเองได้บ้าง (อย่างน้อยทำความสะอาดตนเองได้หลังจากเสร็จธุระ) แต่ต้องการความช่วยเหลือในบางสิ่ง
    10( ) ช่วยตัวเองได้ดี

5. ผู้สูงอายุเดินเคลื่อนที่หรือถัดภายในห้องภายในบ้านหรือไม่

    0( ) เคลื่อนที่ไปไหนไม่ได้

    5( ) ต้องใช้รถเข็นช่วยตัวเองให้เคลื่อนที่ได้เอง (ไม่ต้องมีคนเข็นให้) และจะต้องเอาขาออกมุมห้องหรือประตูได้

    10( ) เดินหรือเคลื่อนที่โดยมีคนช่วย เช่น ผยุงหรือบอกให้ทำตาม หรือต้องให้ความสนใจดูแลเพื่อความปลอดภัย

    15( ) เดินหรือเคลื่อนที่ได้เอง

6. ผู้สูงอายุสวมใส่และถอดเสื้อผ้าเองหรือไม่

    0( ) ต้องมีคนสวมใส่ให้ ช่วยตัวเองไม่ได้หรือได้น้อย

    5( ) ช่วยตัวเองได้ร้อยละ 50 ที่เหลือต้องมีคนช่วย

    10( ) ช่วยตัวเองได้ดี

7. ผู้สูงอายุขึ้นลงบันไดหรือไม่

    0( ) ไม่สามารถขึ้นลงได้เอง

    5( ) ต้องการคนช่วย (คอยบอก, ช่วยจับอุปกรณ์ช่วย)

    10( ) ขึ้นลงได้เอง (ถ้าต้องใช้เครื่องช่วยเดินเช่น walker ต้องเอาขึ้นลงได้ด้วย)

8. ผู้สูงอายุอาบน้ำหรือเช็ดตัวเองหรือไม่

    0( ) ต้องมีคนช่วยหรือทำให้

    5( ) ทำได้เองโดยไม่ต้องมีคนช่วย

9. ผู้สูงอายุกลั้นการถ่ายอุจจาระได้หรือไม่

    0( ) กลั้นไม่ได้ หรือต้องการสวนอุจจาระอยู่เสมอ

    5( ) กลั้นไม่ได้ เป็นบางครั้ง (เป็นน้อยกว่า 1 ครั้ง/สัปดาห์)

    10( ) กลั้นได้เป็นปกติ

10. ผู้สูงอายุกลั้นปัสสาวะได้หรือไม่

    0( ) กลั้นไม่ได้หรือใช้สายสวนปัสสาวะแต่ไม่สามารถดูแลเองได้

    5( ) กลั้นไม่ได้บางครั้ง (เป็นน้อยกว่าวันละ 1 ครั้ง)

    10( ) กลั้นได้เป็นปกติ

ส่วนที่ 3 แบบทดสอบสภาพจิตจุฬาฯ (Chula Mental Test : CMT)

<u>คำชี้แจง</u> : ให้ผู้สัมภาษณ์ถามผู้สูงอายุ แต่ละข้อเกี่ยวกับข้อมูลทั่วไป และโปรดทำเครื่องหมายใน หน้าข้อความ หรือวงกลมตามคะแนนที่ผู้สูงอายุตอบคำถามได้ตามความเป็นจริง

คำถาม	บันทึกคำตอบ	คะแนน	คำตอบ/เกณฑ์ให้คะแนน
1. ปีนี้คุณอายุเท่าไหร่			ถูก = 1 , ผิด = 0
2. ขณะนี้กี่โมง			ถูก = 1 , ผิด = 0 (อาจคลาดเคลื่อนได้ 1 ชั่วโมง)
3. ผู้ประเมินพูดคำว่า “ร่ม, กระทะ, ประตู” ให้ฟังช้าๆ ชัดๆ 2 ครั้ง แล้วบอกให้ผู้ถูกทดสอบทวนชื่อทั้งสามดังกล่าวทันที			- ไม่ถูก = 0 คะแนน - ถูก 1 ชื่อ = 1 คะแนน - ถูก 2 ชื่อ = 2 คะแนน - ถูก 3 ชื่อ = 3 คะแนน
4. เดือนนี้เดือนอะไร?			- ถูก = 1 , ผิด = 0 (อาจตอบเป็นเดือนไทยหรือเดือนสากลก็ได้)
5. คนนั้นเป็นใคร			- ไม่ถูก = 0 คะแนน - ถูก 1 ชื่อ = 1 คะแนน - ถูก 2 ชื่อ = 2 คะแนน (ให้ถามถึงบุคคล 2 คน เช่น แพทย์, พยาบาล หรือบุคคลใกล้เคียง)
6. ข้าว 1 ถัง มีกี่ลิตร / กี่กิโลกรัม			20 ลิตร/15 กิโลกรัม - ไม่ถูก = 0 คะแนน - ถูก 1 หน่วย = 1 คะแนน - ถูก 2 หน่วย = 2 คะแนน
7. ให้ผู้ถูกทดสอบทำตามคำสั่งที่บอกต่อไปนี้ “ให้ตบมือสามทีแล้วกอดอก”			ผู้ถูกทดสอบ : ตบมือ 3 ครั้งแล้วใช้มือกอดอกตนเอง ให้ 1 คะแนน ถ้าทำครบทุกขั้นตอน

คำถาม	บันทึกคำตอบ	คะแนน	คำตอบ/เกณฑ์ให้คะแนน
8. จงบอกความหมายของสุภาษิตต่อไปนี้ “หนีเสือปะจระเข้”			ถูก = 1 , ผิด = 0 ตัวอย่างคำตอบที่ถูกต้อง 1 หนีจากสิ่งที่ไม่ดีไปพบสิ่งที่ไม่ดีอีก 2 หนีจากสถานการณ์หรือบุคคลอันตรายไปพบสถานการณ์หรือบุคคลที่เป็นอันตรายอีก 3 หนีจากสิ่งที่เลวร้ายไปพบสิ่งที่เลวร้ายกว่าเดิม
9. บอกผู้ถูกทดสอบว่า จงฟังประโยคต่อไปนี้ให้ดี เมื่อฟังจบแล้วให้พูดตามทันที “ฉันชอบดอกไม้ เสียงเพลงแต่ไม่ชอบหมา”			- 0 คะแนน ถ้าพูดผิดแม้แต่หนึ่งคำ - ให้ 1 คะแนน ถ้าพูดได้ถูกต้องตามลำดับทั้งประโยค
10. ถามผู้ถูกทดสอบว่า “ถ้าลืมกุญแจบ้านจะทำอย่างไร”			- ให้ 1 คะแนน ถ้าคำตอบมีเหตุผลเหมาะสม โดยที่คำตอบนั้น แสดงถึงความพยายามที่จะแก้ไขปัญหาด้วยความเป็นไปได้และไม่ก่อให้เกิดความเสียหาย ตัวอย่างคำตอบที่ได้คะแนน 1. ทดลองนำกุญแจอันอื่นหรือวัสดุที่ใช้แทนได้ที่มีอยู่ในบริเวณใกล้เคียงมาลองไขกุญแจ 2. ตามช่างทำกุญแจ (ถ้าอยู่ไม่ไกลนัก) 3. ไปขอกุญแจที่ผู้อื่นมีเก็บไว้ (เช่นญาติ) ในกรณีที่อยู่ไม่ไกลจากบ้าน 4. หาทางเข้าบ้าน (ถ้าสามารถทำได้)หรือขอความช่วยเหลือจากผู้อยู่ใกล้เคียง -ให้ 0 คะแนน ถ้าคำตอบไม่มีเหตุผลเหมาะสม

คำถาม	บันทึกคำตอบ	คะแนน	คำตอบ/เกณฑ์ให้คะแนน
10. ถามผู้ถูกทดสอบว่า “ถ้าลืมกุญแจบ้านจะทำอย่างไร” (ต่อ)			ตัวอย่างคำตอบที่ไม่ได้คะแนน 1. ไม่รู้จะทำอย่างไร นั่งรอจนกว่าจะมีคนอื่นกลับมา 2. พังประตูเข้าไป 3. ไปเอากุญแจที่บุคคลอื่นในบ้านเก็บไว้แต่ไกลมาก เช่น อยู่ต่างจังหวัด หรือใช้เวลาเดินทางนานมาก
11. บอกให้ผู้ถูกทดสอบนับเลขจาก “ 10-20”			10,11,12,13,14,15,16,17,18,19,20 - 0 คะแนน ถ้านับผิดแม้แต่จำนวนเดียว - 1 คะแนน ถ้าสามารถนับได้ถูกต้องตามลำดับทั้งหมด
12. ชี้ไปที่ นาฬิกา แล้วถามว่าคืออะไร?/เรียกว่าอะไร ชี้ไปที่ปากกา แล้วถามว่าคืออะไร/เรียกว่าอะไร			- ไม่ถูก = 0 คะแนน - ถูก 1 ชื่อ = 1 คะแนน - ถูก 2 ชื่อ = 2 คะแนน
13. บอกให้ผู้ถูกทดสอบลบเลขทีละ 3 จาก 20 ทั้งหมด 3 ครั้ง - 20-3 = a - 17-3 = b - 14-3 = c			-ให้คิดในใจ a = 17 b = 14 c = 11 - ให้คะแนนตามจำนวนเลขที่ลบได้ถูกต้อง 0 = ไม่ถูกแม้แต่ครั้งเดียว 1 = ถูก 1 จำนวน 2= ถูก 2 จำนวน 3 = ถูก 3 จำนวน
รวมคะแนนทั้งหมด (ต่ำสุด = 0 คะแนน สูงสุด = 19 คะแนน)			
เปรียบเทียบกับเกณฑ์ น้อยกว่า 15 คะแนน หรือ ต่ำกว่า น่าจะมีความผิดปกติของ Cognitive function มากกว่า 15 คะแนน หรือ มากกว่า Cognitive function ปกติ			

CURRICULUM VITAE

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WORKPLACE	:	Red cross Rehabilitation Thailand
POSITION	:	Occupational Therapist
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