

ปัจจัยที่มีผลต่อภาวะซึมเศร้าหลังภาวะน้ำท่วมในผู้สูงอายุที่อาศัยอยู่ศูนย์พัฒนาการจัดสวัสดิการ
สังคมผู้สูงอายุบ้านบางแค กรุงเทพมหานคร ประเทศไทย

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FACTORS INFLUENCING DEPRESSION AMONG ELDERLY
IN BAN BANGKHAE NURSING HOMES, BANGKOK,
THAILAND AFTER FLOODING

Miss Diana Somporn

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for the Degree of Master of Public Health Program in Public Health
College of Public Health Sciences
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นางสาวไฉแอนน่า สมพร ปัจจัยที่มีผลต่อภาวะซึมเศร้าหลังจากภาวะน้ำท่วมในผู้สูงอายุที่อาศัยอยู่ศูนย์พัฒนาการจัดสวัสดิการสังคมผู้สูงอายุบ้านบางแคกรุงเทพมหานคร ประเทศไทย (FACTORS INFLUENCING DEPRESSION AMONG ELDERLY IN BAN BANGKHAE NURSING HOMES, BANGKOK, THAILAND AFTER FLOODING) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: Professor Karl J. Neeser, 85 หน้า.

ความเป็นมา: ภาวะซึมเศร้าเป็นภาวะความคิดผิดปกติที่พบบ่อยทางด้านจิตใจ โรคที่มีปัญหาสุขภาพทางจิตใจซึ่งเป็นผลที่เกี่ยวข้องเนื่องจากปัญหาทางกาย อารมณ์ และความคิด ส่วนมากจะพบในกลุ่มผู้สูงอายุโดยเฉพาะอย่างยิ่งคนที่อาศัยอยู่ในสถานสงเคราะห์คนชรา วัตถุประสงค์การศึกษาวิจัยในครั้งนี้เพื่อ ศึกษาความชุกของภาวะซึมเศร้าในกลุ่มผู้สูงอายุที่อาศัยอยู่ในสถานสงเคราะห์คนชราบ้านบางแค กรุงเทพมหานคร ประเทศไทยและศึกษาถึงปัจจัยที่เกี่ยวข้องกับภาวะซึมเศร้า

วิธีการศึกษา : เป็นการศึกษาวิจัยเชิงพรรณนา ภาคตัดขวาง จำนวนกลุ่มตัวอย่าง 237 คน โดยมีอายุตั้งแต่ ปีขึ้นไป 60 อาศัยอยู่ในสถานสงเคราะห์คนชราบ้านบางแค, กรุงเทพฯ, ประเทศไทย เครื่องมือที่ใช้ในการศึกษาค้นคว้าครั้งนี้โดยใช้เครื่องมือการวัดภาวะซึมเศร้าของผู้สูงอายุไทย TGDS, UCLA Loneliness Scale (ULS) และแบบสอบถามอื่นๆที่เกี่ยวข้อง สถิติที่ใช้ในการวิจัย สมการการถดถอยเชิงเส้นหลายตัวแปร (Multivariable linear regression) เพื่อศึกษาใช้ในการค้นหาความสัมพันธ์ระหว่างภาวะซึมเศร้าและปัจจัยอื่นที่เกี่ยวข้อง โดยมีนัยสำคัญทางสถิติ (P-Value) 0.05

ผลการศึกษา: อัตราความชุกของภาวะซึมเศร้าที่สำคัญมากคือร้อยละ และอัตราความชุกของภาวะซึมเศร้าเล็กน้อยคือ ร้อย 7.2 32.1 และ 33.873 (The adjusted R Square is 0.413, and F value is 33.873 (p value <0.001) and the Durbin-Watson is 1.746). สภาวะความเหงา ($\beta = 0.54, P < 0.001$) อาการนอนไม่หลับ ($\beta = 1.85, P <$ และหลีกเลี่ยงการเข้าร่วมกิจกรรมทางสังคม ($0.002(\beta = -0.39, P < 0.001$) การได้รับวิตามินดีไม่เพียงพอ ($\beta = -1.45, P <$ และการออกกำลังกาย ($0.014(\beta = -1.46, P < 0.021$) โดยมีปัจจัยที่มีความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติที่เกี่ยวข้องกับภาวะซึมเศร้าที่สัมพันธ์กับการถดถอย (β) คือ อาการนอนไม่หลับเหงา กิจกรรมการออกกำลังกาย การได้รับวิตามินดีไม่เพียงพอ และการหลีกเลี่ยงไม่เข้าร่วมกิจกรรมทางสังคมพบว่าปัจจัยที่โดดเด่นร่วมกับภาวะซึมเศร้าในกลุ่มผู้สูงอายุที่อาศัยอยู่ในสถานสงเคราะห์คนชราบ้านบางแค

ข้อจำกัดในการศึกษา: ภาวะน้ำท่วมเป็นภัยพิบัติจากธรรมชาติ ซึ่งไม่สามารถควบคุมได้และเกิดขึ้นในช่วงเดือนตุลาคมถึงเดือนธันวาคม พ.2554.ศ.อาจจะมีผลต่อการประเมินอัตราความชุกของภาวะซึมเศร้าสูงขึ้น

สรุป: อัตราความชุกของภาวะซึมเศร้าในกลุ่มผู้สูงอายุ ร้อยละ ซึ่งอยู่ในระดับสูง โดยจากการเปรียบเทียบผลการ 39.1 ศึกษาวิจัยในผู้สูงอายุที่อาศัยอยู่ในชุมชน ประเทศไทยพบว่า มีภาวะอาการนอนไม่หลับ ภาวะความเหงา การหลีกเลี่ยงไม่เข้าร่วมกิจกรรมทางสังคม กิจกรรมการออกกำลังกาย และการได้รับวิตามินดีไม่เพียงพอ พบว่าเป็นปัจจัยสำคัญที่มีผลต่อภาวะซึมเศร้าในกลุ่มผู้สูงอายุที่อาศัยอยู่ในสถานสงเคราะห์คนชราบ้านบางแค ผลการศึกษาวิจัยครั้งนี้จะช่วยในการพัฒนากลยุทธ์และแนวทางในการป้องกันการรักษาของผู้สูงอายุในสถานสงเคราะห์คนชราต่อไป

สาขาวิชา: สาธารณสุขศาสตร์.....

ลายมือชื่อนิสิต:

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DIANA SOMPORN: FACTORS INFLUENCING DEPRESSION AMONG
ELDERLY IN BAN BANGKHAE NURSING HOME, BANGKOK,
THAILAND AFTER FLOODING. ADVISOR: PROF. KARL NEESER, Ph.D.,
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ABSTRACT

Background: Depression is the most common mental health disorder, a disease that involves the body, mood and thoughts. It is often under diagnosed, especially among elderly people in the nursing home setting. The objective of this study is to determine the prevalence of depression among the elderly people in the nursing home setting, Bangkok, Thailand and identify factors associated with depression.

Methods: Cross-sectional study was conducted among 237 participants above the age of 60 at Ban Bangkhae nursing homes; Bangkok Thailand, The measurement tools consisted of Thai Geriatric Depression Scale, UCLA Loneliness Scale (ULS) and other related questionnaires. Multivariable linear regression was used to find association between depressive symptoms and factors with statistical significant of each analysis against the p-value 0.05.

Results: The prevalence of major depression was 7.2% and the prevalence of minor depression was 32.1%. The adjusted R Square is 0.413, and F value is 33.873 (p value <0.001) and the Durbin-Watson is 1.746. Loneliness ($\beta = 0.54, P < 0.001$), Insomnia ($\beta = 1.85, P < 0.002$), Social Activity ($\beta = -0.39, P < 0.001$), Inadequate of Vitamin D ($\beta = -1.45, P < 0.014$), and Physical Activity ($\beta = -1.46, P < 0.021$) associated with depression where (β) is the regression coefficient. Insomnia, loneliness, Physical Activity, Inadequate Vitamin D and Social Activity were found to be the prominent factors with depressive symptoms among Ban Bangkhae nursing homes setting.

Limitation: Unforeseen flooding natural disaster from October and December 2011 may have overestimate of the prevalence of depression.

Conclusion: The prevalence of depressive symptoms 39.1% was high in comparing to the findings in Thai community dwelling elderly. Insomnia, loneliness, Lack of social Activity, Physical Activity and Inadequate Vitamin D were identified as important factors to emphasize when assessing for depression in the nursing home setting. The findings of this study will assist in developing adequate prevention and treatment strategies among the elderly in the nursing home population.

Field of Study: Public Health

Student's Signature:

Academic Year: 2011

Advisor's Signature:

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Chapter I

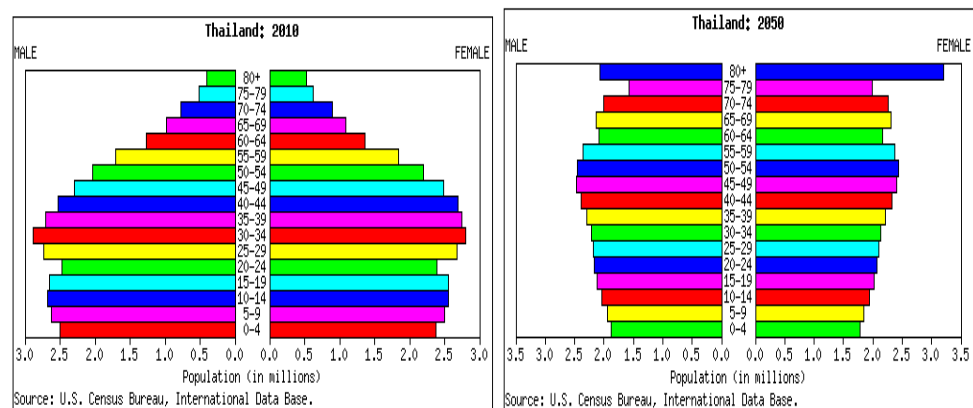
Introduction

1.1 Background and Rationale:

1.1.1 Aging Population

Advancements in medicine, health care service, and technology have led to an increase in human life expectancy. These changes will result in an increase in the proportion of elderly in the population, in both developed and developing countries. An aging population is rising trend being faced by many countries around the world.

Thailand will experience a rapid increase in elderly population in accord with the demographic transition associated with declining birth and death rates. In 1960, there were 1.5 million elderly within the population, approximately 5.4% of the total population. By 2009 the number of elderly increased to 7.6 million. Thailand became an aging society in 2009 as the proportion of people 60 years or older became more than 10% of the total population. The population of Thai elderly was projected to increase to 17.8 million or 25% of the total population by 2030 (Chuharas et al., 2009).



[Table 1: Thailand Population Pyramid]

In view of the trend of an increasingly aging population, the Thai government and Ministry of Public Health must work to stabilize population growth and implement proper policy to support the rising aging society.

1.1.2 Depression Among Elderly

Depression is the most common mental health disorder, a disease that involves the body, mood and thoughts. Depression is a spreading health problem that affects people of all ages worldwide. It is a common mental disorder that results in a depressed mood, loss of interest in pleasure, feelings of guilt, low self-worth, disturbed sleep, loss of appetite, low energy, and poor concentration. It was the fourth leading contributor to the global burden of disease (DALYs) in 2000 and is projected to move up to 2nd place in the rankings by 2020 (WHO, 2011). Especially among elderly people, physicians do not always recognize depression because it is masked by somatic complaints or incorrectly diagnosed with co-morbid conditions, such as physical disability, dementia, and anxiety (Baldwin et al., 2008). General population surveys conducted in many parts of the world, including some South East Asia Regions (SEAR), have revealed a high rate of elderly depression with a lifetime risk of 7-12% for men and 2-25% for women (WHO, 2006).

According to the Thai Department of Mental Health, there is a strong association between aging and depression. In Thailand as in the rest of the world, it is often undiagnosed, even though it ranks as the fourth most prominent disease. The prevalence of depression in the elderly in Thailand is three times more frequent than the rest of the population (Eakaorakorn, 2009).

1.1.3 Living Arrangements of Thai Elderly

As there has been an increase in the Thai elderly population, living arrangements have shifted toward a smaller family structure. Unlike many Western cultures, in Thailand it is deeply ingrained in the culture for adult children to care for and support their elderly parents. Parents believe their adult children are responsible for caring for the parents as repayment for having raised the children. This view is shared by their children, who feel a moral obligation to support and care for their parents out of gratitude (Knowdel et al., 1995). Like in most other Asian countries, living arrangements for Thai elderly are typically with their children or the extended family. Thai elderly view their living arrangements with their children and grandchildren as associated with, or even

defining, their own happiness and well-being. In light of this association, an unfortunate 19% decline over 21 years in elderly living with their children has occurred. This may be due to rapid growth in Thailand's aging population, as well as socio-economic changes throughout the population (Jitapunkul et al., 2001). As a result, some children may not be able to or are unwilling to care for their parents, especially among the low-income families (Chyvan et al., 1997).

As a last resort, elderly whose families cannot or will not care for them can turn to temples for help. Institutional residences for the aged or nursing homes are another alternative. Living in special institutional residences for the aged, including nursing homes, is very rare in Thailand because "many [believe] that the residents in these homes lacked freedom of movement and thus equated them with prisons." Most Thai elderly view nursing home living as being abandoned by their adult children, which can result in grief, sadness, and loneliness: all major factors of depression (Knodel et al., 1995).

Due to the increase of abandoned elderly, the Department of Public Welfare under the Ministry of Labor and Social Welfare must sponsor and provide institutional residences for "elderly who are not medically handicapped, but are unable or unwilling to live alone or with children or relatives." There are now about 25 government residential homes in Thailand. The first residential care institution for elderly in Thailand is Ban Bangkhuae, established on June 1, 1953 (Division of Social Development and Welfare, 2007).

1.1.4 Depression and Nursing Homes

Due to the aging population increase, the number of nursing homes will increase (Jongelis et al., 2004). However, living in special institutional residences for the aged, including nursing homes, is very rare in Thailand because "many [believe] that the residents in these homes lacked freedom of movement and thus equated them with prisons" (Knodel et al., 1995). Despite the advantages that nursing homes may offer in term of providing shelter, physical aid, and activities, being in a place other than their own home or with their children requires adaptation and a change in expectations. Elderly

people want to maintain independence for as long as they can. In Thai culture, it is normal for the elderly to depend on their adult children for support for their social, emotional, and economic needs. Even when they depend on their children to meet these critical needs, they experience greater independence than they would in a nursing home. Currently, the finding suggested the consequence of mortality change have had a great impact on elderly living arrangements. Due to this impact, Thai elderly will likely to face several challenges of living transition to other long term institutes other than their own homes or children' home, as well as emotional challenges of absence of family intimacy and high expectation in response to Thai cultural norm.

Despite its high prevalence, depression among the elderly in nursing homes is often overlooked. It is important to identify these patients in order to evaluate their need for special care and treatment. Awareness of to the prevalence of depression and the factors influencing the rate of depression will be of great importance in developing adequate prevention and treatment strategies for the future aging society. Furthermore, there are not sufficient studies highlighting factors influencing depression among the elderly, especially in nursing homes and long-term care settings.

1.2 Research Objectives:

1. To determine the prevalence of depression among the elderly in Ban Bangkhae. Nursing home in Bangkok, Thailand.
2. To assess the factors influencing depression among the elderly living in Ban Bangkhae, a nursing home in Bangkok, Thailand.

1.3 Research Questions:

1. What is the prevalence of depression among the elderly population of Ban Bangkhae nursing home, Bangkok, Thailand?
2. What are the factors influencing depression among the Thai elderly population in nursing homes in Bangkok, Thailand?

1.4 Research Hypothesis:

There are associations between socio-demographic factors, chronic illness, insomnia, loneliness, social activity, physical activity, and receiving vitamin D with the prevalence of depression among the elderly in Ban Bangkhae nursing home.

1.5 Operational Definitions

The following are terms used in this study of factors of depression in nursing homes in Bangkok. They are defined here for better understanding. *Variables for the study can be classified into 2 categories, which are:*

1.5.1 Independent Variables

Socio-demographic factors: includes factors such as age, gender, marital status, educational background, income and income satisfaction.

Age: refers to how old the patient is at the time of the data collection.

Thai elderly: refers to a Thai person of the sampling group who is living in nursing home whose age is 60 or more.

Sex: refers to male or female

Educational level: refers the highest education level of elderly person, classified as: no education, under 6th grade, under 12th grade, Bachelor's degree or higher.

Financial status: amount of money one generated per month. In this study, the level of income is classified as: not sufficient, sufficient but not enough for saving, or sufficient and enough for saving.

Family history: refers to whether any family members (blood relatives) suffered from depression in the past, as diagnosed by a physician.

Marital status: elderly marital status, in this study classified as: single, married, widow/widower, or divorced/separated.

Chronic illness: refers to whether the elderly person suffers from a chronic illness such as cardiovascular disease, respiratory disorders, cancer, diabetes, or neurological

disorders, particularly Parkinson's disease and the occurrence of a stroke (Hankin et al., 2001).

Insomnia: refers to a sleep disorder characterized by difficulty falling or staying asleep. Insomnia may be due to poor quality or quantity of sleep. It is more common in adults and its frequency increases with age (Medicinenet, 2011). In this study, participants who answer "occasionally or always" on two or more items and have significant daytime impairment, the insomnia requires further evaluation and management (Center for Sleep, 2007).

Loneliness: refers to feelings of distress that occur when one's social relationships are perceived as being less satisfying than what is desired (Louise, 2009). In this study, participants who scored less than 20 are not lonely (Russel, 1996).

Nursing home: refers to a residential facility for older people who have limited capacity to carry out the activities of daily living, and are strained to meet their own emotional and social needs (Brodsky, Habib & Hirschfeld, 2003).

Social Activity: Meaningful, communication-driven and positive social interaction process with progressive reciprocal influence of actors, partners, and situational demands (Beck et al., 1979). Such examples: flower arrangement, group exercise, Thai dancing, and craft making with others. In this study, participants who answered, "never" at least once will be considered to be lacking social activity compared with participants who answered "occasionally" and "always."

Physical Activity: Any bodily movement produced by skeletal muscles that requires energy expenditure. Physical activity includes all activities that you do each day, including:

- a) Sports or recreational activities like walking groups and yoga or aerobics classes.
- b) Unstructured lifestyle activities such as household chores, gardening, and cycling for fun.

Older adults should do at least 150 minutes of moderate/vigorous intensity aerobic physical activity each week, distributed throughout the week. In this study, this can be

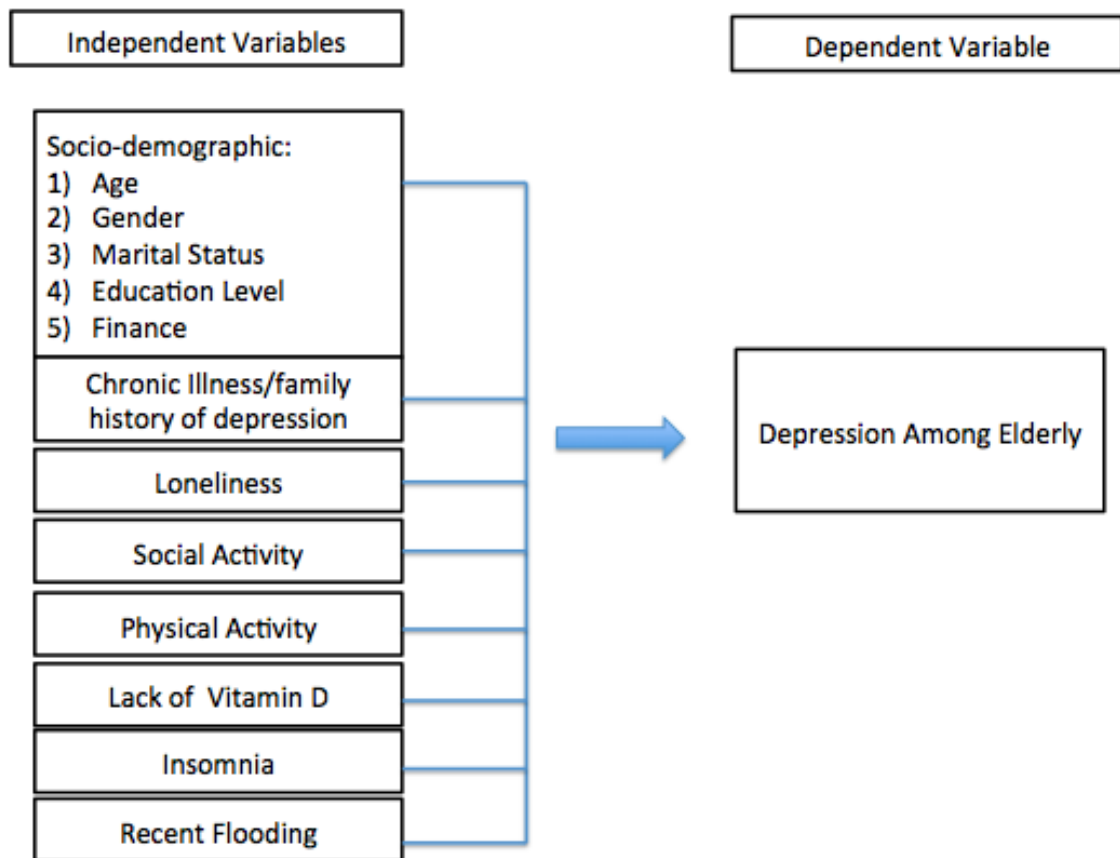
classified as the following: participants must answer yes and exercise more than twice a week (WHO, Physical Activity and Older Adults, 2011).

Vitamin D: a fat-soluble vitamin naturally present in very few foods. It is available added to some foods and as a dietary supplement. It is also produced endogenously when ultraviolet rays from sunlight strike the skin and trigger vitamin D synthesis. For ages 51-70, the recommended intake is 600 IU (15 mcg). It has been suggested by some vitamin D researchers that approximately 5-30 minutes of sun exposure between 10 am and 3 pm at least twice a week to the face, arms, legs, and back without sunscreen usually allows sufficient vitamin D synthesis. Vitamin D deficient diets are associated with milk allergies, lactose intolerance, and veganism. For this study, sun exposure for 5-30 minutes between 10 am to 3 pm at least twice a week indicates adequate vitamin D. In this study, the most important classification comes from sun exposure. For adequate intake, participants must answer yes for outdoors, from 10-3 pm, or received vitamin D supplement (National Institution of Health, 2011).

1.5.2 Dependent Variables

Depression: refers to a common mental disorder that presents as depressed mood, loss of interest in pleasure, feelings of guilt, low self-worth, disturbed sleep or appetite, low energy, and poor concentration. These problems can become chronic or recurrent and lead to substantial impairment in an individual's ability to take care of his or her everyday responsibilities (WHO, 2011).

1.5 Conceptual Framework



Chapter II

Literature Review:

To complete a research on factors influencing depression among elderly in Ban Bangkhae nursing homes, Bangkok, Thailand after flooding, the researcher reviewed on several documents, concepts, theories and related researches.

2.1 Depressions Among nursing homes

Depression and the behavioral symptoms associated with dementia are two of the most significant mental health issues for nursing home residents (Snowden et al., 2003). The prevalence of depression in patients aged 65 years may be as high as 40% in hospitalized and nursing home patients in comparing to 8-15% in the community setting (Leon et al., 2003).

Among community dwelling participants, studies have shown to have a lower prevalence than studies where participants were from institutions such as residential care, nursing home and care facilities. A study in Australia of 22,252 samples, found 34.7% of elderly care residents suffered from depression in comparison to 8.2% among community-dwelling older people (Snowdon & Flemining, 2008).

A longitudinal study was conducted using the Aged in Home Care database in 11 European countries. After they adjusting for potential confounders, the risk of nursing home admission was significantly higher for depressed participants (Onder G et al., 2007).

A cross-sectional study was done in 14 nursing homes in North West of the Netherlands, 333 nursing home patients living on somatic wards of Depressive symptoms were measured and found that the prevalence of depression in the nursing home population was very high, the rate was found three to four times higher than in the community-dwelling elderly. Associated risk indicators with depression were found: age below 80, functional limitations, lack of social support and perceived inadequacy of care. Especially, among nursing home patients, the prevalence rates have been found ranging

from 6% to 26% for major depression, from 11% to 50 for minor depression and from 30% to 48% for depressive symptoms (Jongnelis et al., 2004).

In a study in Canada, nearly 50,000 seniors living in residential care facilities in five Canada, 44% had a diagnosis and symptoms of depression (CIHI, 1999).

Despite its impact on the health of aging population, little attention has been paid to understand depression among elderly in the nursing home setting in Asian' cultures. A study in Taiwan, conducted in 18 long-term care residents, depressive symptoms were found as high as 52.05%. The study found differences between depression with functional-status, impaired swallowing and type of institution. The author emphasizes on the "traditional Chinese culture and three generation living under the same roof" (Li, 2004).

In comparison, a study by Asian Nursing Research found depressive symptoms as high as 66.7% of Korean elderly and 41.7% of Japanese elderly in the nursing home (O. Kim et al., 2003). Furthermore, a study was conducted in Ban Bangkhae by (Charanasri, 1996) the sampled group consisted of 215 elderly; the research found that 58.10% had mental health problems, while 41.9% did not.

All these results highlighted the importance of identifying the factors influencing depression in the western context; it is crucial to take into account the Thai cultural and values in order to develop appropriate intervention and improvement in the nursing homes in Thailand.

2.2 Factors Influencing Depression

Depression is often difficult to diagnose among older people for the following reasons: The symptoms may be less noticeable because older people may not work or may have less social interaction (Gallo and Rabbins, 1999). In order to understand depression among the elderly, the underlying factors influencing must be taken into consideration

According to the *Centre for Addiction and Mental Health*, there are no simple answers to what causes depression. Everyone has a certain number of "risk" or "vulnerability" factors. The way individual copes with problems, such a life events from

childhood trauma or losing a loved one, divorce, or loss of job can lead to depression. The more factors the person is exposed to, the higher or greater stress they may have to face. The greater chance of having this depressive episode is called the stress-vulnerability model or factor influencing depression (Blaengdortir, 2010).

The main psychological factors associated with depression include poverty, trauma event, childhood neglect or sexual abuse, death of spouse, divorce, job loss, and financial dependency (Brown et al., 1997).

Socio-demographic Factors

Age

Many researchers have indicated that age is a significant predictor of depression. Depression is three times more frequent in the elderly than in the rest of the population. About 30% of people over 65 are affected by depression (Roberts, 1997). From the National Health Examination Survey Office of Thailand, the prevalence of depression among men and women increase with age. As shown in figure 2, the total of prevalence of depression among 60 years and above was 28.6%.

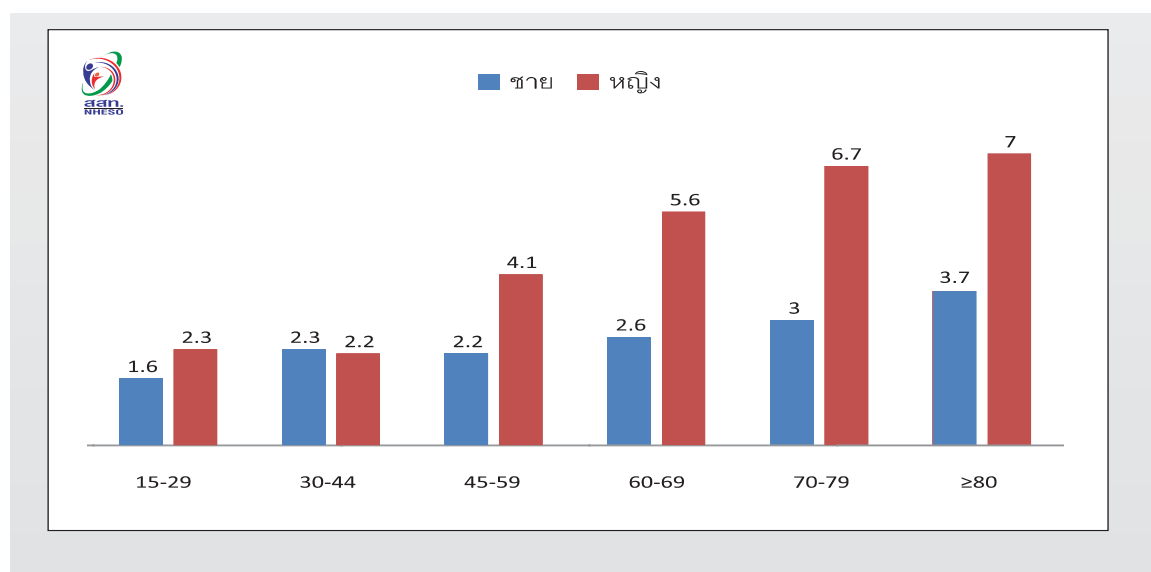


Figure 2: Prevalence of depression among Thai population 15 years of age and above

Gender

In the National studies and the ECA and NCS, the prevalence of depression was twice as high in female than male (Weissman et al., 1996). Women are two times more likely than men to suffer from depression, the lifetime prevalence is estimated to be 25% for women against 12% for men (Kessler et al., 1994). Many studies suggested that depression occurred more common among women due to social rather than biological differences. While in other studies, if gender factor were controlled in regression analyses, there is no association of demographic and social variables with depression variable (Harris et al., 1991).

Marital Status

(Waite and Gallagher, 2001) found being married was a protective factor on health, especially for men. The risk of depression was reported 4.72 times for single or widowed (Maral et al., 2001). In a National Studies and the ECA and NCS found that the prevalence of depression was the highest among participants whose divorces and separated (Weissman et al., 1996).

Education Level

According to Li, education level plays a role regarding awareness and coping. Among 18 long-term care facilities in Taiwan, the prevalence of depression was highest among the participants who were illiterate, and had less than 6 years of education. This study suggested, “low education can restrict the elderly’ awareness of or ability to search for resources in order to cope with their depressed mood and anxiety” (Li, 2004).

Chronic Illnesses

Chronic illnesses often link to mood changes and are common in people who suffer from diseases such as vascular disease, Parkinson’s disease, Dementia, and multiple sclerosis. Often it is difficult to recognize depression from physical illnesses, especially when a person is in pain. Patients may mistakenly depression as pain. There is

a good evidence that patients who suffer from physical illness are often affected by their brain and the chemical system that controls mood and behavior. Such a disability from losing function part of a limb or having a heart attack can trigger a depressive illness (Thomas et al., 2010). Such disease as Parkinson's disease, the consequences of concussion, thyroid, pathologies, diabetes mellitus and many Osteo-articular diseases, all these disease were found in patients who suffer depression (Gallow and Rabins, 1999). In a study by (Rauch et al., 2006) found the Japanese elderly who perceived themselves as "not in good health" has higher depression.

Family history of depression

Individuals with family members who have had a history of depression have slightly higher chances of becoming depressed at some stage in their lives. Many researchers have shown that individual whose families members suffer from depression, are more likely or have a higher chance of developing depression. If a parent or sibling that has had major depression, that individual is 1.5 to 3 times more likely to develop depression condition (Klerman et al., 1989). Such examples can be seen from the twin studies, because they both have the exact same genetic code. They have found that if one identical twin becomes depressed, it is likely that the other will develop clinical depression approximately 76% of the time. Again this points out that genetic influence in the development of clinical depression (Sullivan et al., 2000).

Insomnia

Several studies have shown that sleep disturbance is common among elderly people. The prevalence ranged from 10-52% with most around 30%. Insomnia has been reported in association with many psychiatric disorders including depression, anxiety, dementia and post-traumatic stress disorder (Foley DJ et al., 1999). Although, from the psychiatric point of view, insomnia was considered a natural consequence of mood dysregulation, it is viewed as independent risk factor for major depressive disorder

(MDD) (Breslau et al., 1996). Insomnia or sleep disorders are strongly associated with depression.

In a study, *Journal of Behavioral Sleep Medicine*, focused on 147 men and women over the age of 60 with no history of mental illness at the start of the study. Overall, elderly patients with persistent insomnia are six times more likely to experience serious new-onset depression than individuals who sleep easily. Individuals who suffered from insomnia were almost 11 times more likely to continue being depressed after six months and 17 times more likely to be depressed after a year compared to non-insomniacs (Perlis et al., 2006).

Another longitudinal study examines the prevalence of sleep disturbance among elderly in an inner London Community. The 705 participants' elderly were being interviewed using a validated and reliable semi-structured interview. The result showed that the sleep disturbance was associated with being a woman, being unmarried, living alone and disability. The author concluded at the end that this study has shown that sleep disorder is associated with pathology (Livingston G et al., 2009).

Loneliness

Loneliness is an emotional state, which a person may experience a feeling of isolation, emptiness, being cut off, disconnected and alienated from other people. Without any contact from family members or loved one, the individual may fear of being abandoned. Individuals may suffer from loneliness even if they are among other people (Blaengdortir, 2010).

In the study, *loneliness, depression and sociability in old age*, by (Archana Singh and Mishi Misra, 2009) states that loneliness may lead to serious health-related consequence. It is one of the 3 main factors leading to depression (Green et al., 1992). As people aged, they experience losses, such losses may hinder the desire to maintain or make new relationship.

Another study was conducted between loneliness and subsequent admission to a nursing home over 4-years time period. The results were found as followed: higher levels of loneliness were found to increase the likelihood of nursing home admission. The

influence of extremely high loneliness on nursing home admission remained statistically significant after controlling for other variables such as age, education, income and mental status (Russell, 1997).

The presence of perceived loneliness can contribute tremendously to the effect of depression on mortality. “Depression is a problem that often accompanies loneliness” These depressive symptoms can be seen as withdrawal, anxiety, lack of motivation and sadness mimics and masks the symptoms of loneliness (Max et al., 2005)

Nevertheless, loneliness is distinct and a subjective experience, when compared from the objective condition of aloneness (Rokach, 2004). Other studies (Prince et al., 1997) and (Cacioppo et al., 2006) supported that depression and loneliness are considered to be separate construct and still need to be establishing in a deeper understanding and clearer association based on a cultural context.

(Lena L Lim and Ee-Heok Kua, 2011), emphasized that loneliness can also be viewed as a subjective measure of one’s state of mind. Loneliness was often found when the absence of intimate relationship and expectation from their adult children or relatives (X.Q.Dong et al., 2012).

Physical Activity

Physical activity might be one of the most important behavioral interventions for preventing depression among older adults. From their research, the effects of 16 weeks of aerobic exercise, antidepressant medication, or combined exercise and medication on depression were examined among a large sample of older adults with a major depressive disorder. The result revealed the reduction in depression scores from all three physical activities (Motl et al., 2005).

Health time Magazine stated about a study done at Duke University, researchers conducted a randomized controlled trial of depressed adults who participated in an aerobic-exercise plan were improved as much as participants whom were taken antidepressant medication (Blue, 1999).

General Practitioner says, “Exercise aids depression” A research from the Mental Health Foundation has shown that exercise can help people with mild forms of depression by improving self-esteem-through better body image or achieving goals, and by relieving feelings of isolation which can fuel their depression. When exercise, the body release chemical called endorphins, which interacts with the receptors in your brain. This endorphins hormone triggers a positive feeling in the body (BBC news, 2008)

A recent study on a large group of 17,500 elderly Europeans has confirmed that regular physical activity can lower the risk of suffering depression in old age. The subjects in the study were followed for over two and a half year in regard to physical activity and depression (Naujert et al., 2011)

Social Activity

An intervention focused on social activities significantly decrease depressive symptoms among older adults. A study confirmed that depressed people report fewer relationships, elicit fewer positive interactions and reject responses from others (Gitib et al., 1992).

Numerous studies confirmed that individuals who actively engage in meaningful roles with a friend, volunteer, and church member are less likely to experience mental illness, such as depression. Social activity challenges elderly to participate and maintain their cognitive function as well as their relationship with others, which can lower the prevalence of depression (Antonucci, 1990). A longitudinal study confirmed specific social activities such as volunteering and exercise, self-perception activity level were associated with lower depression (Song-Lee, 2008).

Vitamin D

Vitamin D acts as receptors throughout the human body and the brain, deficiency in vitamin D, may result in improper functioning of the immune system to combat inflammation. Many researchers have discovered that depressed people tend to have higher levels of brain’s inflammation. According to the study, *vitamin D fights*

Depression found that more than 81,000 women who have the highest intake of vitamin from food sources had a “significantly lower prevalence of depressive symptoms (The American Journal of Clinical Nutrition, 2011).

Especially, among the elderly, the capacity of the skin to synthesize and absorb calcium from sun exposure or vitamin D is very low. In particular, elderly who are institutionalized have less frequent exposure to sunlight (International Osteoporosis Foundation, 2011).

Natural Disaster and Depression

Due to the unforeseen natural disaster event that occurred in Bangkok, Thailand 2011, this research will review the risk of developing depression post flooding. After experiencing a traumatic event such as fire, earthquake and flood, victims may develop depression and anxiety due to intrusive memories or bad dreams related to the event. Furthermore, flooding natural disaster not only affect more than just physical damages to individuals’ belonging, but affect emotional strain and psychological damage.

According to the Liu, an epidemiologic study of Posttraumatic Stress Disorder in Flood Victims in Hunan China, his study found that risk of PTSD was higher among female victims than the male victims, which suggested that females and older age are more sensitive than younger victims to natural disaster such as floods (Liu, Aizhong 2006).

According to the *Natural Disaster and Depression: a prospective investigation of reactions to the 1993 Midwest floods*. The researcher sampled 1735 Iowa resident whom were victims of the 1993 floods, the study found that the disaster contributed to small rises of depressive symptoms when diagnosed 60-90 days post flooding (Ginexi et al., 2000).

In comparison, victims who have exposure to a traumatic event; the symptoms must involve persistent re-experiencing such as flashback memories, which last more than one month and cause significant impairment. Although PTSD can cause individual to be in constant on guard, other factors influencing depression which were previously

mentioned have a higher impact on psychological and physical health of the individual (The Royal College of Psychiatry, 2010).

2.3 Measurement Tools

Depression Diagnostic Tools

According to the literature review, there are 2 current diagnosis frameworks, which are often used to diagnosed depression among elderly.

1) The International Classification of Disease (ICD) is classified into 3 levels:

1.1. Mild depression- refers to symptoms that are detectable and has impact upon individual's daily activities. Often resulting in the loss of interest in things he or she used to enjoy. Mild depression sufferer will carry on with their normal lives, however may appear in low spirit and less sharp in their cognitive functions.

1.2 Moderate depression-refers to symptoms that are present in the mild depression, however more noticeable and obvious. It will affect their central features such as low mood, lack of enjoyment, negative thinking and reduced energy.

1.3 Severe depression- refers to depressive disorders that are more severe and occur with greater intensity. People who suffer in this state may not be able to lead their daily lives and even suffer in some form of delusions and hallucinations (depression-guide.com, 2009).

2) The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) 1994:

It belongs to American Psychiatric Association (APA) and falls under mood disorders. Common primary symptom is a disturbance in mood. They classify depression into 4 groups on the basis of severity:

2.1 Bipolar Disorder: refers to a person who has at least one manic episode. Mania means extreme and intense high where the person feels euphoric. (The example of the high: spending much more money than intended, making extremely rash business and personal decisions, involvement in use of drugs or alcohol.

2.2 Cyclothymic Disorder: refers to a serious mood and mental disorder within the bipolar spectrum. (Euphoric phase: extreme good mood, rapid speech, etc).

2.3 Dysthymic Disorder: refers to being depressed most of the day, for more days than not and ongoing for at least 2 years. (2 or more of the symptoms must be the following: under and over eating, sleep difficulty, fatigue, low self-esteem, difficulty with concentration, and feeling of hopelessness.

2.4 Major Depressive Disorder: refers to the presence of 5 or more specified depressive symptoms which has to fall in depressed mood or loss of interest for a period of at least 2 weeks (Fogel, 2006).

Geriatric Depression Scale (Screening tool)

Yessvage (1987) developed the Geriatric Depression Scale (GDS). The GDS was designed to distinguish a pattern of symptoms of depressive symptoms. It is found to have 92% sensitivity and 89% specificity when evaluate against DSM IV diagnostic criteria. The Geriatric Depression Scale is currently one of the most used depression self-reports. It is used as the measurement tool for depressive symptoms, especially among elderly. Demographic and other self-reported related factors were taken into consideration. The Geriatric Depression Scale originally contained 100 items, but it was condensed to 30 questions that indicate the presence of depression. One advantage of the test is the “yes/no” question format, which may be more acceptable for the elderly. The measurement has been found to be reliable and valid in multiple settings and has also been recommended for use in the nursing home population. The cut off point in this study is >9 were considered to be indicative of depression (McGivney et al, 1994). The reasons composed of: the psychometric properties of the GDS when it is used with elderly in the institutionalized resulted (alpha coefficient = 0.99) test-retest reliability =0.94 (Leshner, 1986). The Geriatric Depression Scale has already been translated into the Thai version, known as Thai Geriatric Depression Scale (TGDS) (Jitapunkul et al., 1994). The test had been applied to 275 normal healthy Thai elderly, aged between 60-70 years throughout the country. The accuracy of TGDS was reported as 0.94 in female and 0.91 in male and

the total accuracy was 0.93. It is culturally concerned and now applied in 14 institutes throughout Thailand (Siriraj Hospital, 1994).

Loneliness will be measured according to the 10-item UCLA Loneliness Scale (Russell), developed to assess subjective feelings of loneliness or social isolation. Items for the original version of the scale were based on statements used by lonely individuals to describe feelings of loneliness. In term of validity, it has good concurrent validity, correlating with a number of mood and personality measures. In reliability, it has excellent internal consistency, with an alpha of .94 (Gierveld et al., 1999).

Insomnia will be measure according to the DMS-IV criteria. In this study, participants who answer, “occasionally or always” on any question likely suffer from insomnia. If they answer occasionally or always-on two or more items and have significant daytime impairment the insomnia requires further evaluation and management

This study is thus intended to fill in this knowledge gap and attempt to investigate the prevalence and factors associated with depression among elderly in Ban Bangkhae nursing homes, Bangkok, Thailand.

Chapter III

Research Methodology

3.1 Research Design:

This study was a cross-sectional descriptive study, which design to explore the prevalence and factors influencing depression among the elderly people in nursing homes. The researcher had collected information from Ban Bangkhae nursing homes.

3.2 Study Area:

The study area was in Ban Bangkhae 1 and 2 nursing homes Bangkok, Thailand. Ban Bangkhae 1 was the first and largest nursing home in Bangkok district. It was established in 1953.

3.3 Study Period:

The study was during the beginning of February - March 2012.

3.4 Study Population:

The target population of this study was an elderly aged 60 years and above, both male and female, who lives in at Ban Bangkhae nursing homes 1 and 2, Bangkok Thailand.

3.5 Inclusion Criteria:

1. Participants who were age 60 and above.
2. Both male and female were lived in Ban Bangkhae 1 and 2 nursing homes at least 6 months.
3. Participants who gave inform written consent.

3.6 Exclusion Criteria:

1. Participants who had hearing impairment.

2. Participants who could not speak Thai.
3. Participants who had dementia or cognitive impairment. Today, to diagnose elderly who suffer from dementia, respectively cognitive impairment is still difficult to identify with accuracy. The medical community worked with practice parliament for detection and diagnosis of dementia. (American Academy of Neurology, 2001) The researcher and the staffs worked really closely with the Bangkhae staffs to obtain a secondary data. Furthermore, I will also consult the Psychologist at Bangkhae to verify the findings.

Is it Depression or Dementia?	
Symptoms of Depression	Symptoms of Dementia
<ul style="list-style-type: none"> ▪ Mental decline is relatively rapid ▪ Knows the correct time, date, and where he or she is ▪ Difficulty concentrating ▪ Language and motor skills are slow, but normal ▪ Notices or worries about memory problems 	<ul style="list-style-type: none"> ▪ Mental decline happens slowly ▪ Confused and disoriented; becomes lost in familiar locations ▪ Difficulty with short-term memory ▪ Writing, speaking, and motor skills are impaired ▪ Doesn't notice memory problems or seem to care

[Table 1: symptoms between depression and dementia]

3.7 Sampling Technique:

There were three types of nursing home in Thailand: governmental, private and non-profit organization. Purposive sampling method was used to choose the study area. In this study, the researcher only selected the governmental nursing homes in Bangkok, which are Ban Bangkhae 1 and Ban Bangkhae 2. The Department of Public Welfare under the Ministry of Labor and Social Welfare is a public organization mainly responsible for providing welfare services for older persons. Now, nationally, there are some 20 residential homes (Homes for Older Persons) under the supervision of the Department of Social Welfare. The distribution of the residential homes and the number of older persons living in them are shown in Table 2.

Region	Number of Residential Homes	Female	Male
Bangkok	2	304 (19.8%)	44 (5.9%)
Central	5	383 (25.0%)	121 (16.3%)
North	3	207 (13.5%)	154 (20.7%)
North East	4	259 (16.9%)	138 (18.5%)
East	2	210 (13.7%)	169 (22.7%)
South	4	170 (11.1%)	169 (22.7%)
Total	20	1533 (100%)	744 (100%)

Table 2: Thailand Distribution of Homes for Older Persons, and the Number [Percentage] of Residents, by Region Source: Department of Social Welfare, Thailand (2001).

3.8 Sample & Sample Size:

Sample size calculation: The researcher only selected the nursing homes in the Bangkok Regions: which comprised of Bangkhae 1 and Bangkhae 2. According from the interview from the supervisors on January 30, 2012 with Ban Bangkhae 1 (259 people) & Ban Bangkhae 2 (130 people), was the current total number of the elderly 389 people.

$$\text{Sample Size (n)} = \frac{N}{1 + (Ne^2)}$$

When n = sample size

N = the elderly people in Bangkhae 1 + Bangkhae 2 equal to 389

e = the level of precision or relative error of estimation, equal to 0.05

Based on this formula, the sample size was:

$$n = \frac{389}{1 + (389)(0.05)^2}$$

$$n = \frac{389}{1.97}$$

$$n = 197$$

The sample size from above calculation is 197 participants but there is always chances of potential refusal to participate and dropped out in the middle of the interview, in order to adjust these cases 10% of the total calculated sample size is added to the before calculated sample size. Hence the new sample size is 217. Since the source population for this study consisted of 389 participants, with exclusion criteria and dropouts, the current study sample of 237 participants is a good representation of study population.

3.9 Measurement Tools:

A structure questionnaire has been developed based on in-depth literature reviews, researches, and related concept associated with depression and the elderly among nursing home. This study used Geriatric Depression Scale and UCLA Loneliness guideline, DSM-IV Insomnia and other factors from operational definitions, which modified to be more appropriate for the Thai elderly. The questionnaire was obtained from a review of related theories and conceptual research.

The interview conducted as follow:

There was a set of 9 and a total of 75 questions:

General Information: 9 questions

To collect general information of the elderly sample that includes: sex, age, marital status, education level, and financial income.

Geriatric Depression Scale: 30 questions

The Geriatric Depression Scale has already been translated into the Thai version, known as Thai Geriatric Depression Scale (TGDS) (Jitapunkul et al., 1994). There are 30 questions, 10 which indicate depressive symptoms when answered negatively (Questions: 1,5,7,9,15,19,21,27,29, and 30). The remaining questions were counted as presence of depression when participants answered positively and were given a score of one point. Score was given according to elders' rating scale.

Normal 0-9 points

Minor depression 10-19 points

Major depression 20-30 points

To collect the factors influencing depression: A combination of developed factors influencing depression questionnaire will be then given to all the elderly.

Sleep (DSM-IV Insomnia): 6 questions

Patients must answer, “Occasionally or Always” on any question are likely to suffer from insomnia. If they answer occasionally or always-on two or more items and have significant daytime impairment the insomnia requires further evaluation and management (Center for Sleep, 2007).

UCLA Loneliness Scale: 10 questions

The UCLA has good concurrent validity, correlating with a number of moods and personality measure such as the Beck Depression Inventory and then reliability has excellent internal consistency with an alpha of .94 (Luedeesunun, 2008).

How to compute the score: By adding the response to each question.

A score less than 19 considers normal

A score of 20 or higher reflects a high level of loneliness.

The following questionnaires below will be tested for their validity and reliability.

Chronic Illness: 5 questions

In this study, this can be classified among the following: the participants who answered, “yes” on question number 9.2 (The disease above have been diagnosed by physician were categorized as having chronic illnesses.

Physical Activity: 3 questions

Participants who answered “yes” on physical exercise and answer “exercise more than twice a week” and “more than twice a week” (WHO, Physical Activity and Older Adults, 2011) was categorized under adequate physical activity.

Social Activity: 5 questions

In this study, participants who answered, “Never” at least twice will be considered lack of social activity than those participants who answered “occasionally and always.” (Beck et al, 1979).

Lack of vitamin D: 6 questions

In this study, participants who answered have sun exposure from 5-30 minutes “between 10 am to 3 pm”; at “least one hour a week” or “ taking vitamin D supplement” indicates adequate vitamin D. (National Institution of Health, 2011).

Flooding related questionnaire: 5 questions

In this study, these flooding questionnaires were considered due to the elderly who resides in Bangkhae had been directly affected to the Thailand’s flooding event from October 2011- December 2011.

Validity:

In this research, validity of this research tools was ensured from the following steps: Content Validity- Researchers received guidance and support from an advisor and three psychiatrist experts to accurately verify and give suggestion in regard to the contents of the questionnaires.

Reliability:

The researcher conducted a pretest or the “try out” of the research tools that was translated from the English version into a Thai version. This pre-test took place among 40 samples outside of the actual sample. To obtain the accuracy of the questionnaires, the pretest was carried out of the sample group, which concluded of similar environment and same type of nursing home.

1. Geriatric Depression Scales (30 items): Cronbach’s Alpha = 0.74
2. Loneliness (UCLA Loneliness scale (10 items): Cronbach’s Alpha = 0.69
3. Insomnia (DSM-IV) (6 items): Cronbach’s Alpha = 0.66
4. Social Activity (5 items): Cronbach’s Alpha = 0.61

3.10 Data Collection:

The researcher developed a letter on behalf of Public Health Science College, Chulalongkorn University, authorized by the Dean to Ban Bangkhae for an approval on conducting a research and collects the data. After Ban Bangkhae approval, an orientation was organized for the 10 trained nursing students about the study, how to inform all participants about the confidentiality, what the study administered, as well as the components of the structured face-to-face interviews. Since the questionnaires pertain sensitive personal issues, the principle researcher: Diana Somporn and my thesis advisors. Dr. Karl J. Neeser, who is one of the leading Anti-Aging Research Scientist, who has published a book about mental disease, collaborated and trained the research assistants who are the undergraduates nursing students to communicate with the elderly properly. The researcher and the 10 nursing student interviewers carried out the face-to-face interview questionnaire as well as explain the purpose of the study.

All the questionnaires regarding to the general information, Thai Geriatric Depression scale and factors influencing questionnaires was given to the voluntary elderly participants. The interview was no longer than 1 hour. After the interviewing process, the researchers were required to make sure each elderly participant answered the questions completely. Once the researcher identified any elderly who has depression, I will notify Bangkhae 1 and 2 staffs as well as their psychologists to further diagnose the elderly. I will also recommend the staffs to pay close attention and assist the elderly by enhancing social support and interpersonal activities.

3.11 Data Analysis:

Once verified the completion of the data collection, the data was edited and coded properly into a codebook. The research then analyzed the data by using SPSS for windows version 17 and records the data.

Descriptive Statistics:

Among the independent variables, which have been categorized in nominal scale, will be presented by using frequency, percentage, mode, pie chart and bar diagram. For components which independent variable, which have been categorized in ordinal scale, will be presented using frequency, percentage, and median and bar diagram.

Age	Ordinal Scale (60-69, 70-79, 80 years and above)
Sex	Nominal Scale (Male, Female)
Socioeconomic Status	Ordinal Scale (not sufficient, sufficient but not enough, sufficient and enough for saving)
Education Level	Ordinal Scale (No education, under grade 6, grade 12, Bachelor's degree or higher)
Marital Status	Nominal Scale (Single, Married, Divorced, and widowed)
Depression	Nominal Scale (Yes, No)
Insomnia	Ordinal Scale (Never, Occasionally, Always)
Social Activity	Ordinal Scale (Never, Occasionally, Always)
Physical activity	Nominal Scale (Yes, No) and ordinal scale (once, twice and more than twice a week)
Inadequate Vitamin D	Nominal Scale (Yes, No)
Chronic Illness	Nominal Scale (Yes, No)
Flooding Questions	Nominal Scale (Yes, No) and ordinal Scale
Loneliness Scale	Ordinal Scale (Never, Rarely, Sometime, Always)

Inferential Statistics:

For inferential statistic, linear regression (enter method) was calculated to find the association between individual independent and dependent variables by using correlation coefficient and p-value was be also calculated. Then Multivariable linear regression analysis was done for all those variables whose p-values is less than 0.05.

3.12 Ethical Consideration:

Before conducting the research, the researchers obtained approval from the Ethical Committee of Chulalongkorn University (through College of Public Health Sciences). Before, data collection, the researcher gave clear verbal explanation to each potential elderly participant on the purpose and procedures of the study. Each potential elderly participant was informed and the participation was completely voluntary and they can withdraw or refuse to participate in the research at any time. The informed consent was obtained from the voluntary elderly participants. For the elderly who are illiterate, the second years nurse students read the consent form, informed and made sure the elderly understood about the study.

The elderly participants' information was kept confidential and was only used in this study only. If the participants were found to have score, which indicate depression, the researcher would then recommend the nursing home to seek a physician to come for another rigorous diagnosis and counsel the elderly of the possible treatments.

3.13 Limitation

The researcher acknowledges limitation that were relevant to the methodological and sample issues: the first limitation was that although the researcher were able to go in to Ban Bangkhae nursing home to interview all the participants, there were a considerable number of dropouts due to the inclusion criteria of having to resides in the nursing home for at least 6 months, severe physical illness and cognitive impairments (dementia and Alzheimer). Furthermore, due to lack of medical measure of vitamin D such as blood test for 25-hydroxy vitamin D test, we could not confirmed the accurately measure of vitamin D among the participants. Given the unforeseen event of the flooding natural disaster,

which affected the elderly at Ban Bangkhae, Bangkok area, the researcher cannot specify any causal relationship between depression and possible post-traumatic stress disorder. In consequence, the prevalence rates may likely be an overestimate the true prevalence rates of depression in this setting. In addition, this study was conducted in Ban Bangkhae nursing homes confined to the sampling group of elderly who lives in governmental nursing homes only. The sampling group then, does not represent the total elderly in the nursing home population in Bangkok. The study area has been purposively selected due to time and budget constraints to survey every nursing home in Bangkok.

3.14 Expected Benefits and Application

This study determined the prevalence of depression among elderly in Ban Bangkhae nursing homes. Additionally, it helped selecting new cases of depressive symptoms among elderly in Ban Bangkhae 1. It also highlighted the factors influencing depression among residents in Ban Bangkhae nursing homes in Bangkok. The study also provided insight to the supervisor and the management if an intervention is needed for Ban Bangkhae elderly residents. It will also open the door to generate hypotheses for future researches on depression among the elderly post natural disaster of the flooding event.

Chapter IV RESULTS

Section: 4.1

The researcher has determined steps to present the data analysis from 237 sets of complete form of questionnaire. The presentation is divided into several sections as follow:

Section 1: The Socio-Demographic of elderly includes: age, gender, educational background, marital status, total children, period of residence in Bangkhae nursing homes, and income (income sufficiency) and all factors is presented with descriptive statistics such as frequency and percentage for all independent variables.

Section 2: The prevalence of depression of participants with all the socio-demographic and factors influencing: chronic illness and family history of depression, loneliness, social activity, physical activity, inadequate vitamin D, and Insomnia.

Section 3: Factors association between personal attribution of elderly (including age, gender, educational background, marital status, total children, period of residence in Bangkhae nursing homes, ad income (income sufficiency) with chronic illness and family history of depression, Insomnia, loneliness, social activity, physical activity, and Inadequate vitamin D will be presented using analytical statistics Multivariable linear regression analysis to see the association between dependent and independent variables.

Symbol and abbreviation used in the research

In this research, the data presentation will use specific symbols and abbreviation as follows:

n	represents	Number of sampled group
β	represents	Beta
*	represents	Statistical significance level of 0.05
**	represents	Statistical significance level of <0.001

Descriptive Analysis

Table 4.1: The results of frequency and percentage of Socio-demographic factors of study population ($N=237$)

Socio-demographic	(n)	%
Age Groups		
60-69	36	15.2
70-79	94	39.7
80-89	90	38.0
90+	17	7.2
Mean \pm SD=78.07 \pm 7.759		
Gender		
Male	39	16.5
Female	198	83.5
Marital Status		
Single	89	37.6
Married	97	40.9
Divorced	19	8.0
Education Level		
No Education	60	25.3
Primary school	124	52.3
Secondary school	40	16.9

Socio-demographic	(n)	%
Total Children		
None	132	55.7
1-3 Children	87	36.7
More than 3	18	7.6
Period at Ban Bangkhae		
More than 6 Months	29	12.2
More than 1 Year	208	87.8
Income		
No	163	68.8
Yes	74	31.2
Income sufficiency		
Not sufficient	36	48.6
Sufficient but not enough for saving	23	31.1
Sufficient and enough for saving	15	20.2

The majority of the participants were between 70-89 years old, and their average age was 78 years old. More than half of the research samples resided in Ban Bangkhae nursing homes were female 198 (83.5%), while 39 (16.5%) were male. 97 (40.9%) of the sampled groups were married while 89 (37.6%) were single. For education level, 124 (52.3%) only finished primary school while less than 13 (5.5%) graduated with bachelor degree. Among participants, 132 (55.7%) have no children. 208 (87.7%) have been at Ban Bangkhae for more than 1 year. A majority of the elderly 163 (68.8%) did not have any income, however, the one that did, rate their income 36 (48.6%) as not sufficient.

Table 4.2: The results of frequency and percentage of flooding of study population (N=237)

Influence of Flooding	(n)	%
Remember the flooding		
No	2	0.8
Yes	235	99.2
Stressful to relocate to another location		
Not stressful	133	56.1
Slightly stressful	59	24.9
Moderate stressful	23	9.7
Very stressful	22	9.3
Family/relative suffered from flooding		
No	146	61.6
Yes	91	38.4
Period family or their relative were affected		
Less than 1 month	15	16.4
1-2 months	69	75.8
More than 3 months	7	7.69

Influence of Flooding	(n)	%
Friends suffered from the recent flooding		
No	91	38.4
Yes	146	61.6
Period friends were affected		
Less than 1 month	16	10.9
1-2 months	118	80.8
More than 3 months	12	8.4
Concerned about the risk of flooding event now		
No anxiety	129	54.4
Slightly concerned	65	27.4
Moderate concerned	21	8.9
Very concerned	22	9.3

The data suggested that more than 235 (99.2%) remember the previous flooding happened during October – December 2011. More than half of the participants 133 (56.1%) did not feel stressful to move to another location, while 59 (24.9%) feel slightly stressful and 19% of the participants felt moderate/very stressful. 146 (61.6%) of the participants did not have any family/relative who faced from the recent flooding, while 91 (38.4%) did. Many of those family and relatives who faced the recent flooding, 69 (75.82%) were affected for at least 1-2 months and more than 7 (7.69%) were affected more than 3 months. 146 (61.6%) of the participants' friends also faced the recent flooding, and more than 118 (80.8%) of them were affected for at least 1-2 months. Although, 129 (54.4%) did not feel concerned about the risk of the future flooding, 65 (27.4%) of the participants still feel slightly concerned, 21 (8.9%) felt moderately concerned, and 22 (9.3%) felt very concerned.

Table 4.3: The results of frequency and percentage of chronic illnesses of study population ($N=237$)

Chronic Illness	(n)	%
Status of your health presently		
Not good	90	38.0
Average	93	39.2
Good	46	19.4
Very good	8	3.4
Chronic illnesses		
No	57	24.1
Yes	180	75.9
No	57	24.1
Chronic illnesses diagnosed by physician		
No	13	5.5
Yes	180	81.4
Don't know	44	18.6
Family history of depression		
No	221	93.2
Yes	16	6.8

The data indicated that 90 (38%) of the participants rated their health status presently as not good, while less than 54 (22.8%) of the participants rated their health status above good. 180 (75.9%) participants stated that they have chronic illness. Most of the participants' chronic illnesses, 180 (81.4%) have been diagnosed by physician. In term of history of depression, less than 16 (6.8%) have been diagnosed with depression.

Table 4.4: The results of mean of factors associated with depression of study population (N=237)

Variables	n	M	S.D.	Max	Min
Age	237	78	7.7	100	60
Social Activity	237	5.9	3.9	15	0
Loneliness	237	16.03	4.9	35	10

The mean age of the participants in this study was 78 years, with 100 years as the highest and 60 years as the lowest age among the participants. The mean of social activity in this study was 5.9 and the mean of loneliness was 16.03.

Table 4.5: Prevalence of depression (n = 237)

Depression among participants at Ban Bangkhae nursing homes were measured by Thai Geriatric Depression Scale (TGDS): The diagnostic screening test for depression among the geriatric population, which can be classify into 3 levels.

Score 0-9	indicated that those patients had no depression
Score 10-19	indicated that those patients had minor depression
Score 20-30	indicated that those patients had major depression

Dependent Factors	(n)	%
Normal	144	60.7
Minor depression	76	32.1
Major depression	17	7.2

All the participants in this study were asked to assess the self- feeling in the last 2 weeks events. The score on TGDS for depressive symptoms ranged from 0-30 (possible range 0=30) with a mean of 9.3. It was found that 93 (39.3%) have reported some type of depression, ranging from 76 (32.1%) with minor depression, 17 (7.2%) with major depression respectively. Recent researchers found evidence, which suggests that minor and major depression among elderly share similar risk factors. Furthermore, functional impairment is often associated in minor depression, similar to major depression (Lyness et al, 1999). In order to diminish the power problem, the researcher need to lump the minor and major together = depression.

Table 4.6: The prevalence of depression according to Socio-demographic among the participants in Ban Bangkhae Nursing Homes ($N=237$)

Variables	DEPRESSION		Total
	No	Yes	
Age Group			
60-69	25 (67.6%)	12 (32.4%)	36
70-79	57 (60.6%)	37 (39.4%)	94
80-89	53 (59.6%)	36 (40.4%)	90
90+	9 (52.9%)	8 (47.1%)	17
Gender			
Male	21 (53.8%)	18 (46.2%)	39
Female	123 (62.1%)	75 (37.9%)	198
Marital Status			
Single	58 (65.2%)	31(34.8%)	89
Married	61 (62.9%)	36 (37.1%)	97
Divorced	7 (36.8%)	12 (63.2%)	19
Widowed	18 (56.2%)	14 (43.8%)	32
Education Level			
No education	32 (53.5%)	28 (46.7%)	60
Primary school	73 (58.9%)	51 (41.1%)	124
Secondary school	28 (70.0%)	12 (30.0%)	40
Bachelor's degree +	11 (84.6%)	2 (15.4%)	13
Total Children			
No	80 (60.6%)	52 (39.4%)	132
1-3 children	56 (64.6%)	31 (35.6%)	87
More than 3 children	8 (44.4%)	10 (55.6%)	18

Variables	No	Yes	Total
> 6 months	19 (65.5%)	10 (34.5%)	29
> 1 year	125 (60.1%)	83 (39.9%)	208
Income			
No Income	104 (60.8%)	67 (39.2%)	171
Income	40 (60.6%)	26 (39.4%)	66
Income Rating			
Not satisfy	3 (37.5%)	5 (62.5%)	8
Sufficient not enough for saving	22 (61.1%)	14 (38.9%)	36
Sufficient and enough for saving	15 (68.2%)	7 (31.8%)	22

The descriptive analysis of socio demographic factors indicated that as age increased 60-69 year old: 12 (32.4%), 70-79 37 (39.4%), 80-89: 36 (40.4%), 90 up: 8 (47.1%) the prevalence of depression also increased respectively. For gender, male participants 18 (46.2%) were more depressed than female 75 (37.9%); however, the uneven distribution of the male vs. female participants must be taken into consideration for this percentage. As for marital status, the prevalence of depression was the highest among the divorced 12 (63.2%) and widow 14 (43.8%) groups than the married 36 (37.1%) and single 31 (34.8%). For education level, the prevalence of depression was the highest among the no education group 28 (46.7%), and primary school group 51 (41.1%). For children, the prevalence of depression was seen highest among the participants who have more than 3 children: 10 (55.6%). For period at Ban Bangkhae, the prevalence of depression was the highest among the participants 10 (34.5%) who was residence over 1 year. As for income, the prevalence of depression was higher among the participants who have income 26 (39.4%). However, when participants who stated as having income were given a choice to rate their satisfaction, the prevalence of depression was the highest among the people who rated themselves as not satisfy with their income 5 (62.5%).

Table 4.7: Factors associated with depression among the participants in Ban Bangkhae nursing home ($N = 237$)

Variables	No	Yes	Total
Chronic Illness diagnosed by physician			
No	10 (76.9%)	3 (23.1%)	13
Yes	104 (57.8%)	76 (42.2%)	180
Insomnia			
Adequate sleep	91 (68.4%)	42 (31.6%)	133
Symptoms of insomnia	53 (51.0%)	51 (49.0%)	104
Lack of Vitamin D			
Inadequate Vitamin D	61 (52.6%)	55 (47.4%)	116
Adequate Vitamin D	81 (68.1%)	38 (31.9%)	119
Physical Activity			
Inadequate Physical Activity	35 (55.6%)	28 (44.4%)	63
Adequate sleep	84 (71.8%)	33 (28.2%)	117

The descriptive analysis of table 4.7 reveals that the prevalence of depression among the participants who have chronic illness diagnosed by physician is higher 76 (42.2%), than the no chronic illness group 3 (23.1%). For Insomnia, the prevalence of depression among the participants who have symptoms of insomnia is 51 (49.0%) higher than the participants who have adequate sleep (31.6%). For Vitamin D, the prevalence of depression among the participants who have inadequate vitamin D is 55 (47.4%) more than participants who have adequate vitamin D (38 (31.9%). Lastly, the prevalence of depression among the participants who did not do adequate physical activity 28 (44.4%) was seen higher than the participants who did adequate physical activity 33 (28.2%).

Table 4.8: Correlation Matrix

Correlation Matrix were employed to identify association between factors (independent variables) associated with depression (dependent variables).

	Depression	Age	Loneliness	Lack Social Activity
Depression	1.00	.158*	.441**	-.358
Age		1.000	-.005	-.096
Loneliness			1.000	-.048
Lack Social Activity				1.00

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

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

Table 4.8 illustrates correlations between depression and other variables, using Spearman's correlation test. The independent variables such as Age ($r = 0.15$, $P < 0.015$), Loneliness ($r = 0.44$, $P < 0.001$) revealed significant positive correlation with depression. Whereas, social Activity ($r = -0.35$, $P < 0.001$), revealed significant negative correlation with depression.

Table 4.9: Mean depression and Standard Deviation by Factors (N= 237)

Variables	(M)	(SE)	P-value
Chronic illness	7.92	1.12	0.298
Physical Activity	11.20	0.576	<. 001
Inadequate Vitamin D	10.17	0.592	0.034
Insomnia	8.26	0.474	<. 001

The Independent Samples T-test indicated that Physical Activity, Inadequate Vitamin D and Insomnia are all statistically significant with depression.

Table 4.9: Single model linear regression analysis (Method = Enter)

Single model linear regression analysis was employed to identify association between socio-demographic (independent variables) with depression (dependent variables).

Socio-demographic factors	Correlation		
	Coefficient (β)	Std. error (SE)	p-value
Age (continuous)	0.08	0.04	0.07
Gender (ref-male)	-0.36	1.02	0.72
Marital Status (ref-single)			
Married	-0.09	0.84	0.91
Divorced	3.72	1.46	0.01
Widowed	1.24	1.19	0.29
Education Level (ref-no education)			
Primary	-0.05	0.91	0.95
Secondary	-1.26	1.18	0.28
Bachelor	-3.38	1.78	0.05
Total Children (ref-no children)			
1-3 children	-0.29	0.80	0.71
3+ children	2.58	1.46	0.07
Residence at Bangkhae (ref-6 months)	-1.01	1.15	0.38
Income/per month (ref-no income)	0.09	0.84	0.90
Satisfaction of income (ref-not sufficient)			
Sufficient/no saving	0.14	1.06	0.89
Sufficient/saving	-1.35	1.32	0.30

Table 4.9 illustrates Single model linear regression analysis between depression and socio-demographic variables. The independent variables such as Gender, Total Children, Bangkok residence and Income were statistically insignificant with depression. Only age is statistically significant with depression. For Martial Status, divorced ($\beta = 3.72$), $P < .01$; group was statistically significant with depression when compared to the Single group (reference group). For Education Level, the prevalence of depression among the Bachelor degree or higher ($\beta = -3.38$), $P < .05$; was statistically significant when compared to no education group.

Table 4:10 Bivariate analysis for factors influencing with depression ($N = 237$)

Variable	(β)	(SE)	P-Value
Age	0.87	0.04	0.077
Physical Activity	-3.77	0.72	< 0.001
Chronic Illness	1.76	1.69	0.298
Insomnia	2.44	0.75	< 0.001
Loneliness	0.61	0.06	< 0.001
Lack Social Activity	-0.52	0.09	< 0.001
Inadequate Vitamin-D	-1.61	0.76	0.034

According to the results from table 4.9, 5 variables: Age ($\beta = 0.87$, $P < 0.077$), Physical Activity ($\beta = -3.77$, $P < 0.002$), insomnia ($\beta = 2.44$, $P < 0.001$), loneliness ($\beta = 0.61$, $P < 0.001$), Social Activity ($\beta = -0.52$, $P < 0.001$), and lack of vitamin D ($\beta = -1.61$, $P < 0.034$), were found to be statistical significant with depression in Bivariable analysis. Whereas, Chronic illness, were not statistically significant.

The results obtained from Bivariable analysis from table 4.10 were used to construct Multivariable linear regression model included variables for which p-value was less than or equal to 0.15 in the Bivariable analysis.

Table 4.11: Colinearity Diagnostics

Dimension	Eigen Value	Condition Index	Constant	Loneliness	Social Activity	Physical Activity	Inadequate Vit-D	Insomnia
1	4.491	1	0.00	0.00	0.00	0.01	0.02	0.01
2	0.593	2.752	0.00	0.00	0.00	0.29	0.00	0.55
3	0.441	3.192	0.00	0.00	0.00	0.13	0.83	0.13
4	0.353	3.567	0.01	0.05	0.02	0.39	0.15	0.29
5	0.092	6.976	0.00	0.32	0.66	0.16	0.00	0.01
6	0.030	12.252	0.98	0.62	0.31	0.02	0.01	0.01

Dependent- depression

Table 4.11 above illustrates the Collinearity Diagnostics table, all independent variable whose values are less than or equal p value ≤ 0.15 were included in the Multivariable linear regression analysis. All factors were statistically significant with depressive symptoms.

Table 4.12: Multivariable linear regression analysis for factors with Depression

Variable	(β)	(SE)	P-Value
Constant	5.55	1.49	0.000
Loneliness	0.54	0.60	<0.001
Lack Social Activity	-0.39	0.08	<0.001
Physical Activity	-1.46	0.63	0.021
Inadequate Vitamin D	-1.45	0.59	0.014
Insomnia	1.85	0.59	0.002

Dependent- depression

Multivariable linear regression analysis

To further evaluate the association between factors and depressive symptoms, Multivariable linear regression analysis was applied to determine significant independent predictors. Table 4.12 shows that Insomnia, Loneliness, Physical Activity, Social Activity and Lack of vitamin D remained statistically significant with depression. The final model for this study is.

$$Y = 5.556 + 0.54 x_{\text{loneliness}} + 1.85 x_{\text{Insomnia}} - 1.46 x_{\text{Physical Activity}} - 1.45 x_{\text{Inadequate of Vitamin D}} - 0.39 x_{\text{Social Activity}}$$

The adjusted R Square is 0.41, and F value is 33.87 (p value <0.001) and the Durbin-Watson is 1.74. Loneliness ($\beta = 0.54$, $P < 0.001$), Insomnia; ($\beta = 1.85$, $P < 0.002$) and physical activity ($\beta = -1.46$, $P < 0.021$), Inadequate of Vitamin D ($\beta = -1.45$, $P < 0.014$) and Lack Social Activity ($\beta = -0.39$, $P < 0.001$), associated with depression where β is the regression coefficient.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This cross-sectional study was carried out in 237 healthy Thai elderly age (60-100 years old) to find out the prevalence of depression and its relationship with the related factors in Ban Bangkhae Nursing Homes, Bangkok Province, Thailand.

This chapter is divided into the following sections:

- 5.1 General Discussion on study population
- 5.2 General Discussion on the results and key findings of the study
 - 5.2.1 General Discussion on the factors influencing depression
- 5.3 Conclusion
- 5.4 Recommendations

5.1 General Discussion on study population

The participants in this study were Thai elderly, both male and female (age between 60-100 years) who had been living in Ban Bangkhae 1 and 2 nursing homes, Bangkok province for at least six months, who could communicate in Thai, without hearing impairment and were willing to participate in the research. Researcher and the training team collected data by interviewing 260 participants between March 1th-March 30, 2011. The interviewers carried out the face-to-face interview questionnaire. The guideline was divided into parts. The first part consisted of socio-demographic of the participants. This section is a close-ended question, except for age, which was an open-ended question for a total of 8 items with nominal scale. The second part consisted of the dependent variables, depression TGDS 30 items and independent variables associated to depression for 69 items: DSM-IV Insomnia: 6 items, UCLA Loneliness Scale: 10 items, Chronic Illness: 5 items, Physical Activity: 3 items, Social Activity: 5 items, Lack of vitamin D: 6 items, Flooding Related questionnaire: 5 items. The statistical methods used were bivariate correlations to calculate the association between individual independent and dependent variables by coefficient and p-value. Then Multivariable linear regression analysis was employed in order to analyze all variables whose p-values are less than 0.15.

Model 1 and model 2 included factors in socio-demography factors as well as the factors associated with depression. The first model showed possibility of depression symptoms with age, insomnia, loneliness, physical activity, social activity and inadequate vitamin D. The second model indicated that the adjusted R Square is 0.41, and F value is 33.87, p value <0.001 and the Durbin-Watson is 1.74. Loneliness ($\beta = 0.54, P < 0.001$), Insomnia ($\beta = 1.85, P < 0.002$), physical activity ($\beta = -1.46, P < 0.021$), Inadequate of Vitamin D ($\beta = -1.45, P < 0.014$), and Social Activity ($\beta = -0.39, P < 0.001$) associated with depressive symptoms where β is the regression coefficient.

5.2 General Discussion on the results and key findings of the study

The results in chapter IV were concluded into two sections, categorical descriptive analysis and analytical portion.

In this study, table 4.5 depression was seen 93 (39.3 %) of all participants. The results confirmed the previous study done by (Jongenelis et al., 2004), the prevalence of minor and major depression was found to be between 30-48% among the elderly in 14 nursing home patients in Netherlands. Similar study was done in Canada by (CIHI, 1999) in a sample of nearly 50,000 seniors living in residential care facilities such as long term care, nursing home was found nearly half 44% had a diagnosis and symptoms of depression.

However, when a similar study was done in 18 long-term care residents in Taiwan using 15-Geriatric Depression Scale by (Li, 2004) the result was found higher, 52.05% to have depressive symptoms. The reason for the higher prevalence among Asian countries may be due to the fact that Asian cultures emphasize on the “traditional culture and three generation living under the same roof” In comparison, Thai elderly also depend on their adult children for support with social, emotional, and financial needs. Furthermore, “nursing home” in Thailand still carries a negative connotation to be defined as being abandoned to live by themselves, which can result in grief, sadness and loneliness (Knodel et al., 1995).

In this study, factors, which were statistically significant with depression, are as follow: loneliness, insomnia, social activity, and lack of vitamin D

Nevertheless, the different results could be seen in different socio-demographic characteristics, environment, culture differences, and nursing home setting such as private vs. governmental as well as different type of diagnostic screening for depression in Thai elderly.

Given the above results, depression is an important health problem among the elderly, particularly in the nursing home setting. Thailand must initiate plans and prepare for the increasing number of elderly with objective of providing suitable living arrangement and caretakers that will meet the basic need of the elderly, as well as tailored to their psychosocial factors.

5.2.1 Factors associated with depression

Depression is a complex mental health disorder and may have possible genetic causes. But as the present study has shown, lifestyle situations and factors probably have the major impact.

Sleep (DSM-IV Insomnia)

This study found that sleep (DSM-IV Insomnia) ($\beta = 1.85, P < 0.002$); was statistically significant with depression in Bivariate analysis and remained significant in Multivariable linear regression analysis. Similarly a study findings by (Foley DJ et al, 1999), and (Livingston G et al, 2009), suggested that the prevalence of depression was found higher among the patients who have sleep disturbance. Likewise, a study by (Peris et al, 2006), found that elderly patients who have persistent insomnia are six times more likely to experience depression than those who get a quality sleep at night. In this study, approximately more than half of the elderly participants reported having sleep disturbance due to frequent visits to the bathroom among their roommates and feeling of numbness and pain during their sleep, which can result in, disrupt sleep and a sleep deprivation.

Loneliness

As people aged, they experience losses and disconnected from loved one. In this study, the results loneliness ($\beta = 0.54, P < 0.001$); shows significant positive association with depression. Similarly, a cohort in a prospective 2-years follow up study in Singapore among the elderly, loneliness was a more robust predictor of GDS score than living arrangement. Similarly, a cross-sectional study assessed in 333 nursing home patients living in 14 nursing homes in the North West of the Netherlands, loneliness was found to be associated factor with major depression (OR = 13.37 CI 3.08-58.15) in multivariable analysis (Jongenelis, 2004). Previous study and current study all signifies the importance of relationship, depression is a problem that often accompanies loneliness, (Max et al., 2005). Without any contact from family members or loved one, the individual may fear of being abandoned (Blaengdortir, 2010). In this study, it was observed that majority number of elderly participants over 55.7% do not have any children and 7.6% who do have more than 3 children have the highest prevalence of depression, this may be due to the absence of intimate relationship and expectation from loved ones may manifest the intense feeling of emptiness and abandonment (Meis, 1985).

Social Activity

In this study, lack of social activity ($\beta = -0.39, P < 0.001$), was statistically significant and negatively associated with depression in Bivariate analysis and Multivariable linear regression analysis. Similarly to studies by (Song Lee, 2008) and (Antonucci, 1990), social activities such as volunteering, group exercise and self-perception activity were associated with lower depression. In this study, the prevalence of depression was seen highest among the participants who did not participate in social activity than the participants who did. Such activities of handcrafts, golf, singing and dancing lessons were observed during the data collection. This confirmed that positive interaction with others benefit individual who actively engage in meaningful roles with others.

Inadequate Vitamin D

Vitamin D (from natural sunlight and/or supplement) ($\beta = -1.45, P < 0.014$) was statistically significant and negatively with depression in both Bivariate analysis and Multivariable linear regression analysis. Adequate vitamin D in many studies had been significantly associated with combating depression. Vitamin D plays a major role regulating Serotonin (the hormone of “happiness”) and Norepinephrine, an important neurotransmitter. Lack of Vitamin D causes the parathyroid gland to produce more hormones; have been linked to depression severity (Hoogendick et al., 2008). Furthermore, vitamin D also protects from dysregulation of Serotonin (5HT) and Norepinephrine (NE), both hormones mediating a broad spectrum of depressive symptoms. (American Journal of Clinical Nutrition, 2011) found that 81,000 women who have the highest intake of vitamin D from food sources and natural sunlight had a significantly lower prevalence of depressive symptoms. Similarly, an (International Osteoporosis Foundation, 2011), also found that the capacity of the skin to synthesize and absorb calcium from sun exposure among the elderly is very low. A study done in Murcia, among elderly in the nursing home, 58.2% had an inadequate vitamin D status, as assessed by serum 25 (OH)D concentration (Francisca Perez, 2008). In this study, it was observed that some participants received vitamin D from their physician, however majority of them preferred to be indoor rather than outdoor, apart from participating physical activity from 6:00 -8:00 am.

Physical Activity

This study, the results indicated that physical activity ($\beta = -1.46, P < 0.021$) was statistically significant and negatively associated with depression. Similarly to other previous studies, researchers found that physical activity were one of the most important behavioral interventions for preventing depression (Motel et al., 2005). A study conducted by Blue in a randomized controlled trial of depressed adult who participated in physical activity was improved than the participants who were taken anti-depression medication (Blue, 1999). In this study, only 28.2% was doing adequate exercise. Possible

explanations may be that, participants were limited to only Tai Chi every morning from 6:00- 8:00 am; this routines schedule may not be the most preferred physical activity for every participant due to their disability. If elderly were given several other options for physical activity, they can actively engage in the activity as well as improving their self-esteem. A report by (BBC, 2008) news suggested that, when exercise, the body release chemical endorphins, which interact with receptors in your brain, thus triggers a positive feeling in the body. Furthermore, when physical activity is limited and hard to perform, the patients may lack motivation and lose encouragement; physical activity should be encouraged in small achievable goals where the patients feel comfortable and simple (Blashki et al., 2001).

Age

Increasing risk of depression is associated with age (Osborn, 2003). In this study, age ($\beta = 0.87, P < 0.07$) was only statistically significant in Bivariate analysis. However, in descriptive analysis, the results clearly indicated that the prevalence of depression increase with age. Similarly, the National Health Examination Survey Office of Thailand, the prevalence of depression among men and women increase with age, the total of prevalence of depression among 60 years and above was 28.6%. (Luppa et al, 2007) and (Roberts et al, 1997), found depression is three times more frequent than the rest of the population and affected 30% of people over the age 65.

Gender

Remarkably, gender was not statistically significant in Bivariate analysis. The prevalence of depression among male was higher than female. In contrast to other studies, among the prevalence of depression was twice as high in female than male. However, studies by (Harris et al, 1991) have shown that if gender factors were controlled in regression analyses, there is no association between gender and depression. Similarly, other studies conducted among Korean and Japanese elderly in the nursing home setting, the majority of patients were female (93.8%) in the nursing home in Korea,

as well as (78.4%) were female in the nursing home in Japan (O. Kim et al., 2009). In this study, we also see similar trend, the uneven distribution among male and female sample in the nursing home population. Participants in this study, 83.5% were female, while 16.5% were male.

Education level

Education level was statically insignificant associated with depression. However, the descriptive analysis clearly shows that the majority of the elderly participants, one-fourth were illiterate and more than half had less than 6 years of education. Furthermore, the prevalence of depression shows that the lower education group tends to have higher depression score than the higher education group. It can be hypothesized that elderly who have lower education may be unawareness with their depressed mood and anxiety as well as may not know where to search for resources for help.

Marital Status

Marital Status was statistically insignificant associated with depression. However, table 4.6 clearly shows that the prevalence of depression was found higher among the divorce and widow groups among the sample. The result was consistent with (Beekman et al, 1995); (Aluoja et al., 2004); (Wissman et al., 1996). Their studies found that the prevalence of depression often found higher in those who were divorced and widow. Thus, these results might suggest that disruptive marriage being divorced and widow may have a higher chance of stress and anxiety.

Income

Income was statistically insignificantly with depression. In contrast to the previous study by (Blazer et al, 1994) and the National Comorbidity Survey, the likelihood of depression increase as both income and education decreases. In this study, participants may not feel as overwhelmed to have income due to Ban Bangkhae nursing

homes already provide both accommodation as well as meals, thus results in less stress in the basic living factors to support themselves.

Chronic illnesses

This study found that depression was statistically insignificantly associated with presence of chronic illness among the elderly participants. Although, it is often difficult to recognize chronic illness with depression, especially, among elderly who are in pain, they can mistakenly depression as part of their pain (Barca et al., 2009) and (Rozznini et al., 1996). In contrast to a study by (Gallow and Rabins, 1999), diseases related to vascular disease, dementia and multiple sclerosis are often affected their brain and the chemical systems that controls mood and behavior, as well as disability from losing function; part of a limb could trigger a depressive illness (Thomas et al., 2010). In this study, it was observed that many participants were seen coping with existing health problems such as pain, numbness and physical disability. Many of them have to endure social isolation due to disability, which they are bound to the wheelchair. As a result, lack the opportunity to socialize and increased dependence on others, this as well may trigger depressive symptoms.

Family history of depression

Family history of depression was statistically insignificant with depression. In contrast to other studies, researchers have shown that individual whose families members suffer from depression, are more likely or have a higher chance of developing depression. If a parent or sibling that has had major depression, that individual is 1.5 to 3 times more likely to develop depression condition (Klerman et al., 1989). Researchers have found that if one identical twin becomes depressed, it is likely that the other will develop clinical depression approximately 76% of the time. The reason for this might be that depression may seem to be “a stigma and shame among older patients in disclosing feelings of depression” According to a qualitative study by (Murray. J, 2006), depression to them was not something that they acknowledged. To them, depression was seen as

somebody went into an institution, which is not acceptable, especially among Asian people to admit to mental illness. The elderly believe, that they would “get a bad name. It’s not good for the children.” In this study, when questions were asked related to their family history of depression, many participants nervously laughed, this may indicated they would like to omit the truth to avoid negative reflections on their family.

Natural Disaster (Flooding)

Lastly, Flooding Natural Disaster was analyzed using descriptive analysis. Several studies have shown significant association between post natural disaster and depression. A study by (Liu Aizhong, 2006), found that victims who experienced a traumatic events such as fire, earthquake and flood, victims may develop anxiety and depression due to intrusive memories and bad dream related to the event. Flooding disaster not only affects more than just physical damages to individual’s belonging; It is an emotional strain and psychological damage. Another study by (Ginexi et al., 2000), found that the natural disaster contributed to small rises of depressive symptoms when diagnosed 60-90 days post flooding.

In this study, the finding suggested that the influence of flooding did not have as much impact on participants at Ban Bangkhae nursing homes, since they were able to provided buses for the participants to evacuate from Bangkhae district to the center in Ratchaburi Province pre flooding disaster, thus resulting in less anxiety to safety and less concerned about their physical belongings.

5.3 Conclusion

Data was collected cross sectional among 237 participants age 60 and above among the elderly in Ban Bangkhae nursing homes, Bangkok, Thailand. Data analysis was done using Bivariate and Multivariable Linear Regression with statistical significance of each analysis against p-value of 0.05. All the participants in this study were asked to assess the self- feeling in the last 2 weeks events. It was found that 39.3% have reported some type of depression, ranging from 32.1% with minor depression, 7.2% with major depression respectively. This study confirms the previously reported high prevalence of depression in the nursing home population. The results of this study highlight the importance of Loneliness ($\beta = 0.54, P < 0.001$), Insomnia ($\beta = 1.85, P < 0.002$) physical activity ($\beta = -1.46, P < 0.021$) Inadequate of Vitamin D ($\beta = -1.45, P < .014$) and Lack Social Activity ($\beta = -0.39, P < 0.001$) with depression as prominent factors for depressive symptoms.

Depression is already a serious health threat in Thailand for the years to come and will without doubt become a major public health issue. This results of this study suggested that depression appears to be a major health problem among the elderly participants in the nursing homes. Given, the increasing number of elderly people in the population, the demand for nursing home and long term care for the elderly will therefore be essential. Hence, it is of great importance to develop adequate prevention, control, and treatment strategies for depression among the elderly in this type of long-term institutes.

5.6 Recommendations

Suggestion for the application of the research

The purpose of this study is to enhance detection and identify elderly who have characteristic associated with a higher risk of depression. As well as to develop adequate prevention and treatment strategies, these are the following recommendations:

1. A screening program should be launched once a year to determine elderly who may be at risk of depressive symptoms, in particular special attention and care must focus on patients who are less expressive and have recent negative life events: such as loss of loved one.
2. Participants who have depressive symptoms should be further diagnosed by psychiatrist and receive an appropriate treatments and follow-ups.
3. Providing a vibrant social life environment such as social gathering, pet day and volunteering visiting program among the elderly to prevent the feeling of loneliness.
4. Provide pleasant accommodation that limited elderly room capacity can greatly increase positive environment, allowing the elderly to adapt to changes of scenery from their own home.
5. Develop a healthy dietary guideline with the elderly. Recommend a high in nutrients include vitamins, minerals and protein and less sugary foods.
6. Encourage the elderly to get plenty of sunshine and natural sunlight, not only will it enhance mood, it's also help preventing hormone-related physiological imbalances preventing a wide variety of degenerating diseases and health ailments.

5.7 Suggestions for future research

The results of this study only demonstrated the quantitative research in regard to factors influencing depression among the elderly in the nursing home settings. There are yet problems in other external factors waiting to be explored. Therefore,

1. A qualitative study should be conducted to examine nursing home resident's own perceptions of depressive symptoms and the risk factors in order to assess their preference on what is an appropriate, desirable and effective intervention.
2. The caretakers and the nursing home administrative' perspective should also be considered, so that both the providers and the receivers understand what is feasible and applicable in the nursing home settings. Although many research findings have found the major risk factors for depression, few studies have encouraged all members to get involve.
3. A study on other factors that have association with depression such as social support, mastication, visual impairment, types of institution and etc., should be conducted as well.
4. A similar study should be conducted in other types of institutions such as long-term care, nursing home and residence care home to determine and compare different factors influencing depression.
5. A study should be conducted at Ban Bangkhae nursing homes in order to compare the prevalence of depression under normal circumstance and post flooding situation.
6. A larger sample population including other regions of Thailand can determine a better association between factors and depression.

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APPENDICES

Appendix A:**QUESTIONNAIRE: ENGLISH****Structured face-to-face interview****General Personal Information of the Elderly:**

1) Name: _____

2) Current age: _____ Years

3) Sex: (1) Male (2) Female

4) Marital status:

(1) Single (2) Married (3) Divorced (4) Widowed

5) Education level

(1) No education (2) Primary school (3) Secondary school (4) Bachelor's

Degree or higher

6) How many total children do you have?

(1) No (2) Yes

7) How long have you live in Ban Bangkhae Nursing Home?

(1) Less than 6 months (2) More than 6 months (3) More than 1 year

8) Do you have any income?

No (please refer to question 10) Yes

8.1) If yes, how do you rate your income per month?

(1) not sufficient (2) sufficient but not enough for saving (3) sufficient and enough for saving.

Chronic Illness

9) How is your health today?

(1) Not good (2) Average (3) Good (4) Very good

9.1) Do you have any major health problem?

(0) No (1) Yes, _____

9.2) The disease above have been diagnosed by physician?

- (1) No (2) Yes

9.3) Are you taking any medication

- (1) No (2) Yes

10) Does anyone in your family (parents, grandparents, great grandparents, brother, sister, aunts, or uncles) including you have been diagnosed with depression (from physicians)

- (1) No (2) Yes

Questions related to recent flooding:

11) Do you remember the recent flooding disasters that occurred at Bangkhae?

- (1) No (2) Yes

12) How stressful was the move for you to another location?

- (1) Not stressful (2) slightly stressful (3) moderate stressful (4) very stressful

13) Did your family or anyone you care suffered from the recent flooding event?

- (1) No (2) Yes

13.1) How long were your family affected from the flooding event?

- (1) Less than 1 month (2) 1 month-2 months (3) More than 3 months

14) Did you have a friend who suffered from the recent flooding event?

- (1) No (if no, please skip to question 16) (2) Yes

14.1) How long were your friend affected from the flooding event?

- (1) Less than 1 month (2) 1 month-2 months (3) More than 3 months

15) How concerned are you about the risk of flooding event now?

- (1) Not concerned (2) slightly concerned
 (3) moderate concerned (4) very concerned

Physical Activity Questions:

16) Do you usually practice any physical activity? Such as tai chi, walking, gardening, exercise, household work like cleaning floor, etc.? (If No, skip to question 18)

- (1) No (2) Yes

17) How often do you do the above activity in a week?

- (1) Once a week (2) Twice a week (3) More than twice a week

18) How many time do you do the above activity per week?

- (1) Once a week (2) Twice a week (3) More than twice a week

Lack of Vitamin D:

19) For most of the days this week, have you been outdoors for at least one hour?

- (1) No (2) Yes

20) At what time of the day do you usually spend outdoors?

- (1) Between 6 to 9 am (2) Between 10 to 3 pm (3) Between 4 to 7 pm?

21) Do you take any vitamin D supplements?

- (1) No (2) Yes

22) When you go out, what type of clothes do you wear?

- (1) Long sleeves (2) short sleeves

23) On average, what type of food plates do you usually eat?

24) When you buy food from outside (snacks), what type of food do you usually get?

- (1) Mostly sugary snack (2) mostly fruits (3) others, _____

DSM-IV Insomnia Questionnaire 1 = Never 2 = Rarely 3 = Occasionally 4 = Always	Never	Rarely	Occasionally	Always
25. Do you have trouble falling asleep?				
26. Do you have trouble staying asleep?				
27. During the past month, how often have you taken medicine to help you sleep?				
28. Do you wake up un-refreshed?				
29. Do you use alcohol to help you sleep?				
30. Do you have any medical condition that disrupts your sleep?				

Social Activity Questions: 1 = Never 2 = Rarely 3 = Occasionally 4 = Always	Never	Rarely	Occasionally	Always
31. Do you volunteer to work with others?				
32. Do you participate in any sports or recreation activities like flower arrangements, group exercise, or craft making activities with other?				
33. Do you enjoy group activities with others?				
34. Do you go to any gathering or family activities?				
35. How often do you go to the temple or any religions activities?				

Geriatric Depression Scale Questions: Please check (x) in appropriate column	Yes (0)	No (1)
36. Are you basically satisfied with your life?		
37. Have you dropped many of your activities and interests?		
38. Do you feel that your life is empty		
39. Do you often get bored?		
40. Are you hopeful about the future?		
41. Are you bothered by thoughts you can't get out of your head?		
42. Are you in good spirits most of the time?		
43. Are you afraid that something bad is going to happen to you?		
44. Do you feel happy most of the time?		
45. Do you often feel helpless?		
46. Do you often get restless and fidgety?		
47. Do you prefer to stay at home, rather than going out and doing new things?		
48. Do you frequently worry about the future?		
49. Do you feel you have more problems with memory than most?		
50. Do you think it is wonderful to be alive now?		
51. Do you often feel downhearted and blue?		
52. Do you feel pretty worthless the way you are now?		
53. Do you worry a lot about the past?		
54. Do you find life very exciting?		
55. Is it hard for you to get started on new projects?		

56. Do you feel full of energy?		
57. Do you feel that your situation is hopeless?		
58. Do you think that most people are better off than you are?		
59. Do you frequently get upset over little things?		
60. Do you frequently feel like crying?		
61. Do you have trouble concentrating?		
62. Do you enjoy getting up in the morning?		
63. Do you prefer to avoid social gatherings?		
64. Is it easy for you to make decisions?		
65. Is your mind as clear as it used to be?		

UCLA Loneliness Scale	Never 1	Rarely 2	Sometime 3	Always 4
66. I am unhappy doing so many things alone				
67. I have nobody to talk to				
68. I cannot tolerate being so alone				
69. I feel as if nobody really understand me				
70. I find myself waiting for people to call or write				
71. I feel completely alone				
72. I am unable to reach out and communicate with those around me				
73. I feel starved for company				
74. It is difficult for me to make friends				
75. I feel shut out and excluded by others				
A score of 20 or higher reflects a high level or loneliness.				

Appendix B

Structured face-to-face interview (Thai version)

เลขที่: _____

วันที่: _____

ผู้สัมภาษณ์: _____

แบบสอบถามโดยสัมภาษณ์

ส่วนที่ 1: ข้อมูลโดยทั่วไปของผู้สูงอายุ

- 1) ชื่อ.....
 - 2) อายุปัจจุบัน.....ปี
 - 3) เพศ: (1) ชาย (2) หญิง
 - 4) สถานะภาพ:

 (1)โสด (2) แต่งงาน (3) หย่า (4)เป็นม่าย (5) อื่นๆ (โปรดระบุ).....
 - 5) ระดับการศึกษา

 (1) ไม่ได้รับการศึกษา (2) ประถมศึกษา

 (3) มัธยมศึกษาตอนต้น .ม)1-ม.3) (4) มัธยมศึกษาตอนปลาย .ม)4-ม.6) ปวช.

 (5) ปวสหรือเทียบเท่า . (6)ปริญญาตรีหรือสูงกว่า
 - 6) ท่านมีบุตรจำนวนกี่คน

 (1) ไม่มี (2) 1-3 คน (3) มากกว่า 3 คน
 - 7) คุณอาศัยอยู่ที่ศูนย์พัฒนาการจัดสวัสดิการสังคมผู้สูงอายุบ้านบางแคมาเป็นระยะเวลาเท่าใด

 (1) น้อยกว่า 6 เดือน (2) มากกว่า 6 เดือน (3) มากกว่า 1 ปี
 - 8) ท่านมีรายได้หรือไม่

 (1) ไม่มี ชำมไปตอบข้อ9) (2) มี
 - 8.1) การประมาณรายได้ต่อความเพียงพอของผู้ตอบแบบสอบถามต่อเดือน

 (1) ไม่เพียงพอ (2) เพียงพอ แต่ไม่มีเงินออม (3) เพียงพอ และมีเงินออม
- การเจ็บป่วยเรื้อรัง:**
- 9) ปัจจุบันสุขภาพของท่านเป็นอย่างไร

 (1) ไม่ดี (2) ปานกลาง (3) ดี (4) ดีมาก
 - 9.1) ท่านมีโรคประจำตัวหรือไม่

 (0) ไม่มี (1) มี(ระบุ)

9.2) ความเจ็บป่วยในข้อก่อนหน้านี้ท่านได้รับการวินิจฉัยจากแพทย์หรือไม่

- (1) ไม่ได้รับ (2) ได้รับ

9.3) ท่านได้รับประทานยาในการรักษาหรือไม่

- (1) ไม่ได้รับประทานยา (2) รับประทานยา

10) ท่านมีคนในครอบครัวของท่าน (พ่อแม่ปู่ย่าตายายทวดพี่ชายน้องสาวป้าลุง) ได้รับการวินิจฉัยว่าเป็นโรคซึมเศร้า (จากแพทย์) หรือไม่

- (1) ไม่มี (2) มี

ภัยธรรมชาติที่เกิดจากน้ำท่วม:

11) ท่านจำเหตุการณ์น้ำท่วมที่เกิดขึ้นที่บ้านบางแค 1 ได้หรือไม่

- (1) จำไม่ได้ (2) จำได้

12) รู้สึกเครียดหรือไม่เมื่อต้องย้ายไปอยู่สถานที่อื่นในขณะที่เกิดน้ำท่วม

- (1) ไม่รู้สึกเครียด (2) เครียดเล็กน้อย (3) เครียดปานกลาง
 (4) เครียดมาก

13) ครอบครัวของท่านหรือผู้อื่นได้ดูแลท่านขณะเกิดเหตุการณ์น้ำท่วม

- (1) ไม่ (2) ใช่

13.1) ครอบครัวของท่านได้รับผลกระทบจากเหตุการณ์น้ำท่วมยาวนานเท่าใด

- (1) น้อยกว่า 1 เดือน (2) 1-2 เดือน (3) มากกว่า 3 เดือน

14) ท่านมีเพื่อนที่ได้รับผลกระทบจากเหตุการณ์น้ำท่วมหรือไม่

- (1) ไม่มี (ถ้าตอบไม่มี ให้ข้ามไปตอบข้อ 15) (2) มี

14.1) เพื่อนของท่านได้รับผลกระทบจากเหตุการณ์น้ำท่วมยาวนานเท่าใด

- (1) น้อยกว่า 1 เดือน (2) 1-2 เดือน (3) มากกว่า 3 เดือน

15) ท่านรู้สึกเป็นกังวลกับความเสียหายของเหตุการณ์น้ำท่วมหรือไม่

- (1) ไม่เป็นกังวล (2) กังวลเล็กน้อย (3) กังวลปานกลาง (4) กังวลมาก

คำถามการออกกำลังกาย:

16) ท่านปฏิบัติ หรือออกกำลังกาย เช่น โยเก้ก, การเดิน, การทำสวน, การทำความสะอาดบ้าน ฯลฯ

(1) ไม่ (ข้ามไปตอบคำถามข้อที่ 19) (2) ใช่

17) ท่านปฏิบัติ หรือออกกำลังกาย โยเก้ก, การเดิน, การทำสวน, การทำความสะอาดบ้าน ฯลฯ กี่ครั้ง

(1) 1 ครั้งต่อสัปดาห์ (2) 2 ครั้งต่อสัปดาห์ (3) มากกว่า 2 ครั้งต่อสัปดาห์

18) จำนวนครั้งที่ท่านใช้ทำกิจกรรม หรือออกกำลังกายในข้อข้างต้นที่ปฏิบัติไม่น้อยกว่า 30 นาที

(1) 1 ครั้งต่อสัปดาห์ (2) 2 ครั้งต่อสัปดาห์ (3) มากกว่า 2 ครั้งต่อสัปดาห์

การไม่ได้รับวิตามินดี:

19) หนึ่งวันในสัปดาห์อย่างมากที่สุดท่านอยู่บริเวณกลางแจ้งเป็นเวลาอย่างน้อยหนึ่งชั่วโมง

(1) ไม่ใช่ (2) ใช่

20) ส่วนมากคุณมักจะใช้เวลาใดอยู่บริเวณกลางแจ้ง

(1) ระหว่าง 6.00 - 9.00 น. (2) ระหว่าง 10.00 - 15.00 น. (3) ระหว่าง 16.00 - 19.00 น.

21) ท่านรับประทานวิตามินดีที่เป็นผลิตภัณฑ์เสริมอาหารเพิ่มหรือไม่

(1) ไม่ได้รับประทาน (2) รับประทาน

22) เมื่อท่านออกไปภายนอก ท่านใส่เสื้อผ้าประเภทใด

(1) เสื้อแขนยาว (2) เสื้อแขนสั้น (3) อื่นๆ.....(ระบุ)

23) โดยเฉลี่ยแล้ว อาหารประเภทใดที่ท่านรับประทานมากที่สุด

.....

24) เมื่อท่านซื้ออาหารจากภายนอกจำพวกของว่าง หรือขนม อาหารประเภทใดที่ท่านรับประทานมากที่สุด

(1) ส่วนมากเป็นขนมหวาน (2) ส่วนมากเป็นผลไม้

(3) อื่นๆ(ระบุ)

DSM-IVคำถามเกี่ยวกับความผิดปกติในการนอนหลับ 1 = ไม่เคย 2 = รู้สึกนานๆครั้ง 3 = รู้สึกบางครั้ง 4 = รู้สึกบ่อยครั้ง	ไม่เคย	รู้สึกนานๆ ครั้ง	รู้สึก บางครั้ง	รู้สึก บ่อยครั้ง
25) คุณมีปัญหาในการนอนหลับหรือไม่				
26) คุณมีปัญหาการตื่นนอนในกลางดึกในขณะนอนหลับ				
27) ในเดือนที่ผ่านมาคุณมักจะใช้ยานอนหลับเพื่อช่วยให้คุณนอนหลับ				
28) คุณตื่นขึ้นมาเมื่ออากาศที่ไม่สดชื่น				
29) คุณใช้เครื่องดืมแอลกอฮอล์เพื่อช่วยให้คุณนอนหลับ				
30) คุณมีอาการเจ็บป่วยต่างๆ ที่รบกวนการนอนหลับของคุณ				

คำถามกิจกรรมทางด้านสังคม: 1 = ไม่เคย 2 = รู้สึกนานๆครั้ง 3 = รู้สึกบางครั้ง 4 = รู้สึกบ่อยครั้ง	ไม่เคย	รู้สึกนานๆ ครั้ง	รู้สึก บางครั้ง	รู้สึก บ่อยครั้ง
31) ท่านทำงานอาสาสมัครเพื่อทำงานช่วยเหลือผู้อื่น				
32) ท่านมีส่วนร่วมในกิจกรรมกีฬา หรือกิจกรรมนันทนาการ เช่นการจัดดอกไม้การออกกำลังกายกลุ่ม หรืองานฝีมือร่วมกับผู้อื่น				
33) ท่านมีความสุขสนุกสนานกับกิจกรรมกลุ่มร่วมกับผู้อื่น				
34) ท่านไปพบปะสังสรรค์ หรือร่วมกิจกรรมกับครอบครัว				
35) ท่านไปวัดหรือเข้าร่วมกิจกรรมทางศาสนาบ่อยครั้งเพียงใด				

แบบวัดความเศร้าในผู้สูงอายุไทย (Thai Geriatric Depression Scale-TGDS)

โปรดอ่านข้อความในแต่ละข้ออย่างละเอียด และประเมินความรู้สึกของท่านในช่วงเวลาหนึ่งสัปดาห์ที่ผ่านมา

รายการ	ใช่ (0)	ไม่ใช่ (1)
36. คุณพอใจกับชีวิตความเป็นอยู่ตอนนี้		
37. คุณไม่อยากทำในสิ่งที่เคยสนใจหรือเคยทำเป็นประจำ		
38. คุณรู้สึกชีวิตของคุณช่วงนี้ว่างเปล่าไม่รู้จะทำอะไร		
39. คุณรู้สึกเบื่อหน่ายบ่อยๆ		
40. คุณหวังว่าจะมีสิ่งที่ดี เกิดขึ้นในวันหน้า		
41. คุณมีเรื่องกังวลอยู่ตลอดเวลา และเลิกคิดไม่ได้		
42. ส่วนใหญ่แล้วคุณรู้สึกอารมณ์ดี		
43. คุณรู้สึกกลัวว่าจะมีเรื่องไม่ดีเกิดขึ้นกับคุณ		
44. ส่วนใหญ่คุณรู้สึกมีความสุข		
45. บ่อยครั้งที่คุณรู้สึกไม่มีที่พึ่ง		
46. คุณรู้สึกกระวนกระวาย กระสับกระส่ายบ่อยๆ		
47. คุณชอบอยู่กับบ้านมากกว่าที่จะออกนอกบ้าน		
48. บ่อยครั้งที่คุณรู้สึกวิตกกังวลเกี่ยวกับชีวิตข้างหน้า		
49. คุณคิดว่าความจำของคุณไม่ดีเท่าคนอื่น		
50. การที่มีชีวิตอยู่ถึงปัจจุบันนี้ เป็นเรื่องน่าอินดีหรือไม่		
51. คุณรู้สึกหมดกำลังใจ หรือเศร้าใจบ่อยๆ		
52. คุณรู้สึกว่าชีวิตคุณค่อนข้างไม่มีคุณค่า		
53. คุณรู้สึกกังวลมากกับชีวิตที่ผ่านมา		
54. คุณรู้สึกว่าชีวิตนี้ยังมีเรื่องน่าสนุกอีกมาก		
55. คุณรู้สึกลำบากที่จะเริ่มต้นทำอะไรใหม่ๆ		
56. คุณรู้สึกกระตือรือร้น		
57. คุณรู้สึกสิ้นหวัง		
58. คุณคิดว่าคนอื่นดีกว่าคุณ		
59. คุณอารมณ์เสียง่ายกับเรื่องเล็กๆ น้อยๆ อยู่เสมอ		
60. คุณรู้สึกอยากร้องไห้บ่อยๆ		
61. คุณมีความตั้งใจในการทำสิ่งหนึ่งสิ่งใดได้ไม่นาน		
62. คุณรู้สึกสดชื่นในเวลาตื่นนอนตอนเช้า		
63. คุณไม่อยากพบปะพูดคุยกับคนอื่น		
64. คุณตัดสินใจอะไรได้เร็ว		
65. คุณมีจิตใจ สบาย แจ่มใสเหมือนก่อน		

การอยู่เพียงลำพัง

UCLA Loneliness Scale คะแนนความรู้สึกโดดเดี่ยว คุณรู้สึกโดดเดี่ยวอย่างไร 1 = ไม่เคย 2 = รู้สึกนานๆครั้ง 3 = รู้สึกบางครั้ง 4 = รู้สึกบ่อยครั้ง	ไม่เคย (1)	รู้สึก นานๆ ครั้ง (2)	รู้สึก บางครั้ง (3)	รู้สึก บ่อยครั้ง (4)
66. ฉันรู้สึกเศร้าใจที่จะทำสิ่งใดโดยลำพัง				
67. ฉันไม่มีใครที่จะคุยด้วย				
68.ฉันทนไม่ได้ที่จะอยู่คนเดียว				
69. ฉันรู้สึกเหมือนว่าไม่มีใครเข้าใจฉัน				
70. ฉันรอที่จะได้รับการติดต่อทางจดหมาย หรือ โทรศัพท์				
71. ฉันรู้สึกอยู่เพียงลำพัง				
72. ฉันไม่สามารถเข้าใจและสื่อสารกับคนรอบข้าง				
73. ฉันอยากมีเพื่อน				
74. ฉันเข้ากับคนได้ยาก				
75. ฉันรู้สึกไม่เป็นที่ยอมรับของคนอื่น ๆ				
กำหนดคะแนนรวมโดยรวมจากการตอบในแต่ละคำถาม ค่าเฉลี่ยคะแนนความรู้สึกโดดเดี่ยวอยู่ที่ 20				

Appendix C Budget

	Activity	Unit	Price (Baht)	Subtotal	Total Budget (Baht)
1	Pre-Testing (Reliability and validation) -Photocopy -Stationery	Questionnaire	30 sets x 100 baht 10 set x 100 baht	3000 1000	
2	Data collection -Photocopy Orientation (1 time) (Ten Nurse research assistants) Transportation cost (gas and renting) Snack for Participants	Questionnaire Person Day	300 sets x 100 baht 10 person x 7 days x 500 baht 7 days x 1500baht 300 participants x 50baht	3000 2000 35,000 10,500 15,000	
3	Document Printing -Paper+ Printing -Photo copy	Page Page	1 page x 300 baht 1 page x 300 baht	300 300	
4	Thesis Publication	Set	1 set x 3000 baht	3000	
	THESIS DOCUMENT PROCESS				73,100

Appendix D

Time Schedule

Project Procedure	Time Frame (Month)									
	11-Aug	11-Sep	11-Oct	11-Nov	11-Dec	12-Jan	12-Feb	12-Mar	12-Apr	12-May
1. Literature Review										
2. Writing Thesis Proposal										
3. Submission for Proposal Exam										
4. Proposal exam										
5. Ethical Consideration from Chulalongkorn University										
6. Pretest Questionnaire										
7. Field preparation and data collection										
8. Data analysis										
9. Thesis and article writing										
10. Final thesis exam										
11. Submission of article for publication										
12. Submission of thesis										

Appendix E Reliability Test

Thai Geriatric Depression Scale Cronbach's coefficient alpha = .74	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
36. คุณพอใจกับชีวิตความเป็นอยู่ตอนนี้	0.162	0.775
37. คุณไม่ชอบทำในสิ่งที่เคยสนใจหรือเคยทำเป็นประจำ	0.321	0.767
38. คุณรู้สึกชีวิตของคุณช่วงนี้ว่างเปล่าไม่รู้จะทำอะไร	0.302	0.768
39. คุณรู้สึกเบื่อหน่ายบ่อยๆ	0.57	0.752
40. คุณหวังว่าจะมีสิ่งที่ดี เกิดขึ้นในวันหน้า	0.368	0.764
41. คุณมีเรื่องกังวลอยู่ตลอดเวลา และเลิกคิดไม่ได้	0.459	0.759
42. ส่วนใหญ่แล้วคุณรู้สึกอารมณ์ดี	0.598	0.758
43. คุณรู้สึกกลัวว่าจะมีเรื่องไม่ดีเกิดขึ้นกับคุณ	0.049	0.781
44. ส่วนใหญ่คุณรู้สึกมีความสุข	0.405	0.763
45. บ่อยครั้งที่คุณรู้สึกไม่มีที่พึ่ง	0.492	0.76
46. คุณรู้สึกกระวนกระวาย กระสับกระส่ายบ่อยๆ	0.579	0.755
47. คุณชอบอยู่กับบ้านมากกว่าที่จะออกนอกบ้าน	0.026	0.783
48. บ่อยครั้งที่คุณรู้สึกวิตกกังวลเกี่ยวกับชีวิตข้างหน้า	0.429	0.763
49. คุณคิดว่าความจำของคุณไม่ดีเท่าคนอื่น	0.393	0.764
50. การที่มีชีวิตอยู่ถึงปัจจุบันนี้ เป็นเรื่องน่ายินดีหรือไม่	-0.155	0.79
51. คุณรู้สึกหมดกำลังใจ หรือเศร้าใจบ่อยๆ	0.59	0.752
52. คุณรู้สึกว่าชีวิตคุณค่อนข้างไม่มีคุณค่า	0.086	0.779
53. คุณรู้สึกกังวลมากกับชีวิตที่ผ่านมา	0.353	0.766
54. คุณรู้สึกว่าชีวิตนี้ยังมีเรื่องน่าสนุกอีกมาก	0.192	0.773
55. คุณรู้สึกลำบากที่จะเริ่มต้นทำอะไรใหม่ๆ	0.368	0.764
56. คุณรู้สึกกระตือรือร้น	0.081	0.781
57. คุณรู้สึกสิ้นหวัง	0.155	0.774
58. คุณคิดว่าคนอื่นดีกว่าคุณ	0.333	0.766
59. คุณอารมณ์เสียบ่อยๆกับเรื่องเล็กๆ น้อยๆอยู่เสมอ	0.643	0.748
60. คุณรู้สึกอยากร้องไห้บ่อยๆ	0.25	0.771

61. คุณมีความตั้งใจในการทำสิ่งหนึ่งสิ่งใดได้ไม่นาน	0.101	0.777
62. คุณรู้สึกสดชื่นในเวลาตื่นนอนตอนเช้า	0.02	0.782
63. คุณไม่อยากพบปะพูดคุยกับคนอื่น	0.177	0.773
64. คุณตัดสินใจอะไรได้เร็ว	0.208	0.772
65. คุณมีจิตใจ สบาย แจ่มใสเหมือนก่อน	0.132	0.774

Loneliness UCLA Scales		
Cronbach's coefficient alpha =	Corrected Item-	Cronbach's Alpha if
0.69	Total Correlation	Item Deleted
66. ฉันรู้สึกเศร้าใจที่จะทำสิ่งใดโดยลำพัง	0.09	0.71
67. ฉันไม่มีใครที่จะคุยด้วย	0.141	0.695
68. ฉันทนไม่ได้ที่จะอยู่คนเดียว	0.329	0.67
69. ฉันรู้สึกเหมือนว่าไม่มีใครเข้าใจฉัน	0.182	0.699
70. ฉันรอที่จะได้รับการติดต่อทางจดหมาย หรือ โทรศัพท์	0.396	0.658
71. ฉันรู้สึกอยู่เพียงลำพัง	0.47	0.642
72. ฉันไม่สามารถเข้าใจและสื่อสารกับคนรอบข้าง	0.617	0.612
73. ฉันอยากมีเพื่อน	0.517	0.632
74. ฉันเข้ากับคนได้ยาก	0.286	0.677
75. ฉันรู้สึกไม่เป็นที่ยอมรับของคนอื่น ๆ	0.452	0.649

Social Activity		
Cronbach's coefficient alpha =.66	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
1) ท่านทำงานอาสาสมัครเพื่อทำงานช่วยเหลือผู้อื่น	0.465	0.587
2) ท่านมีส่วนร่วมในกิจกรรมกีฬา หรือกิจกรรมนันทนาการ เช่น การจัดดอกไม้ การออกกำลังกายกลุ่ม หรืองานฝีมือร่วมกับผู้อื่น	0.625	0.49
3) ท่านมีความสุขสานกับกิจกรรมกลุ่มร่วมกับผู้อื่น	0.218	0.686
4) ท่านไปพบปะสังสรรค์ หรือร่วมกิจกรรมกับครอบครัว	0.326	0.645
5) ท่านไปวัดหรือเข้าร่วมกิจกรรมทางศาสนาบ่อยครั้งเพียงใด	0.448	0.591

Sleep (DSM-IV Insomnia)		
Cronbach's coefficient alpha =.61	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
1) คุณมีปัญหาในการนอนหลับหรือไม่	0.377	0.563
2) คุณมีปัญหาการตื่นนอนในกลางดึกในขณะที่นอนหลับ	0.134	0.648
3) ในเดือนที่ผ่านมาคุณมักจะใช้ยานอนหลับเพื่อช่วยให้คุณนอนหลับ	0.22	0.631
4) คุณตื่นขึ้นมามีอาการที่ไม่สดชื่น	0.602	0.447
5) คุณใช้เครื่องดื่มน้ำแอลกอฮอล์เพื่อช่วยให้คุณนอนหลับ	0.255	0.612
6) คุณมีอาการเจ็บป่วยต่างๆ ที่รบกวนการนอนหลับของคุณ	0.559	0.478

VITAE

A. Personal Details

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B. Education/Qualifications

Course Completed	Institution	Date of Completion
Bachelors of Art (Psychology and Communications)	UC Davis, California, USA	2008
High School	Menlo Atherton High school	2004

C. Professional Work Experience

1. **Google Contractor:** Analyst; Data Integrity for Google Maps.
2. **Stanford Management Company:** CMS Project Coordinator
3. **Orchid Villa Care Home:** Home Care Supervisor