ปัจจัยที่มีอิทธิพลต่อพฤติกรรมสุขภาพของผู้สูงอายุ
ในเขตอำเภอเมืองร้อยเอ็ด จังหวัดร้อยเอ็ด ประเทศไทย

นางสาวศิริวัฒน์ ไชยหะนิจ

FACTORS INFLUENCING HEALTH BEHAVIORS

OF ELDERS IN MUEANG DISTRICT,

ROI ET PROVINCE, THAILAND

Miss Siriwat Chaihanit

A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Public Health Program in Health Systems Development

Collage of Public Health Sciences

Chulalongkorn University

Academic Year 2009

Thesis Title   FACTORS INFLUENCING HEALTH BEHAVIORS OF ELDERS

            IN MUEANG DISTRICT,ROI ET PROVINCE,THAILAND

By   Miss Siriwat Chaihanit

Field of Study   Health Systems Development

Thesis Advisor   Prathurng Hongsranagon, Ph.D.

Accepted by the College of Public Health Sciences, Chulalongkorn University in Partial Fulfillment of the Requirements for the Master's Degree

.... Dean of the College of Public Health Sciences

(Professor Surasuk Taneepanichskul, M.D.)

THESIS COMMITTEE

.... Chairman

(Assistant Professor Ratana Somrongthong, Ph.D.)

.... Thesis Advisor

(Prathurng Hongsranagon, Ph.D.)

.... External Examiner

(Wongwat Liuluck, M.D.)

ศิริวัฒน์ ไชยหะนิจ:ปัจจัยที่มีอิทธิพลต่อพฤติกรรมสุขภาพของผู้สูงอายุในเขตอำเภอเมืองร้อยเอ็ด จังหวัดร้อยเอ็ด
ประเทศไทย. (FACTORS INFLUENCING HEALTH BEHAVIORS OF ELDERS IN MUEANG DISTRICT,ROI
ET PROVINCE,THAILAND) อ. ที่ปรึกษาวิทยานิพนธ์หลัก
:อ.ดร.ประเทือง หงสรานากร, 109 หน้า.

วัตถุประสงค์ของการศึกษาครั้งนี้   เพื่อศึกษาระดับของพฤติกรรมสุขภาพด้านการออกกำลังกาย การรับประทาน
อาหาร การปฏิบัติตนในภาวะเจ็บป่วย และการจัดการความเครียด เพื่อทราบลักษณะปัจจัยส่วนบุคคลได้แก่ เพศ อายุ ระดับ
การศึกษา สถานภาพสมรส รายได้ ความพอเพียงของรายได้ แหล่งที่มาของรายได้ส่วนใหญ่ การมีโรคประจำตัว ระบบบริการ
สุขภาพและสิ่งแวดล้อมทางสังคม   และเพื่อศึกษาปัจจัยที่มีอิทธิพลต่อพฤติกรรมสุขภาพของผู้สูงอายุ   การศึกษาครั้งนี้เป็น
การศึกษา ณ จุดเวลาใดเวลาหนึ่ง โดยใช้การสุ่มตัวอย่างแบบเป็นระบบ กับกลุ่มตัวอย่าง จำนวน 430 คน เก็บข้อมูลระหว่างเดือน
ธันวาคม พ.ศ. 2552 เครื่องมือที่ใช้เป็นแบบสัมภาษณ์ วิเคราะห์ข้อมูลใช้สถิติเชิงบรรยาย (ความถี่ ร้อยละ ค่าเฉลี่ย ส่วน
เบี่ยงเบนมาตรฐาน) และใช้สถิติChi –Square test เพื่อตรวจสอบความสัมพันธ์ระหว่างตัวแปรอิสระกับตัวแปรตาม

ผลการศึกษาพบว่าข้อมูลประชากรส่วนใหญ่เป็นเพศหญิงร้อยละ58.6 อายุระหว่าง60-65ปีร้อยละ40.5 จบการศึกษา
ระดับประถมศึกษาร้อยละ79.8   สถานภาพสมรสคู่ร้อยละ63.7 รายได้ของครอบครัวต่อเดือนน้อยกว่า5,000บาทร้อยละ47.9
รายได้เพียงพอต่อการใช้จ่ายแต่ไม่เหลือเก็บร้อยละ41.9 แหล่งรายได้ส่วนใหญ่มาจากตัวเองร้อยละ96.3 มีโรคประจำตัวร้อยละ
57.2 ส่วนใหญ่ป่วยเป็นโรคเบาหวานร้อยละ46.1ของโรคประจำตัวทั้งหมด ร้อยละ99.3รักษาและติดตามผลสม่ำเสมอ พฤติกรรม
สุขภาพของผู้สูงอายุพบว่าพฤติกรรมด้านการรับประทานอาหารอยู่ในระดับดี($\overline{X}$ =2.68, S.D.=0.25) พฤติกรรมด้านการออกกำลัง
กายอยู่ในระดับพอใช้($\overline{X}$ =2.13, S.D.=0.60). พฤติกรรมด้านการปฏิบัติตัวในภาวะเจ็บป่วยอยู่ในระดับดี($\overline{X}$ =2.69, S.D.=0.39)
และพฤติกรรมด้านการจัดการความเครียดอยู่ในระดับดี($\overline{X}$ =2.37, S.D.=0.41)   ปัจจัยที่มีอิทธิพลต่อพฤติกรรมสุขภาพพบว่า
อายุ   การมีโรคประจำตัวมีความสัมพันธ์กับพฤติกรรมสุขภาพด้านการรับประทานอาหารอย่างมีนัยสำคัญทางสถิติที่ระดับ0.05
(p=0.048,0.008 ตามลำดับ)   เพศ ระดับการศึกษา และความพอเพียงของรายได้มีความสัมพันธ์กับพฤติกรรมสุขภาพด้านการ
ออกกำลังกายอย่างมีนัยสำคัญทางสถิติที่ระดับ0.05(p=0.002,0.016,<0.001 ตามลำดับ)   สถานภาพสมรสมีความสัมพันธ์กับ
พฤติกรรมสุขภาพด้านการปฏิบัติตนในภาวะเจ็บป่วยอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.05 (p=0.032) เพศ ระดับการศึกษาและ
ความพอเพียงของรายได้มีความสัมพันธ์กับพฤติกรรมสุขภาพด้านการจัดการความเครียดของผู้สูงอายุอย่างมีนัยสำคัญทางสถิติที่
ระดับ0.05 (p=0.045,0.024,0.001 ตามลำดับ)

การศึกษาในอนาคตควรศึกษาพฤติกรรมสุขภาพของผู้สูงอายุในรูปแบบการวิจัยเชิงคุณภาพ และศึกษาปัจจัยอื่นๆที่
น่าจะมีความสัมพันธ์กับพฤติกรรมสุขภาพของผู้สูงอายุ

สาขา วิชาการพัฒนาระบบสาธารณสุข   ลายมือชื่อนิสิต..
ปีการศึกษา 2552   ลายมือชื่ออ.ที่ปรึกษาวิทยานิพนธ์หลัก.....................

SIRIWAT CHAIHANIT: FACTORS INFLUENCING HEALTH BEHAVIORS OF ELDERS IN MUEANG DISTRICT, ROI ET PROVINCE, THAILAND.THESIS ADVISOR :PRATHURNG HONGSRANAGON,PH.D., 109 pp.

The objectives of this research were to study health behavior of the elderly in Mueang District, Roi Et Province, concerning exercise, diet, self care during illnesses and stress management , to describe each personal attribution factor, such as, gender, age, educational background, marital status, income, income sufficiency, main source of income and personal illness) by taking into consideration health service system and social environment and to determine factors influencing health behaviors. It was a cross-sectional study with systematic sampling among 430 samples. Data collection was in December 2009. Descriptive statistics was employed (frequency, percentage, mean, standard deviation) while Chi-Square test was used to find out the factors associated with their health behaviors .

The results found that majority of samples was females (58.6%),aged between60–65 years old (40.5%) ,finished primary school (79.8%), married (63.7%) ,with monthly household income less than 5,000 baht (47.9%), had sufficient income but not enough for saving (41.9%), earned their own income(96.3%), had personal illnesses (57.2%),such as diabetes (46.1%), with consistent follow-up of their chronic disease(99.3%).In regards to their health behaviors, the result revealed that diet behavior was on good level($\overline{X}$=2.68, S.D.=0.25); exercise behavior was on fair level ($\overline{X}$=2.13, S.D.=0.60); self care behavior was on good level($\overline{X}$=2.69, S.D.=0.39) and stress management behavior was on good level($\overline{X}$=2.37, S.D.=0.41). Factors positively associated with health behaviors of elderly were as follows: age and personal illnesses with diet behavior at the statistical significance level of 0.05 (p=0.048,0.008 respectively); gender, educational background and income sufficiency with exercise behavior at the statistical significance level of 0.05 (p=0.002,0.016,<0.001 respectively); marital status with self care behavior at the statistical significance level of 0.05 (p=0.032); gender, educational background and income sufficiency with stress management behavior at the statistical significance level of 0.05 (p=0.045,0.024,0.001 respectively). In the future, there should be the study on health behavior of elders in qualitative method and on other factors that have association with health behavior of elderly.

Field of Study: Health Systems Development   Student's Signature ....

Academic Year : 2009 ....   Advisor's Signature ....

ACKNOWLEDGEMENTS

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure

CHAPTER I

INTRODUCTION

1.1 Background and rationale

The advancement of medical science and public health as well as family planning policy for the past decade has reduced population growth rate and fertility rate. This changing increases proportion of the elderly population to the total population and improves life expectancy of the Thai people. It is expected that the number of elders will continue to increase in the future as the average life expectancy tends to increase. This phenomenon is a normal occurrence in both developed and developing countries. From the projection of Thai population from 2000 to 2030, it is expected that the Thai population will be increasing at a decreasing rate from 62.24 million people in 2000 to 70.65 million people in 2025 and will reduce to 70.63 million people in 2030. This is due to a lowering in fertility rate from 1.81 in 2000 to 1.60 and 1.35 in 2006 and 2030 respectively (The National Economics and Social Development Board, 2007).

Furthermore, the implications of population ageing cannot be dismissed. In the more developed regions, the population aged 60 or over is increasing at the fastest pace ever (growing at 1.9 per cent annually) and is expected to increase by more than 50 per cent over the next four decades, rising from 264 million in 2009 to 416 million in 2050. Compared with the more developed world, the population of the less developed regions is ageing rapidly. Over the next two decades, the population aged 60 or over in the developing world is projected to increase at rates far surpassing 3 per cent per year and its numbers are expected to rise from 475 million in 2009 to 1.6 billion in 2050. (Press Release ,World population to exceed 9 billion by 2050 ,2009).

In 1950, the proportion of elders to the total population of Thailand was five percent. Thailand was ranked in the seventh position of countries with the highest proportion of elder in the South East Asia Region. However, presently, the proportion of elders to the total population of Thailand was ten percent (National Institute on Aging, 2006) which ranked in the second position of countries with the highest proportion of elder in the South East Asia Region after Singapore (National Institute on Aging, 2006). From the projection of Thai population in 2000 – 2030 showed that in 2010, the elderly population will rise to 7.6 million people or 11.4% of the total population. The figure is expected to increase to 11.3 million or 16.1% and 19.8% of the

total population by 2020 and 2025 (The National Economics and Social Development Board, 2007). Therefore, the trend of increasing in number of elders was a warning sign for society and related organization to be aware of the importance and preparing for the elderly care at present and in the future.

The number of elderly population in Thailand has been rising at a fast pace when we compare with the same occurrence in developed countries in the past. The time taken for the proportion of elders, above 60 years old, to the total population to grew from 7% to 14% within 107 years, while Thailand used only a period of 30 years (Jitapunkul S, Bannag S, 1998). As a result, the proportion of elders to the Thai population grew from 4.8% to 5.6% (in A.D. 1985), 7.6% (in A.D. 1995), to 9.3% (in A.D. 2000) and expected to be 12% (by A.D.2010) (The National Commission on the elderly, 2006). According to the United Nations' criteria, an ageing society refers to a society where 10 percent or more of its population is over 60, or over 7 percent of its population was older than 65 (United Nation,1956). Two important factors that contribute to the rising of elderly population were reduction of birth rate and death rate. The changing in structure of population pyramid in each time interval affects the population structure of Thailand from wide-base pyramid (the shape of pagoda) in 1970 to high shape vessel in 1995. The structure will be expected to become a vase shape in 2025 (United Nation, 1996).

This continuous increasing trend of elderly population will bring along health risks and problems, especially chronic disease because elders will experience deterioration in physical, emotional, economic and social aspects. For overall physical problems, it was found that 72 – 80% of Thai elders had chronic diseases such as joint pain (43 – 48%), high blood pressure (14 – 27%), diabetes (3 – 9%), Alzheimer (8 – 12%), hearing problem (8 – 15%), long eyesight (50 – 66%), short eyesight (22 – 26%), regular medication need (40 – 55%),regular smoking (12 – 26%), alcohol drinking (9 – 21%), walking problems (16%), falling-down problems (10%) outside the dwelling more than inside the dwelling due to stumbling upon barriers or slippery floor (Foundation of Thai Gerontology Research and Development, 2008; Institute for Population and Social Research, 2008; National Institute on Aging, Department of Medical Services, 2006).

Suthichai Jitapankul(2009)revealed the present situation of elderly health problems. He said that most of elders were found with more than one disease. Besides, some of them also had disability. Nearly one percent of elders were unable to help themselves and needed 24-hour bed

care. In addition, many more elders needed healthcare at various levels. This was a result of improper preparation for elderly healthcare problems. Diseases in elders can be classified into three groups. The first group is coronary artery related chronic diseases such as diabetes, high blood pressure etc. These diseases cause problem to the coronary system and can lead to paralysis. The second group involves problems at joints and bone as a result of doing physical works, osteoporosis, or accident. These problems would disallow elders to use their body normally and need to rely on others. The third group is encephalopathy. It was found that a number of the Thai elders who have suffered these diseases was as high as countries. In addition, the number of patients from these diseases was rising due to an increase in elderly population. Apart from encephalopathy, elders were found with mental problems and depression. These three groups of diseases can cause major problems to elders, especially side effect from taking medicine. When an elder has multiple diseases, he/she had to take more medicine and experienced more side effects as a consequence.

The increasing of elderly population in both quantitative and proportional aspects has given impact to the economic and social structures as well as public health development plan of the country. An increasing in life expectancy does not guarantee that elders will have better health condition. On the other hand, elders' bodies and organs performance will be greatly reduced. This will create a dependency status. This kind of change will affect health, economy, living standard and adaptation of elders.

Aging population is a common occurrence that is nowadays faced by countries around the world. Thailand must prepare plans and measures to support the coming 'Aging Society' today. The country has to provide adequate and high quality public health services, social welfare and social services for elders as well as a mean to protect their lives and properties. Since in the future, elders must be independent and able to face various types of sicknesses resulting from a deterioration of their bodies. Recognizing the importance of this issue, the Thai government has initiated several plans and policies to support health promotional activities for elders.

From the information of Roi Et Province, it found that during year 2007 – 2009 the elderly population were 131,689, 134,718 and 141,651 respectively. The independent percentage was 15.6. The trend of average life expectancy was accelerating. The male and female had an average life expectancy of 69.97 and 74.31 years respectively (Roi Et Public Health Office,

2009).Mueang District had a total population of 150,145 people out of which 17,720 or 11.8% were elders (Mueang District Public Health Office, 2009). Roi Et Province was considered as one of the provinces with an increasing number of elderly population which was in alignment with the statistical projection of the Thai population. The increase in elderly population will affect Roi Et socially and economically so much that there is a necessary to provide continuous health resources in the long run.
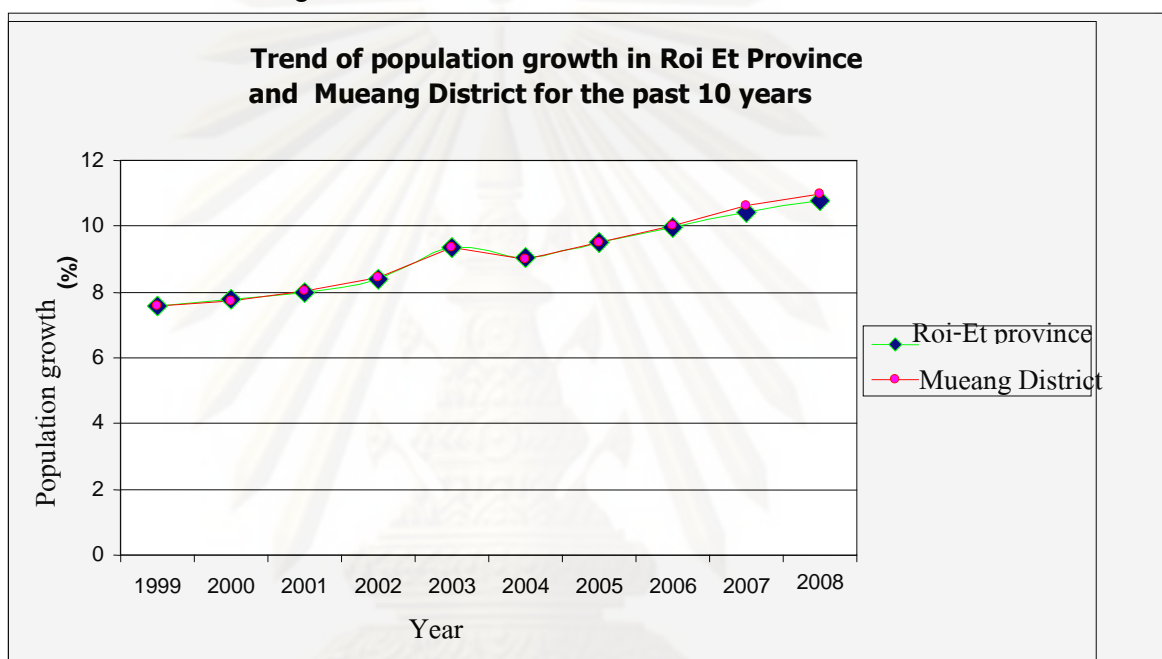
Source: Public Health Strategy Development Group, Roi Et Public Health Office.

Graph 1 Trend of population growth in Mueang District, Roi Et Province.

The study of health behavior of elders is as important as health promotion which will reduce health problem and medical expenses.

The researcher is thus interested in the study of elderly health condition in Mueang District, Roi Et Province as a result of the elders' self-care behavior. The objective is to learn level of behavior among elders and their problems and needs, so as to improve and determine appropriate for elderly healthcare accordingly.

1.2 Research questions

1. What is the level of health behavior concerning exercise, diet, practice during sickness and stress management of elders who are living in Mueang District, Roi Et Province?

2. What is the characteristics of personal attribution factors which include gender, age, educational background, marital status, income, income sufficiency, main source of income and personal illness of the elders?

3. What are the factors influencing health behaviors of elders in Mueang District, Roi Et Province?

1.3 Hypothesis

1. Health behavior of elders who are living in Mueang District, Roi Et Province, is on good level.

2. The factors influencing health behavior of elders who are living in Mueang District, Roi Et Province are gender, age, educational background, marital status, income, income sufficiency, main source of income and personal illness.

1.4 Objectives

1. To study health behavior concerning exercise, diet, practice during sickness and stress management of elders who are living in Mueang District, Roi Et Province.

2. To describe each personal attribution factor, such as, gender, age, educational background, marital status, income, income sufficiency, main source of income and personal illness) of the elders who are living in Mueang District, Roi- Et Province, by taking into consideration health service system and social environment.

3. To determine factors influencing health behaviors of elders in Mueang District, Roi Et Province.

1.5 Conceptual Framework

Independent		Dependent

Personal Attribution Factors
1. Gender
2. Age
3. Educational background
4. Marital status
5. Income
6. Income sufficiency
7. Main Source of Income
8. Personal illnesses

Health Service System
- Health service in medical service, health promotion, health prevention and recovery

Social Environment
- Involvement in community's activities

Health Behavior
1. Diet
2. Exercise
3. Self-care behavior
4. Stress management
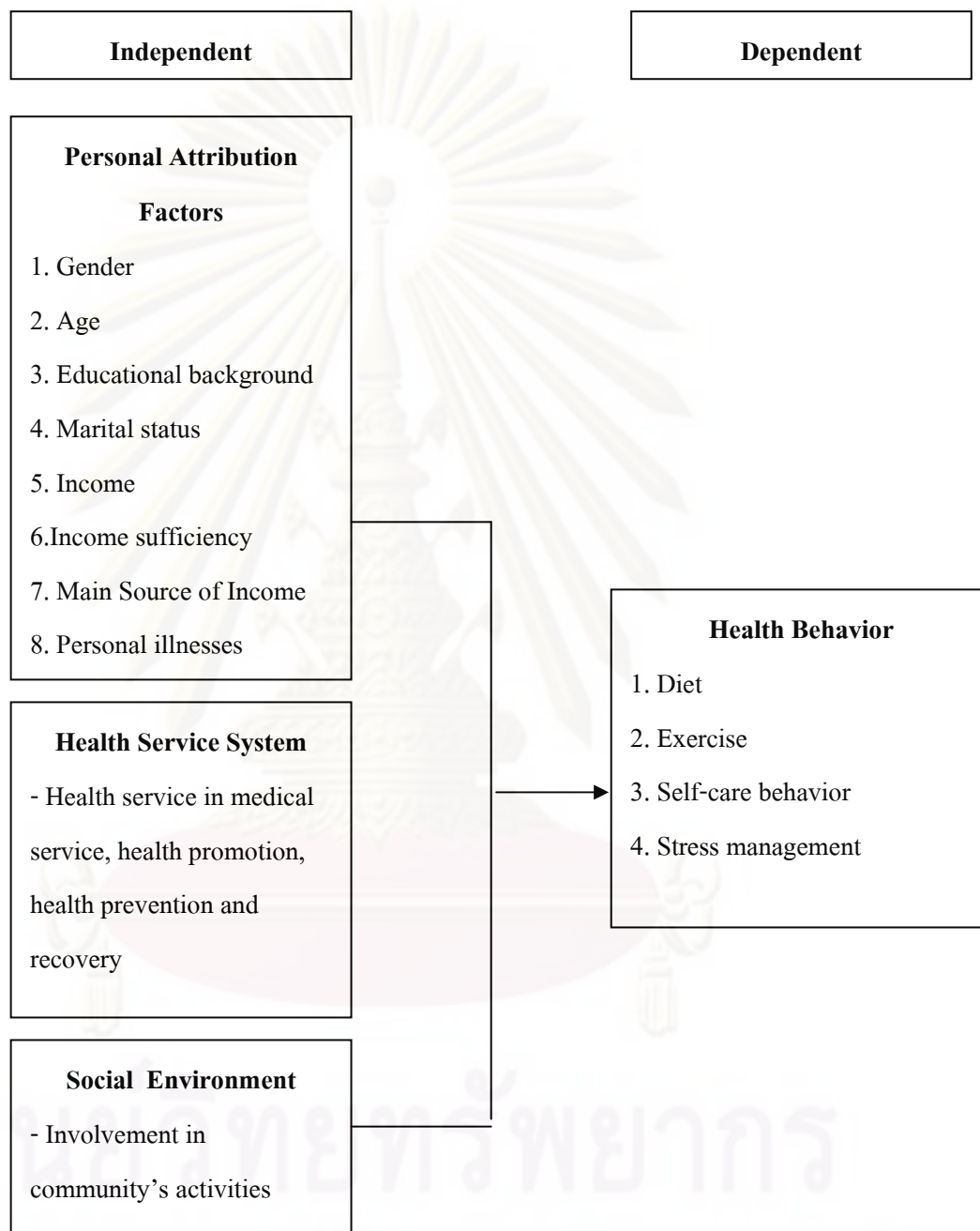
Figure 1 Conceptual Framework

1.6 Operational Definition

There are terms in this study of health behavior of elders in Mueang District, Roi Et Province that needed to be defined for better understanding. They are:

1.Variables for the study can be classified into 2 categories which are:

1.1 Independent variables are personal attribute information of the targeted population including gender, age, educational background, marital status, income, income sufficiency, source of main income, and personal illness.

1.2 Dependent variables are the 4 health behaviors including diet, exercise, self-care behavior and stress management.

2. Elder means a person of the sampling group who is living in Mueang District, Roi Et Province whose age is more than 60 years .

3. Mueang District means 15 Tambol (sub-districts) and 223 Moobaan (villages) that are located in the Mueang District, Roi Et Province.

4. Educational background means the highest educational level of elder which can be classified as no-education, primary schools, secondary schools, vocational education, bachelor's degree or higher .

5. Marital status means elder's marital status which can be classified as single, married, window or divorced/separated.

6. Income of elder means amount of money and sufficiency of the amount of money generated per month. The levels of income can be classified as not sufficient, sufficient but not enough for saving, and sufficient and enough for saving.

7. Main source of income means the sources of elder's income in each month whether from organizations or individuals both related or not related to the elders. The income can be paid to the elder for compensation or for other reasons or as a result of social welfare. Besides, the income might be earned by the elder from his/her professional, pension or from family members and other individuals.

8. Personal illness means whether an elder has personal illness(s) which means a chronic disease that must received treatment continuously for a long period of time or throughout the elder's life.

9. Health behavior means activities or action taken by an elder with an objectives to

promote, prevent, or maintain health condition of oneself. Health behaviors consist of 4 areas which are:

       9.1 Diet means elder's eating behavior whether the elder receive suitable level of nourishment per day such as having clean and safe diet that cover 5 groups of food that is suitable for elder's digestive system.

       9.2 Exercise means elder's behavior regarding body movement and walk that consumes high level of energy or muscle exercise. These activities include doing agricultural work, conducting light to medium level of exercise such as walking, cycling, doing body work, or Chinese boxing etc. The exercise should be carried out about 30 minutes for 3-5 times a week. After an exercise session, one's heart beat rate should be around 100-120 times/minute. An elder should not feel dizziness or experience abnormal heartbeat during the exercise.

       9.3 Self-care behavior means elder's behavior when the body experiences abnormality or sicknesses such as seeking for medical treatment from public health officer, following physician's instruction, taking prescription, relaxing, having suitable diet, and preventing incurrent diseases.

       9.4 Stress management means elder's behavior regarding prevention and avoidance of sadness, anger, fear, worrisome that incurred as a result of advancement in ages, and isolation, by networking or participating in the social activities of the community, practice religious conduct religious practices such as meditation, taking up hobbies to relax bodies and getting mind off things.

CHAPTER II

LITERATURE REVIEW

The topic of this thesis is "Factors influencing health behaviors of elders in Mueang District, Roi Et Province, Thailand ". In order to determine approaches to this thesis, the researcher has studied and conducted research on the following concepts:

2.1 Concept and theory on elders

    2.1.1 Definition of elders

    2.1.2 Classification of elders

    2.1.3 Transformation in elders

    2.1.4 Health condition in elders

2.2 Concept on health behavior

    2.2.1 Definition of health behavior

    2.2.2 Health behavior of elders

        2.2.2.1 Food consumption

        2.2.2.2 Exercise

        2.2.2.3 Illness and sick-role behavior

        2.2.2.4 Stress management

2.3 Related researches

2.1 Concept and theory on elders

2.1.1 Definition of elders

Generally, the word 'elder' refers to an old person with white hair, wrinkles and slow movement.

The Royal Institute of Thailand(2003) defined the word 'elder person' as old age and deterioration. Nonetheless, this definition is not widely used as it expresses isolation and hopelessness meaning.

Surakul Janobrom(1998) has specified characteristics of elders into four different criteria as follows:

1. Chronological Aging: a person's age measured by the calendar year without considering other factors.

2. Physiological Aging or Biological Aging: physical transformation process that occurs as the person getting older year by year.

3. Psychological Aging: deterioration in emotion, intelligent, responsiveness, and learning ability.

4. Sociological Aging: changes in elders' social role, interaction with others people and responsibility in work.

2.1.2 Classification of elder people

Choosak Vechapat(1988) specified that a person who is 60 years old and above is an elder. The World Health Organization by Dr. Alfred J. Kahn, a Professor from the Columbia University, similarly classified the criteria by dividing into phases (Non-formal Education Center in Eastern Region, 2000) as follows:

1. Elder person: between 60 – 74 years of age

2. Old person: between 75 – 90 years of age

3. Very old person: 90 years old and above

Yuriek and others(1980) suggested the criteria according to the U.S. National Institute of Aging which divided elder person into two groups as:

1. Elder in early period: between 60 – 74 years of age

2. Elder in late period - Old: 75 years and above

Non-formal Education Center in Eastern Region(2000) has suggested age classification for elder person in Thailand as

Period 1: between 60-69 years of age

Period 2: between 70-79 years of age

Period 3: 80 years old and above

In summary, the criterion of elder person established by the expert, organization or institute summarized is rather similar. Therefore, for this thesis, the researcher would use the criterion specified by Thai expert which cutoff old person at 60 years and above.

2.1.3 Transformation in elders

Transformation in elders: Researchers had studied and given elaboration on the transformation in physiological, psychological, emotional and sociological aspects of elders. These factors are the causes that led to deterioration of elders' bodies. (Wanpen Wongchantara, 1996) has suggested problems that elders would face from three changes which are:

1. Physiological changing : changes in accordance with function of body which are

    1.1 Skin and connective tissue: Skin layer would be thinner due to reduction of skin cell production, slow growth and deceleration of skin cell regeneration

    1.2 Nervous system: reduction of brain cells and nervous cells, mass reduction in bone and muscle, the size of muscle fiber gets smaller and is replaced by fascia.

    1.3 Blood circulation system: Bronchus and lung would be widened, while the lung muscle would be less flexible.

    1.4 Digestive system: Elders' teeth roots would be weakened, while the teeth layer get thinner. Elders are more prone to tooth decay. Some of them need to use to denture when chewing food. Thus elders should be served with soft and easy- to- digest food.

    1.5 Urinary and reproductive system: there is a mass reduction in kidney tissue due to decrease in blood flow to kidney (Glomerular Filtration Rate). Elderly male would have experience of benign prostatic hypertrophy, which makes him to urine with difficulty, shrinking testicle which makes it to produce lesser sperm. Elderly female would have experience shrinking ovary, uterine horn and uterine body

1.6 Endocrine System**:** Pituitary gland would change its shape and perform with less efficiency. Elders would have experience fatigue, loss of appetite and body weight loss.

2. Mental changing : change in mental and emotion which correlates with physical and social changes. This changing occurs as a result of degradation of body function, loss of intimate person, departure of family member and retirement from work. These factors can influence mental changes in elders.

3. Social changing : this is a change that elders must face as their responsibilities and roles are being reduced due to physical degradation that limits their thinking ability, action, communication and social relationship. Elders tend to withdraw themselves from the society, become irrational and pessimistic. Generally, elders are viewed by the society as incompetent even though some of them can justify that their ages are not an obstacle in their work and involvement in the society.

Department of the Non-Formal Education(1998) explained the transformation process in elders as follows:

1. Physical aspect: Cells in human body will grow and deteriorate in circle all the time. Nonetheless an elder would have experience his/her cell deterioration more than cell generation. In addition, elders' emotional degradation would lead to isolated and lonely feeling.

2. Respiratory system: this would be less efficient due to respiratory organs' inability to expand, decreased lung compliance and lower diffusion capacity for carbon monoxide and oxygen in lung.

3. Blood circulation system: heart muscle and blood artery would be weakened as they are filled with foreign substances. This will cause reduction in stroke volume, hardening of artery-wall, and high blood pressure and lower blood supply to body organs

4. Intelligence: Elders would have experience intelligence degradation and slower thinking process. Elders would need more time to think, process and review before making any decision and would not make swift response. Elders would use rational and experience to make any decision but sometime would not dare to make any

decisions.

5. Learning ability: Elders would take long time to learn new things or technology as well as changing perception or action. Nonetheless, if the new knowledge is based on past experience of elders, the elders would be able to master the new skills in lesser time.

6. Learning-related behavior and nature of elders

   6.1 If an elder is left with nothing to do, they would feel moody, distracted and grumble.

   6.2 An elder is tends to be forgetful sometime.

   6.3 An elder would have poor eye vision and unable to read small-size letters for long period of time.

   6.4 An elder would prefer to read, listen and watch news about the well-being of one's country rather than entertainment or academic books.

   6.5 An elder would have a good concentration and is able to concentrate on a matter for a long time.

From the study of transformation in elders, it can be summarized that an aging is the process whereby an elder would have experience three changes which are physical, psychological and social changes. The body organs of elder would degrade as with the age of elders which is in consistent with emotional changes, attention on the environment, decrease in responsibility and social relationship. Without proper prevention and healthcare method, these changes can lead to sickness in elders.

2.1.4 Aging

Somsak Srisanthisuk(1996) aging is a common biological and social phenomenon that occurs when members in the society get older .

Praves Wasee(2000) gave definition of aging as good health which covers not only good physical health but also the completed physical, mental, social and spiritual well-being. The details of his concept are as follows:

1. Completed physical well-being means a person who has healthy, active and vigorous body with no disability, and has sufficient economic support. In addition, the person must not

engage in any accident or in some sort of danger, and living in a surrounding that will promote health. The word 'physical' here indicates a body.

2. Completed mental well-being means mentally happiness, delight, active, affectionate in beauty of the surrounding, attentive, intelligent and less ego. Since as long as there is an ego, the stage of completed mental health cannot be reached.

3. Completed social well-being means living in unity with others, having a warm family, fair and just society with brotherhood, freedom and good governance and a civil society.

4. Spiritual well-being means a mental stage that occurs when a person commits good deed or when he/she reaches the highest spiritual level such as sacrifice, compassion, nirvana or is touched by God. Spiritual happiness is a feeling that does not entangle with an ego. It is a stage of self transcending which grants us with freedom, peace of mind, relaxation, joys, peacefulness, pure and refined happiness that have positive effects on physical, mental and social health.

Generally, an ordinary person would have experience both good health and illness at times. These are the circle of life that every human being cannot avoid. A person's response to any physical condition will progress on the continuous axis of good health and illness. However, each individual will have different responses. Some people may feel that sickness is a minor abnormality in life that can not hinder their way of life. Thus, for this group of people, sickness is a normal occurrence which is a part of the development and growing process. At the same time, some people may reckon that illness is a disturbance that greatly threatens their existence and individualism. Results of this negative thinking are fear and discouragement. This different response in each individual can have different impacts on a person when faces with difficulties in life.

Health condition would change periodically along the development process. Elders will face health problems due to physical, mental and social change in oneself. Elders will feel that they are losing social role and status and confront with health problems which are a result of deterioration of the body. Thus definition of health may change according to its impact on life. In this regard, for elders, good health means freedom to conduct any activities as one pleases without relying on others with a sense of self-worthiness (Wilaiwan Thongchareon, 1996)

In a nutshell, health condition of elders refers to complete stage of physical, mental, social and spiritual well-being.

2.2. Concept on health behavior

2.2.1 Definition of health behavior

Prapapen Suwan(1989) indicated that health behavior is any behavior regarding health. This behavior would be related with illness or abnormal body condition which is a result of personal, surrounding, germ and other factors.

Supat Chupradit(2006) gave definition of health behavior as the practice or expression of a person's action or inaction that can impact health based on the person's knowledge, understanding, attitude and attempt to balance physical, emotional and social health perfectly. Definitions of health behavior are individual's action to maintain good health and prevent illness.

In this regard, definition of health behavior is an action taken by a person to maintain, attain, or regain good health and to prevent illness. Health behaviors can be classified into two types which are

1. Health behavior to maintain a person's health during normal condition. This behavior can be divided further into two types which are:

1.1 Health promotion behavior. This behavior will promote good health, resist ailments and maintain peaceful living, avoid any dangers that will post threat to health. A person tends to practice this behavior on a consistent basis. Some of the examples of this behavior are taking rests, take nutritious diet, and regular exercise.

1.2 Health prevention behavior refers to any activity undertaken by an individual who believes himself/herself to be healthy for the purpose of preventing or detecting illness in an asymptomatic state. It can be classified as:

1.2.1 Primary prevention

1.2.2 Secondary prevention

1.3.3 Tertiary prevention

2. Behavior during illness means a person behavior when falling ill or in abnormal stage which will be different for each individual and depends on many factors such as knowledge of the illness, response to the illness's symptoms, belief, value, culture and tradition.

2.2.2 Health behavior in elder person

Khunnantha Maranetr and team(2009) suggested approaches to promote health behavior in elders as follows:

The obvious benefits of the promotion of health behavior in elders are prevention of sicknesses which would occur when elder experiences physical and psychological change as a result of aging. Another benefit is to assist elders to perform daily activities and live normally in the society with good living standard. The approaches to promote health behavior in elders are:

1. Avoiding risk behavior

2. Maintaining regular exercise

3. Having suitable diet

4. Involvement in family and social activities

5. Maintaining positive emotion

6. Avoiding behavior that increase risk to sicknesses such as cancer, heart and cardiovascular disease, and Osteoarthritis

7. Vaccination

From this concept, it can be summarized that health behavior in elders is a behavior that aims to promote health, prevent illness, alleviate illness symptoms or seriousness of problems that are faced by the elders, as well as to regain good health as soon as possible.

2.2.2.1 Exercise in elder person

Presently, the advancement in technology has greatly influenced our lifestyle. In addition, the increasing in assisting facilities makes us use less energy. Our busy lifestyle makes us overlook exercise. Several factors such as unclean air, traffic jam, pollution, lack of time and space for exercise and relaxation impose negative impacts to us in many areas such as body deterioration, stress, physical and emotional problems. From the study of physical changing in elders during normal and illness period to determine approach to promote good health for elders and high living standard, it was found that suitable level of regular exercise is one of the vital factors that promotes health, prevent illness, insomnia, constipation, obesity and stress as well as improve psychological condition.

Steps to Exercise

1st Step: Warm up

This step will prepare the body before the actual exercise session. It will help to increase temperature in the muscle and enable it to expand and contract more efficiently. An elder should warm up the body for about 5 – 10 minutes by stretching, swinging legs and arms and jogging.

2nd Step: conduct actual exercise

This step will allow the body to burn fat by using the oxygen intake during the exercise and create energy for the body. Different individual will experience different increase in heart rate and level of benefit from the exercise depends on the age of the individual. It can be calculated using the formula of the American College of Sport Medicine which are uses 220 minus the individual age. The suitable heart beat rate is between 65-80 times (as shown in table 2.1)

Table 2.1 Percentage of highest heart beat rate per minute for different age period (years)

Age (year)	Highest heart beat rate (time/minute)	65 percent/ minute	70 percent/ minute	75 percent/ minute	80 percent/ Minute
20	200	130	140	150	160
30	190	123	133	142	152
40	180	117	126	135	144
50	170	110	119	127	132
55	165	107	116	124	132
60	160	104	112	120	128
65	155	101	109	116	124
70	150	98	105	112	120

Source: (Ministry of Public Health, Department of Medical Services, 2002)

3rd Step: Cool down – after an elder does an exercise as specified in the second step, the elder should slowly relax the body from the tense exercise, instead of stop the exercise suddenly. This is to allow blood that clogged in the muscle to flow back to heart.

Principle of exercise for elders

Correct way of exercise for elders as follows :

1. In case an elder never conducts regular exercise before, the elder must study exercise principle thoroughly and start the training from light exercise. The elder must consult physician if the elder has personal illness.

2. Choose a type of exercise that is suitable to one's body and character

3. When playing sport, do not emphasize on the result of the competition, but should focus on enjoyment of an exercise.

4. Watch out for an accident

5. Should exercise on a regular basis (3 – 4 times per week)

6. When an elder experience abnormal condition, especially dizziness or irregular heartbeat, the elder should stop the exercise and consult physician.

7. The exercise should be carried out in group or with companions so as to increase enjoyment

Type of exercises that are suitable for elders

1. Walking: This is a suitable exercise for elders (except an elder with foot and ankle problem). An elder needs to walk faster to increase heart beat rate. If the elder is unable to walk fast, he/she should add the time of walking instead. An elder should wear appropriate shoes and swing arms at the same time while walking to exercise neck and chest muscle. The exercise should be conducted in a place with high level of oxygen and less pollution such as in early morning. In order to add enjoyment, elder should have companion during the walking.

2. Jogging: An elder is allowed to do jogging an exercise. Nonetheless, the elder must not have ankle problem as jogging requires high impact on the ankle and may cause injury to the impacted point. An elder should wear suitable shoe when jogging. Principles of jogging are similar to walking exercise.

3. Body work exercise: An elder can do various types of suitable body works. Nonetheless the exercise should be intense enough to raise heart beat rate.

4. Chinese boxing: The principles of Chinese boxing are slow movement and concentration. This type of exercise is good for elders. Nonetheless the exercise should be carried out under proper instructor and in group. The practitioner should exert time to commit to the

training.

     5. Yoga: Yoga is a type of exercise that combined breathing control with the exercise. In order to reap utmost benefit from the exercise, an elder should practice yoga under proper instructor and   commit oneself to the training.

Benefit of exercise for elders

     Having regular exercise will benefit body and improve and strengthen functions of body parts as well as prepare the body for conducting an activity. The benefits of exercise are:

     1. Delay aging. An elder who conducts regular exercise will look energetic and youthful. The deterioration process in the body will be reduced and delayed. Exercise prolongs the life of elders.

     2. Improve Balance and function of the body organs. The body organs will function and coordinate more effectively. Elder will be able to move around better and less prone to accident.

     3. Weight reduction, prevent obesity and keep body in good shape

     4. Reduce stress and despair, improve a person's mood

     5. Reduce risk of getting several diseases such as heart disease, diabetes and high blood pressure

2.2.2.1 Exercise in elder person

Exercise Principle (physical training) in elders (National Institute of Aging, Department of Medical Services, Ministry of Public Health,2006) suggested some popular exercises which are:

     1. Body exercise

     2. Strength training with and without the use of equipments

     3. Endurance and stamina training

     4. Playing sport

     5. Do physical works or hobbies

     1. Body exercise the objectives of body exercise are to enhance body movement systems which are consist of muscle (both ligament and muscle) and joint (bone tip, periosteum, connective tissue). An elder should do exercise from 5 to15 minutes everyday. There are several exercise methods such as physical education, Chinese boxing, Yoga etc. Each exercise will have

different impact depending on the level of physical movement and length of exercise period. Nevertheless, all exercise will help to enhance body movement.

Principle

1. The joint should be put to its limit such as stretch or bend to the extreme until one can feel aches and tension at the joint or muscle. This training is an ideal practice for individual with joint movement problems.

2. Try to move all or almost all the joints in the body in all directions that the joint is allowed to move during normal physical condition.

3. Number of times to repeat the exercise. This depends on level of physical movement and length of exercise period. For an exercise that uses a lot of muscle power, one may need to do only 6 to 10 times. Meanwhile, one may need to do more than 50 times for an exercise that uses little muscle power such as arm swinging.

4. During the exercise, one must maintain breathing to be consistently. One should not try to force out or hold the breathing (avoid Valsava maneuver).

2. Strength training One can do strength training without using any equipment. This exercise method is similar to body exercise but needs more muscle power. Strength training can be practiced by all people. Training can be done with equipments such as dumbbells, chest expander etc. These equipments are popular for athletic in particular sport to build muscle and body builders.It is also useful for patient in recovery process or for physical therapy from some type of disabilities. General healthy people can do body exercise and muscle training without the need for equipments.

Elders especially those that are 60 years old and above, who do body exercise that requires considerable level of muscle forces, do not need to practice strength training. In case strength training for particular weakened area is needed, one should do the training without equipment first. If that is not possible, then one should use equipment and need to stick to the following principles:

- Do not apply weights more than 80% of the highest weights that one can take or weights that one cannot repeat the exercise more than 6 times. The appropriate weight is around 50 – 60% of the highest weight that one can do and repeat about 8 – 10 times. The routine is called 1 set.

- Choosing to do only necessary positions with not more than 3 sets and 3 set of exercise for each position per day.

- Observe the level of exhaustion after the first exercise. If within 10 minutes of rest, one does not regain one's strength or still feel weary in the muscle, one has to reduce weights and number of times in your next set of exercise.

- Do not force out or hold one's breathing during strength training. Try to maintain breathing in consistence with the body movement.

   3. Endurance and Stamina Training This exercise is very important for elders as it can enhance blood circulation and breathing process. Besides increasing function performance of the body, it can prevent several diseases and help the body to recover from degradation after any sickness. The principles of endurance and stamina training for elders are:

   3.1 Choosing the suitable type of exercise for one's physical and environmental condition

   3.2 Always observe heaviness of the training by noticing level of one's exhaustion (whether one experiences breathing difficult, stiff, and after 10 minutes of rest, one gains back all or almost all your strength). A person can do this by counting heart rate. After 10 minutes rest, heart beat rate should fall below 100 times per minute.

   3.3 During the exercise, one should maintain breathing to be consistent with the body movement, take a deep breath, or breathe through mouth instead. Do not try to speed up one's breathing rate.

   3.4 After doing the training for a period of time, the body's stamina would be increased and heart rate would be lower after the exercise. One should try to slowly increase the weights load (such as walk or run faster).

   3.5 If one has an experienced of abnormal symptoms (such as dizziness, loose of body control, chest pain, difficulty in breathing etc.) during the exercise, one must reduce weights load or stop exercise temporarily.

   4. Playing sport Playing sport is one of exercise method that elders can use to train their bodies. When comparing with normal exercise, playing sport gets the following advantages and disadvantages:

Advantage

1. Enjoyable, exciting and no lackluster

2. Motivation to conduct the exercise regularly

3. Social network, interaction with others

Disadvantages

1. Difficulty to measure weight load, sometime may be too heavy or too light

2. Sometime, the competition may add physical and mental stress

3. Increasing a chance of getting accident

If elders choose to play sport as a way to exercise, the elders must adhere strictly with to the following principles:

1. Choosing to play sport with less body contact and complex maneuver as possible, avoid sport that needs to exert one's force in short period of time. Meanwhile elders should play a sport that they can control weight load by themselves and which can enhance their body stamina.

2. Do not focus one's mind on the result of the competition, but rather treat it with a friendly manner.

3. Do not overexert yourself when there are abnormal symptoms

4. Choosing to play sport with people of one's own age.

5. Correlation between daily activities and hobbies.

Many people would disallow their grandparents from doing physical work or hobbies in everyday life because of their misunderstanding that elders should not do hard work and have more rest instead. Actually, doing some physical work or hobbies in a suitable level would be a good exercise for the elders. Besides giving physical and mental benefits to elders, many hobbies can benefit living condition such as gardening, baby sitting, repairing and maintaining household equipments etc. Nevertheless, these work and hobbies must be adjusted to be consistent with the training principles in weights load and other relevance such as internal, external factors and relaxation.

2.2.2.2 Food consumption for elders

(Ministry of Public Health(2004)   indicated that food is important for living. Having nutritious diet will contribute to healthy body. Nutritious diet for elders includes consuming a balanced and complete diet that satisfies the body's need, control weight within average range.

The diet should cover 5 food groups which are as fallows :

The first group consists of dairy product, egg, meat such as fish, pork, beef, duck, chicken and beans (soybean, groundnut, green bean, red bean). The main element of this food group is protein which is a vital element in muscle, tissue, enzyme and blood. It is being used by the body to construct and maintain healthy tissue and enhance immunity system. Protein is also needed for growth in children. Elders should consume fish as a source of protein because fish contains low cholesterol and is easy to digest. For other type of meat, one must choose meat with no fat and cook it by mince or stew. Elders can consume 3-4 eggs/week. Nonetheless, elders with high cholesterol should eat only white egg.

The second food group consists of rice, starch, sugar. Examples of this food group are all type of rice, noodle, Thai vermicelli, taro, potato. The main element of this food group is carbohydrate which is the source of energy for body that enables us to walk, run, and work etc. If a body overly consumes carbohydrate, extra carbohydrate would be stored in the body in the form of fat. Too much fat would lead to obesity and high blood sugar. Elders should consume less carbohydrate because the body will need very little amount. For example reduce from usual three scoop of rice per meal to only two would be appropriate.

The third food group is fat which comes from both vegetable and animal. Examples of this food group are vegetable oil such as soybean oil, rice bran oil, or oil that extracted from vegetable seeds such as groundnut, sesame or coconut. Fat from animals are pork oil, or fat contained in meat. The main element in this food group is fat which provides warmth and energy, similar to carbohydrate, to body. However, fat will be stored in the body as reserved energy and will only be used when necessary such as during starvation. When preparing food for elders, one should use vegetable oil (such as soybean oil and rice bran oil) and avoid using animal oil, palm oil and coconut oil.

The fourth food group is all types of green leafy vegetable such as morning glory, coccinia grandis, cabbages, legume as well as vegetable with yellow or red color. This food group contains minerals, vitamins and fiber which help to maintain healthy body, prevent constipation and obesity.

The fifth food group is all types of fruits such as banana, orange, guava, papaya etc. As similar to vegetable, these fruits contain mineral, vitamin, fiber and water. Elders can consume

most types of fruit, except for fruits with high sugar content such as durian, longan, jackfruit, custard apple. In this regard, fruits that can be found in all seasons and can be consumed by any person at all ages are banana, orange, guava and papaya.

Clean water: It is not classified as food but it is vital for human body. Drinking water will help to improve appearance of skin, enhance digestive system, and prevent constipation. A person should drink 6 – 8 glasses of clean water per day.

As different types of food contain different food elements, one cannot get sufficient nutrition by consuming only one food group. Therefore, one needs to consume all five food groups and drink clean water every meal daily.

Principles for food preparation food for elders

1. The food should have sufficient nutrition and satisfy the body's need. Food should cover all five food groups but less carbohydrate and fat such as rice, bread, sugar and oil. Meanwhile one should increase content of high-fiber-content food to improve bowel movement.

2. Divide food consumption into 4 –5 meals a day by adding late morning and late afternoon meal. This will help to prevent stomach discomfort after having meals. Avoid gastric food because it can lead to flatulent symptom. If not, one should try to consume in small quantity first then slowly increase the quantity such as milk, nuts etc.

3. Prepare food so that it can easily be chewed with less seasoning. Decorate the dish to enhance its appearance and serve it when hot to increase appetite

From this concept, it can be summarized that, besides suitable quantity and variety, one must consider food taste when preparing a dish for elders. Most of elders tend to lose appetite and eat less food which will lead to insufficient intake of nutrition. As some of elders have personal illness, they would need different quantity and types of food which should be consistent with the illness. Having suitable diet with high nutrition would promote good health and prevent pathological process in the body.

2.2.2.3 Illness and sick-role behavior

Illness behavior is any behavior undertaken by an individual who feels ill. The illness behaviors involve ignoring the symptoms, seeking knowledge of the symptoms from friends, turning to the medical care, hiding away from the society etc. According to sociologist and

anthropologist, the illness behaviors can be divided into four levels which are:

    1. Individual self care

    2. Family care

    3. Care from the extended social network

    4. Mutual aid or Self-help group

Self-care behavior is any behavior undertaken by an individual who feels ill or an individual behavior that starts from acknowledging the illness to evaluate seriousness of the symptoms and action that is done in response to the sickness as well as decision to ignore the symptoms. An individual may turn to self-help strategies or seek others for advice or treatment method. This behavior can be shown in the patient's family, social network or public health personnel. The necessary processes of self-care during illness are as follows:

    1. Seek and adhere to medical assistance for healthcare during illness.

    2. Learn to prevent pathological process.

    3. Self-learning to effective treatment, diagnosis, recover, prevention of periodical infection.

    4. Acknowledge, pay attention, and prevent adverse impact from the side effect from treatment or illness.

    5. Adapt to the changes that occur from illness or treatment while maintaining self-concept and positive self-image, adjust role and responsibility of oneself and balance the reliance on oneself and other.

    6. Learn to live and cope up with the pathology in oneself or the present situation as well as accept result of the diagnosis and treatment. Learn to utilize and promote self development with the remaining ability and set up goals for oneself.

According to Orem's concept (Somchit Hanuchareon, 1994) self-care is a behavior with intentions and objectives that can be divided into two phases as follows:

Phase 1: An individual, who will be able to look after oneself effectively, must have knowledge of oneself and the surrounding as well as judgment to see whether the action is suitable to the current situation. Therefore, before an individual knows whether the action is suitable, the individual needs to know that the action will effectively yield expected results. Regarding this, self-care is knowledge of internal and external factors and situations, an ability to

observe, and interpretation the observation. Being able to observe the relationship between the occurrence and a course of proper action that one should take will help an individual to make a decision over the matter.

Phase 2: The implementation phase. Action must have objectives. Goal-setting is very vital for self-care activities as it determines course of actions and criteria to evaluate results. An individual may give oneself a question of which course of action to take so as to choose the most suitable self-care activities, or try to find assistance from other sources as well, the activities will be carried out correctly and effectively with proper period of time. In case self-care activities hinder one's lifestyle, one should seek after necessary help.

From this concept, it can be summarized that self-care behavior during illness refers to decisions and actions that an individual can take to cope with health problems. The course of actions can be done by individual, family, neighbors, colleagues, and community. Self-care can be done for oneself or for others. Examples of self-care behaviors include decision making on health-related problems, health prevention, diagnosis and treatment (as well as taking medication) for illnesses, and practice after the self-care treatment. The process of self-care behaviors can be started by observing the symptoms without involving any treatment, self treatment, or seeking treatment from hospitals or health centers. The chosen steps would depend on the judgment of elders and may involve several other factors such as belief, seriousness of the illness, financial status, travel expense, other facilities etc. Self-care behavior would help to control and prevent the advancement of the disease to lethal stage.

2.2.2.4 Stress management

Stress refers to the reaction of a body and mind that is being aroused to overly response (than in normal stage) when preparing to face with complexities in life such as examination, interrogation by police, separation from loved one, marriage, taking an overseas trip, competition etc. Confronting with difficult or reluctant situations can give positive or negative feeling and add tension to an individual.

Stress management or ways to handle stress refers to a behavior or cognitive activities that are used to cope with tension. No matter how each individual handle one's stress, it can have either direct or indirect impact on the individual. Stress management is a learning process of how to adapt to a situation. An individual needs to use different strategy and methods when

confronting with serious problems that the individual does not have control over them.

Stress management methods

1. Develop potential for self management by set up short-term and long-term goal. These goals should be in alignment with self capacity and time.

2. Improve self emotional control. Stay calm and be aware of one's emotion, make understanding of the situation and causes that can trigger one's emotion so as to learn to control it.

3. Develop potential to effectively manage relationship with other. Maintain good relationship with others will help to reduce emotional stress.

4. The improvement of emotional control can be divided into two major types as follows:

4.1 Individual problem solving. It can be achieved by

4.1.1 Clearly identifying the problems

4.2.2 Gathering information relating to the problems

4.3.3 Analyzing the information

4.4.4 Determining alternatives for problem approaches

4.5.5 Assessing each alternative for the problems

4.6.6 Making action plan to solve the problems

4.7.7 Executing the action plan

4.8.8 Evaluating end results

4.2 Group problem solving by brainstorming method.

4.2.1 This method would start by getting suggestion or idea from an individual, then each member would share his/her point of views on the same idea. The contributed ideas would be recorded and compared to the actual result.

4.2.2 After collecting all ideas, the group would evaluate the ideas and list out their pros and cons.

5. Enhance self endurance by living an appropriate lifestyle, avoid activities that expose harm to the health such as using drug.

6. Stay optimistic. This is a good potential that an individual can train in order to build positive feeling to others and the surrounding. Learn to give for oneself and other, keep

self-esteem, be thoughtful and considerate of others.

7. Learn to meditate: to keep one's mind focus, be at ease and relax.

From this concept, it can be summarized that stress in elders emerged from loneliness and isolation, abandonment from children as a result of migration and change in family structure (from extended family into nuclear family). Another reason is natural degradation of the body physically, mentally and socially. The recent western culture trend that makes children less polite toward the elders also creates disappointment and makes the elders feel neglected, less important, and emotionally hurt. In addition, most of them would have to retire from their work at this age. This makes them feel even less useful. The situation will be worsened in the elders with financial stress and lack of financial reserve while their health starts to deteriorate. Therefore if an elder knows how to properly cope with the stress level, the elder will be able to live peacefully in the society.

2.3. Related researches

Khemiga Yamaratn (1984) undertook a study on factors that created satisfactory for elders. The sampled group consisted of officers in the Ministry of Agriculture and Cooperatives. The research found that elders who had financial problems would also had problems that obstructed health promotion behavior.

Kwanjai Tantiwatthanasatien(1991) studied relationship between selected factors (including self power over health, self-worthiness, acknowledgment of health condition, health knowledge, gender, age and economic situation) and health promotion behavior of elders. The sampled group consisted of 200 elders who were living in the suburban area in the Northeastern region of Thailand. The research showed that the overall average score for health promotion behavior of the elders was in good level. When considering on each category, it was found that the average score for health responsibility was in medium range. The average score for social support was in good level. In addition, health promotion behavior in other aspects were also good. The factors that had medium-level positive correlation with health promotion behavior of elders, with statistical significance level of 0.01, were self power over health, self-worthiness, acknowledgment of health condition, health knowledge, and gender. Meanwhile, the factors that had medium-level negative correlation with health promotion behavior of elders were other power over health and age. Variables that can be used to predict health promotion behavior of

elders, in decreasing order, were self-worthiness, gender, acknowledgment of health condition, self power over health and health knowledge. These variables could be combined to predict more than 57.50% of health promotion behavior of elders, with statistical significance level of 0.01.

Niranard Witthayachokkitti(1991) conducted a study on self care ability and health condition of elders and some fundamental factors such as gender, marital status, length of study, and income of elders who were living in Amphur Muang, Nakorn Sawan Province and receiving physical check up service in Sawan Pracharak, Nakorn Sawan Province. The sampled group consisted of 120 elders, aged between 60-74 years old. The research found that the elders tended to rate their health condition as in good to excellent level. Their self care ability were in rather high level. Sicknesses that were commonly found within the sampled group were osteoarthritis and high blood pressure. Education and marital status were factors that have correlation with self care ability.

Suwimol Panawatthanakul(1991) conducted a study on influence of the physical, emotional and social changes on way of life, health condition, and quality of life of elders. Suwimol's research found that elders who had ability to look after themselves suitably would help them to maintain good health and live a happy life which would lead to better quality of life. At the same time, factors including marital status, income, education, and self-concept can be used to predict self care ability and quality of life of elders.

Maitree Tiyarathanakoon(1993) conducted a study on factors that had correlation with mental health of elders in Bangkok Area. The sampled group consisted of 234 elders who were members of Siriraj Hospital Elderly Club, Wachira Hospital Elderly Club, and Dindaeng Social Elderly Club. The result indicated that elders who had sufficient income possessed better mental health than those with insufficient income.

Petchara Intarapani(1993) carried out a study on relationship between acknowledgement of health condition, social support and health promotion behavior of elders who were living in Municipality, Udon Thaini Province. The research results showed that, the health promotion behavior of elders was in medium level. When considering on each category, it was found that, regarding health responsibility, only a small group of elders conducted annual physical check up when their body were in normal condition. Most of them were uninterested to listen or view health related show and seek information from reading books. In the aspect of self

conceptualization, most of the elders did not make future plan and set up goals to be accomplished. They would tend to live their life day by day. In the exercise aspect, most of the elders exercised regularly. Regarding diet behavior, most of the elders were having food that included five food groups at least four meals a day. Most of them were having vegetable and no-tasty food. In the aspect of interpersonal relationship, most of the elders tended to engage in religious ceremony. Under stress management category, most of the elders would pray before going to sleep.

Chonthicha Wangvivek(1994) undertook a research on relationship between physical condition, social support and self care behavior of elders. The sampled group consisted of 200 elders who were members of Thammasat University Hospital. The research found that the self care behavior regarding mental health of the elders was on rather good level. The factors including marital status, education and social support could be used to predict 33.1% of self care behavior regarding mental health of the elders.

Ahijevch and Bemard (1994, cited in Chonthicha Chantakiri, 2003) conducted study on health behavior of African women. The study used Pender's health promotion behavior concept, and found that history of illness had correlation with health promotion behavior.

Malulee Chooned(1995) conducted a study on factors influencing way of life and nutrition of elders who were living in Amphur Takarnpeedpol, Ubon Ratchathani province. The sampled group consisted of 400 elders. The nutrition evaluation was done by using Mindex demiquet method to measure body measurements. The method would compare body's weight to length from middle finger to center of the chest bone. The research found that 69.20% of elders were having normal nutrition, 16.5% were having overnutrition, and 14.30% were having undernutrition. In addition, it was found that income sufficiency and knowledge on nutrition had correlation with way of life of elders. Ability to conduct daily routine, personal illnesses and eating behavior had correlation with nutrition condition of elders with statistical significance level.

Wandee Yamchanchai (1995) conducted a study on level of health promotion behaviors of elders and correlation between personal attribute, self-efficacy, self-perceived health and health promotion behaviors of elders. The sampling group consisted of 150 elders who were living in Nakhon Sawan province. The result showed that health promotion behavior of the elders was on

medium level. In addition, it was found that educational background, income level, self-efficacy, and self-perceived health had positive correlation with health promotion behaviors of elders. Meanwhile, gender had negative correlation with health promotion behaviors of elders.

Chanthima Charanasri(1996) conducted a study on mental health level of elders who were living in Bangkae Home for the Age, Bangkok. The sampled group consisted of 215 elders. The research found that 58.10% of the elders had mental health problems, while, 41.90% of the elders did not. Variables including gender, education, marital status, professional, economic status, original place of birth, type of social service received, and length of social service received had no correlation with mental health.

Chitkanya Boonya(1996) conducted a study on mental health of elders in Elderly Club in Tambol Tapanhin, Pichit Province. The sampled group consisted of 200 elders. The research showed that elders with different gender had dissimilar mental health.

Chailai Chaiyaseri(1996) conducted a research on comparison of mental health of elders who were members of Elderly Police Hospital Club. The sampled group consisted of 200 elders, aged between 60-74 years old. The research showed that male and female elders did not have different mental health.

Duangjai Pianbumrung (1997) conducted a study on self care behavior and quality of life of elders who were living in the southern border provinces of Thailand. The result showed that gender had no correlation with exercise behavior of elders.

Mallika Mattiko and team(1997) conducted a study on hygiene and self care behavior regarding hygiene of elders. Mallika's study was taken in the Northern part of Thailand and with a sampled group consisting of 838 elders. The result showed most of the elders tended to rate their health condition as medium to poor level. Female elders rated their health as medium to poor level, while male would rate their health as good. Elders in the same age tended to rate similar health condition. When an elder reached 60 years old, most of them (72.7%) would stop economic activities but would continue other activities such as exercise, building social relationship, mental and intellectual development that could be carried out daily. Nevertheless, these activities tended to reduce with age. Moreover, it was found that more male elders than female elders drank alcohol, smoked and drank tonic. On the other hand, more female elders than male elders had betel nut, pain killer or muscle-relief pill.

Sasipatn Yodpetch and team (1997) conducted a study on social support for elders. The research found that if elders could have sufficient income that they could spend freely, even in significant amount, they would feel secure and be at ease and less stressful. On the other hand, elders who had low income or poor economic status and had to struggle to make ends meet, would experience financial constraints and feel stressful.

Suree Karnchanawong and team (1997) conducted a study on hygienic health condition and self care behavior of elders in the central region including Suphanburi Province, Saraburi Province and Singburi Province. The sampled group consisted of 711 elders. The result showed that the elders had rather good mental health and satisfaction in life. The personal attributes such as gender, age, marital status, and physical condition had correlation with mental health of elders.

Sodsai Srisa-ard (1997) conducted a study on factors influencing health promotion behavior of elders who were living in Amnat Charoen province. The study conducted in a sampled group consisted of 510 elders. The research involved personal attributes such as gender, age, educational background, joining Elderly Club and experience on health promotion behavior; knowledge aspect such as realization, value, attitude, self acceptance, understanding benefit and obstacles of the health promotion factors that triggered action. The result showed that exposing to health information and receiving advice and support from health related individual had correlation with health promotion behavior, with statistical significance. In addition, value and understanding of benefit of health promotion behavior, participation in Elderly Club and body mass index could be used to predict 43.1% of health promotion behavior of elders.

Vasana Tuenwong (1997) conducted a study on self care behavior and quality of life of elders who were living in Bangkok area. The research found that most of the elders refused to exercise because of their poor health condition, difficulty in moving their bodies and walk, and being afraid that their body condition might get worse after they exercised. Furthermore, it was found that majority of the elders, who were still working, had no available time for exercise, and believed that some activities such as conducting house works, selling goods were some form of exercise. In addition the result also showed that educational background had correlation with exercise behavior of elders.

Sirima Leelawong (1998) conducted a study on relationship between personal attributes, acceptance of aging process, family, social support, and elderly care. The study indicated that

most of the elders were living together with their children or relatives. In addition, they still received support from their families to assist them in improving their health promotion behavior.

Sirima Wonglaemthong (1999) carried a research on personal attributes, realizing the importance of health promotion behavior, and health promotion behavior of elders. The sampled group consisted of 200 elders who were living in Nakorn Sawan province. The result showed that age and income could be used to predict health promotion behavior of elders. In other word, elders with younger age tended to have much better health promotion behavior than the older one. It was because as a person grew older, the person would experience more body limitation and health problems. Moreover, elders who had lower income tended to have lower health promotion behavior than those with higher income.

Mallika Mattiko and team (2000, cited in Kingchan Tamthong, 2003) gathered data on health and social status of elders. It was found that one of the normal health problems faced by elders was depression. Depression tended to increase with age. Female elders were more inclined to experience depression than male elders. Elders who lived on their own would experience higher depression than elders who were living with their spouses. The elders who were living in urban area had less depression than those who lived in the suburban area. Factors influencing mental health of elders were income sufficiency, income level, health condition of elders, feeling of loss, and social support.

Saengduan Promkaewngam(2000) conducted a study on self motivation and health promotion behavior of elders after received coronary bypass surgery. The study found that the self motivation of the sampled group was on good level. When considering on each category, it found that their spiritual maturity, responsibility for health, nutrition, interpersonal relationship, and stress management were on good level. Meanwhile, their physical work was on medium level. The self motivation had positive correlation with health promotion behavior, physical work, and spiritual maturity with statistical significance level of .01.

Suthinant Jitpanusopol (2000) conducted a study on health promotion behavior of elders who had long life in Karnchanaburi province. The sampled group consisted of 90 elders, aged 70 years and above. Suthinant's research found that elders with different personal attributes (such as gender, age, marital status, education, and income) had indifferent health promotion behavior.

However, Suthinant found that a good family relationship and involvement in the community would lead to good health promotion behavior of elders.

Suthichai Jitapankul (2001) conducted a research on principle of medical sciences for elders. His research found that 35.4% of Thai elders did not have sufficient income to meet the monthly household expense, 31.9% of the elders still had to work to support their families. For dwelling aspect, it was found that 12% of elders were living in poor condition accommodation and 4.5% did not have access to electricity.

Wannipa Assawasuwikrom(2002) conducted a study on factors influencing exercise behavior of elders who were living in Tambol Saensuk, Chonburi. The sampled group consisted of 259 elders, aged 60 years and above. The result showed that personal attributes (income and education) and thought on exercise (understanding of benefit, obstacle, and environment) had a correlation with exercise behavior and could be used to predict exercise behavior of elders. The personal attributes (income and education) could explain only 43% of exercise behavior. However, when adding the variable of thought of exercise (understanding of benefit, obstacle, and environment) to the analysis, it found that the variables could explain more than 68% of the exercise behavior. Every variable had a statistical significance level of 0.05. Acknowledgement of environment, income, understanding of obstacle, benefit and education had regression coefficient against (β) exercise behavior of .356, .234, -.164, .135 and .122 respectively.

Chonthida Chantakiri(2003) conducted a study on health promotion behavior of elders who came to do activities in the Lumpini park, Bangkok. The sampled groups consisted of 400 elders who came to do activities in the park. The research showed that the health promotion behavior of the elders was on good level. They had high self motivation, good-level of health perception and high level of social support. The study indicated that factors including age, gender, marital status, education, and income had no correlation with health promotion behavior of elders. Nonetheless, factors including self motivation, health perception and social support had positive correlation with health promotion behavior of elders with statistical significance level of 0.05.

Pirom Tabtimtes(2003) conducted a study on factors influencing exercise behavior of elders who were members Sritanya Hospital Elderly Club. The sampled group consisted of 80 elders, aged between 60-75 years old. The result found that 83.7% of elders practiced some form

of exercise but the exercise was not adequate and correct. Only 16.3% of elders practiced complete and correct form of exercise. The personal attribute that had correlation with exercise behavior of elders was education.

Paijitra Lorskulthong, Chawapornpan Chanprasit and Sirirat Panuthai(2003) conducted a study on relationship between health promotion behavior and health condition of elders who received service of Family Consulting Center in Nan province. The sampled group consisted of 180 elders, aged between 70 – 84 years old. The research found that the health promotion behavior of elders was on medium level. In this regard, due to difference in gender and very old age group (70 – 84 years old), the elders were infested with several sicknesses and could not participate in health promotion activities as often. One out of three of the elders was either single, widower/widow, divorced/separated. Thus they lacked of social support to carry out health promotion behavior.

Niramol Intharith(2004) conducted a study about factors that correlated with health promotion behavior of elders. The Chaopraya-Apai-Phubek, Prachinburi Province had conducted a study on a randomly-selected sampling group of 260 elders. From the study, it found that the perception of health promotion in elder person was high. The percentage of elders who had high self esteem was 68.85. The percentage of elders who had medium self esteem was 31.15. The factors that correlated (with statistical significance of 0.014) with health promotion behavior of elders were age, marital status, educational background, sources of income, professional and perception of self value. Important variations in forecasting the health promotion behavior in elders were self esteem, marital status and educational background. The statistical significance level of these factors are 23.1%.

Saralrat Pol-in and team (2005, cited in Maitreejit Takwan, 2007) conducted a study on relationship between personal attributes, social support and mental health of elders who were living Tambol Thongchai, Amphur Muang, Petchaburi province. They found that educational background had correlation with elders' mental health.

Tossaporn Sribarigij(2006) did a study about the influence of involvement in community to health behavior of elders who were living in Bangkok area. The sample group was 400 elders, aged 60 years and above, who were members of Elderly Clubs of health centers, Bangkok Health Department. The result showed that health promotion behavior of elders was on good level. The

highest score was health responsibility. The elders would conduct annual physical check up. Second highest score was social relationship, especially among the elders in the same age group. As their family members and relatives had to work outside of their houses or staying in a far away place, thus they would seldom make contact with one another. Problems and obstacles on health promotion behavior of elders were poor physical condition, possession of personal illness, no support from their children, as well as failure to perceive importance of health promotion.

Chanadda Kerdprae(2007) conducted a study on health promotion of elders on a sampling group of 261 elders in Tambol Makarmsoong, Amphur Muang, Pitsanulok Province. Forty five point sixty seven percent of the sampling group was between 60 – 69 years of age, 64.0% were female, 58.4% had normal range of Body Mass Index (18.5-24.99), 78.38% graduated from primary school, 56.03% were married, and 26.04% were living with relatives. Eighty three point ninety nine percent had 1-5 family members (including the elders themselves), 61.83% stopped working, 61.83% relied on themselves as main sources of income, 52.21% had sufficient income for living, 52.58% had heart and coronary artery disease, 80.54% did not smoke, 84.82% did not drink alcohol, 88.72% learned information about self-care behavior from television, In a nutshell, the elders in Tambol Makarmsoong, Amphur Muang, Pitsanulok Province had good level of overall health promotion behavior. In addition, it found that their perception toward every aspect of health promotion was on high level, especially interaction with individual who had highest average value, followed by spiritual well-being, responsibility on diet, exercise and stress management respectively.

Piyanuj Kaewreong, Anfamr Siriito(2007) conducted a study on correlation between health belief and self-care behavior of elder person in Doklumduan Community, Tambol Koobuo, Amphur Muang, Ratchaburi Province. The study found that the health belief perception and self-care behavior of elders in Doklumduan Community were on medium level and high level respectively. Elders with different sex, age, educational background, had indifferent health belief. Meanwhile, elders with different level of income, marital status, family structure, had dissimilar health belief (statistical significance of 0.5). Elders with different age had indifferent self-care behaviors. The self-care behavior and health belief had positive correlation of 0.05.

Tharathorn Duangkaew, Hiranya Dej-udom(2007) conducted a study on health behavior of elders in Tambol Prongmadue, Amphur Muang, Nakorn Pathom Province. The study found

that overall health behavior of the elders was in medium level. On separate level, it found that their perception toward diet, exercise, stress management, and illness behavior, was on good, medium, satisfactory, and good level. The elders with different income, sufficiency of the income, educational background, had different health behavior (statistical significance of 0.05).

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Design

This study was a cross-sectional research which designed to explore factors that influence health behavior of elderly people in Mueang District, Roi Et Province, Thailand.

3.2 Study Area

The study area was   Mueang District, Roi-Et Province, Thailand.

3.3 Study Period

16th December to 25th December 2009 was data collection time.

3.4 Study Population

The targeted population of this study was elderly aged 60 years and above, both male and female, who were living in Mueang District, Roi Et Province. The data from Mueang District Health Office, Roi Et Province showed that in July 2009 there were 17,720 people who aged 60 year or above (Mueang District Public Health Office, 2009).

Table 3.1 The population of elderly aged 60 years and above, both male and female, in Mueang

District, Roi Et Province, in 2009.

No.	Sub-district	Population		
		Male	Female	Sub-total
1	Nimuang	1,437	1,788	3,225
2	Nuemuang	1,009	1,153	2,162
3	Nongwang	450	593	1,043
4	Nontan	268	348	616
5	Kaenyai	211	287	498
6	Khonkaen	403	563	966
7	Sikaew	695	856	1,551
8	Napho	237	310	547
9	Nonrung	276	360	636
10	Saardsomboon	478	594	1,072
11	Donglan	449	548	997
12	Robmuang	900	1,042	1,942
13	Mueangthong	217	302	519
14	Poparn	427	616	1,043
15	Nongkaew	388	515	903
	Total	7,845	9,875	17,720

3.5 Sampled population

The sampled population for this study was four hundred and thirty elderly aged 60 year

or above, both male and female was 430. The sampling method is as follows:

3.5.1 Sample size calculation.

The sample size was calculated using Taro Yamane formula (Tanin, 2008) for the 95%

confidence interval and alpha error at 0.05. The sample size calculation was show below.

$$n = \frac{N}{1 + Ne^2}$$

When n = sample size

     N = population number

     e = sample error, which was set at 0.05

Put the number into the formula:

$$n = \frac{17,720}{1 + 17,720 \, (0.05)^2}$$

$$n = \frac{17,720}{1 + 17,720 \, (0.0025)}$$

$$n = \frac{17,720}{1 + 44.3}$$

$$n = 391.169$$

$$n \approx 391$$

Therefore, the sample size was 391 for this study. The author added 10% to compensate drop-out cases, so the total number was 430.

3.5.2 Sampling method

The samples for this study were systematically sampled through the following steps (Kulaya 2006).

1) Arrange list of elders according to district names from number 1 to 15 (please refer to the table 3.1)

2) Create sample frame and then assign the numbers for each unit according to district names 1 to 15 to be number from 1 to 17,720.

3) Calculate the interval = N/n = k

          = 17,720/430 = 41.20

4) Select the first unit by randomly sampling those numbers between 1 and 41 for the first study unit.

5) Select the second unit by adding number 41 and select the next sample in an order of 41 and so forth until attain the calculated sample size. (Note: in case k had decimal number or N was not the integer time of n, discard all the decimals; e.g., 41.20 will be changed to 41).

6) The selected subjects were interviewed accordingly. For those who had speaking, listening and memory problem would be replaced by the elder in the following list.

Inclusion criteria

- Aged 60 year or above by year 2009, both male and female.
- Had been living for at least 6 months within the community.
- Healthy person or who had any one of the chronic diseases such as diabetes, hypertension, heart disease, joint problems and other diseases, as this study was to learn about the health behavior of elders with both normal health condition and sickness.
- Had no speaking, listening and memory problems.
- Understand Thai and be able to answer the questions
- Willing to participate in this study.

Exclusion criteria

- Living for less than 6 months within the community.
- Hearing, speaking or memory defects.
- Cannot understand Thai language.
- Do not have consent to participate for the study.

3.6 Measurement tools.

This study used interview guideline which was modified to be more appropriate for the area (Tarathon Duangkaew, Hiranya Detudom, 2007). The guideline had 2 parts.

Part 1 General data of the elderly which was check-list style, except for age and income which were open- ended question. This part had 8 items with nominal scale.

Part 2 Health behavioral data of the elderly interview guideline. There were 30 items with multiple choices for rating scale in 4 perspectives:

1) Healthy diet, 8 items.
2) Physical activity, 6 items.
3) Self-care, 8 items.
4) Mental stress management, 8 items.

The rating scale for interview guideline is divided into 3 levels as follows:

Regularly means within the past week, interviewee did at least 5-7 days.

Often means within the past week, interviewee did 3-4 days.

Seldom means within the past week, interviewee did 1-2 days.

Score was given according to elders' rating scale which were 3, 2 and 1 point for regularly, often and seldom respectively and vice versa for the opposite answers/negative statement.

This study set criteria for analysis the average behavioral scores according to Kulaya, 2001, as followed:

$$\text{Interval} = \frac{\text{Maximal score} - \text{Minimal score}}{\text{Number of levels}}$$

$$= \frac{3-1}{3} = 0.66$$

The interpretation of health behavior of elders by item can be divided into 3 levels as follows:

Average score 1.00 – 1.66 indicates that the behavior is on unsatisfactory level

Average score 1.67 – 2.33 indicates that the behavior is on satisfactory level

Average score 2.34 – 3.00 indicates that the behavior is on good level

After the interpretation of health behavior of elders by item according to the above criteria, the scores by aspect could be classified into ranges of score value as follows:

- The scores are used to interpret behavior relationship concerning diet, illness behavior and stress management.

Scores fall in the range of 8.00 – 13.33 indicates that behavior is on poor level

Scores fall in the range of 13.34 – 18.67 indicates that behavior is on fair level

Scores fall in the range of 18.68 – 24.00 indicates that behavior is on good level

- The scores are used to interpret behavior relationship concerning exercise behavior

Scores fall in the range of 6.00 – 10.00 indicates that behavior is on poor level

Scores fall in the range of 10.01 – 14.00 indicates that behavior is on fair level

Scores fall in the range of 14.01 – 18.00 indicates that behavior is on good level

Note: If the expected frequency value is 0 cells must be eliminated cells together.

Steps in data collection tool development

1. Data collection tool development. There were 2 parts modified which were modified from previous researches.

2. Planning for scope and contents of interview guideline and conceptual framework.

3. Item development, set scoring criteria and submit research questionnaires to 3 experts (Proposal Examination Committee) for their comments, so as to

4. Apply the comments to correct and improve the questionnaire so as to cover all related topics. Submit the corrected questionnaire to advisor for approval.

5. Try out the corrected and approved questionnaire with 30 elderly people in the Panomphrai District, Roi Et Province.

6. Test for questionnaire's reliability with Cronbachs' alpha coefficient.

7. Use the completed version of the questionnaire to interview elderly people who were living in Mueang District. Before the interview session, the researcher would train and explain the interviewees on how to do the interview ranging from sampling methods, inclusion and exclusion criteria, the need to obtain their consent by signature or fingerprint as well as going through questionnaire in each session on ensure that the elders understood the content of the questionnaires.

3.7 Pre-testing

The face-to-face interviews were pre-tested the corrected and approved questionnaire with 30 elderly people in the Panomphrai District, Roi Et Province. Each scale's reliability was as follows:

Health behavior of elders

      1.Food consumption (8 items) :Cronbach's Alpha = 0.678

      2. Exercise (6 items) :Cronbach's Alpha = 0.923

      3. Illness and Sick-role (8 items) :Cronbach's Alpha = 0.768

      4. Stress management   (8 items):Cronbach's Alpha = 0.821

3.8 Data collection methods

This study collected data through face-to-face interviews which comprised the following steps:

3.8.1 After Ethical Review Board approval, the local endorsement process was preceded, met with heads of selected health centers to inform about the study and data collection process.

3.8.2 Research assistants worked in on the field.

3.8.3 Data quality was checked, coded and analyzed.

3.9 Data analysis

The SPSS version 17 for Windows was used for statistical analysis.

3.9.1 Analyzed for personal attribution factors: This part comprised of gender, age, educational level, marital status, income and income adequacy, income sources, and personal illness. Descriptive statistic such as frequency and percentage were employed.

3.9.2 Healthy behavioral analysis to cover all 4 aspects: 1) Healthy diet 2) Physical activity 3) Self-care and 4) Mental stress management. Descriptive statistic such as frequency and percentage were employed.

3.9.3 Correlation analysis between independent variables such as gender, age, educational level, marital status, income and income adequacy, income sources, personal illness; while dependent variables were healthy behaviors. Chi- Square test was employed.

3.10 Ethical Consideration

3.10.1 Elders are the pillar of the society and social forces as they are valuable human resources who contribute to their family, community, and society, therefore, they should be honored and admired.

3.10.2 Elders have the right to or not to join the research

3.10.3 Their information was kept confidential

3.10.4 Ethics review was requested from Chulalongkorn University.

3.11 Limitation

As the time for collecting data is limited, the researcher confined the sampling group to only from the elders who were living in Mueang District, Roi Et Province. The sampling group, then, did not represent the total elderly population in Roi Et Province.

3.12 Expected Benefits & Application

Expected benefits of the study are:

3.12.1 To learn about the level of health behavior of elders who were living in Mueang District, Roi Et Province.

3.12.2 To make a plan / project for public health organizations and other related organizations to promote elders for correct and suitable health behavior as well as raising living standard.

3.12.3 To determine study approach about elders in various topics
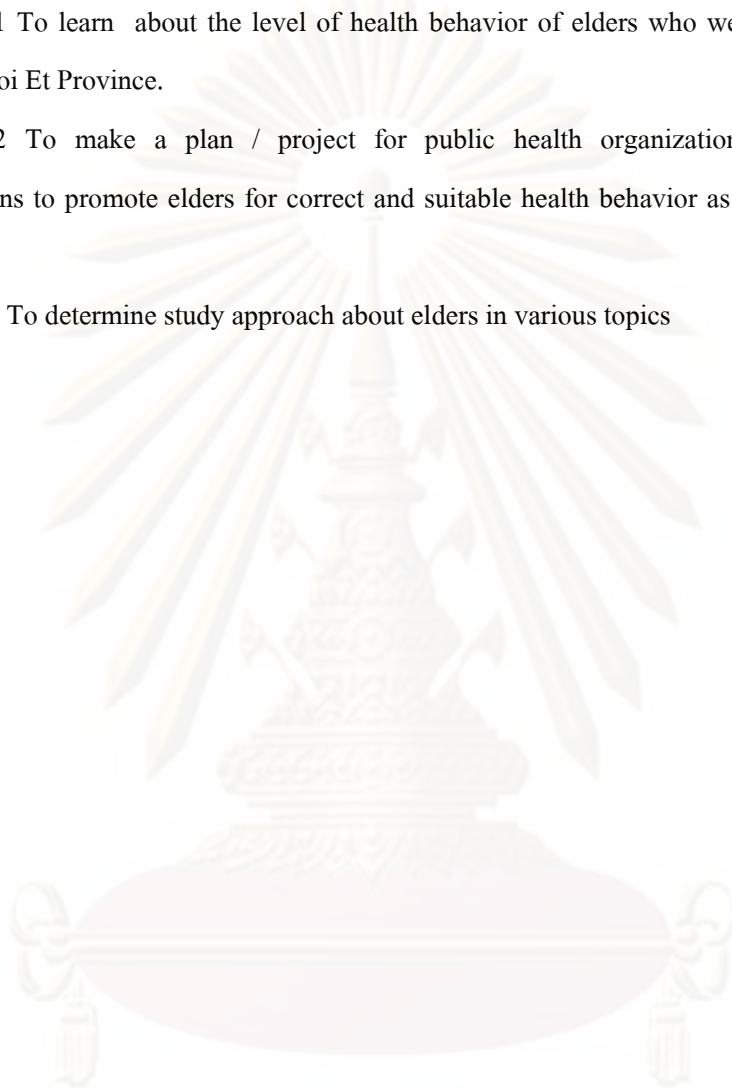
CHAPTER IV

DATA ANALYSIS

4.1 Steps in Data Analysis

The researcher has determined steps to present data analysis from the 430 sets of complete form of questionnaire. The presentation can be divided into several sections as follows:

Section 1: Data analysis of personal attribution of elders including gender, age, educational background, marital status, income and income sufficiency, main source of income, and personal illnesses.

Section 2: Data analysis of health behavior of elders including diet, exercise, self-care behavior, stress management.

Section 3: Data analysis of factor association between personal attribution of elders (including gender, age, educational background, marital status, income and income sufficiency, main source of income, and personal illnesses) and health behavior of elders (including diet, exercise, self-care behavior, stress management) who were living in Mueang District, Roi Et Province. Chi –square test was employed.

4.2 Symbol and abbreviation used in the research

In order to make the data presentation more convenience and brief, the researcher has specified symbols and abbreviations used in the research as follows:

n	represents	Number of sampled group
$\overline{X}$	represents	Mean
S.D.	represents	Standard deviation
χ^2	represents	Chi square distribution
p	represents	Probability value
IQR	represents	Percentile25- Percentile75
*	represents	statistical significance level of 0.05
**	represents	Fisher's Exact

4.3 Data Analysis

      Section 1: Data analysis of personal attributions factors of elders including gender, age, educational background, marital status, income and income sufficiency, main source of income, and personal illnesses. The data is presented in the table 4.1

Table 4.1 Number and percentage of elders who were living in Mueang District,

        Roi Et Province as classified according to personal attributions factors.(n=430)

Personal Attributions	n	%
Gender		
Male	178	41.4
Female	252	58.6
Age(years)		
60 – 65	174	40.5
66 – 70	117	27.2
71 - 75	74	17.2
76 – 80	37	8.6
above 80	28	6.5
minimum age = 60 years old, maximum age = 88 years old, median=67,IQR=49.5-85.5		
Educational Background		
No education	13	3.0
Primary school	343	79.8
Secondary school	41	9.5
Vocational education	10	2.3
Bachelor's degree	22	5.2
Higher than bachelor's degree	1	0.2

Table 4.1 (continued) Number and percentage of elders who were living in Mueang District,

Roi Et Province as classified according to personal attributions factors.(n=430)

Personal Attributions	n	%
Marital status		
Single	15	3.5
Married	274	63.7
Widower/widow	137	31.9
Divorce/separation	4	0.9
Income		
Less than 5,000 baht	206	47.9
5,001 – 10,000 baht	99	23.0
10,001 – 15,000 baht	36	8.4
15,001 - 20,000 baht	25	5.8
More than 20,000 baht	64	14.9
minimum income = 500 baht, maximum income = 50,000 baht		
median=6,000, IQR= -15,000 – 33,000		
Income sufficiency		
Insufficient	175	40.7
Sufficient but not enough for saving	180	41.9
Sufficient and have some left for saving	75	17.4
Main source of income		
Oneself	414	96.3
Family members	331	77.0
Other people	0	0.0
Personal illnesses		
Do not have personal illness	184	42.8
Have personal illnesses	246	57.2

Table 4.1 (continueก) Number and percentage of elders who were living in Mueang District,

Roi Et Province as classified according to personal attributions factors.(n=430)

Personal Attributions	n	%
Personal illnesses		
Diabetes	**137**	**46.1**
- Receiving treatment	137	100.0
- No treatment	0	0.0
- Buy one's own medicine	0	0.0
- Receiving regular aftercare	136	99.3
High blood pressure	**95**	**32.0**
- Receiving treatment	94	98.9
- No treatment	1	1.1
- Buy one's own medicine	0	0.0
- Receiving regular aftercare	94	98.9
Osteoarthritis	**31**	**10.4**
- Receiving treatment	30	96.8
- No treatment	0	0.0
- Buy one's own medicine	1	3.2
- Receiving regular aftercare	28	90.3
Other illness	**34**	**11.5**
Cancer	2	5.9
Heart disease	6	17.6
Stomach disease	3	8.9
Allergy	5	14.7
Asthma	4	11.8
Thyroid	3	8.9
Gout	2	5.9

Table 4.1 (continued) Number and percentage of elders who were living in Mueang District,

Roi Et Province as classified according to personal attributions factors.(n=430)

Personal Attributions	n	%
Other illnesses (continued)		
Leg/back/waist pain	5	14.7
Osteoporosis	1	2.9
Hepatitis	1	2.9
Skin disease	1	2.9
Prostate gland hyperplasia	1	2.9
-Receiving treatment	25	73.5
- No treatment	8	23.5
- Buy one's own medicine	1	2.9
- Consistent follow-up	25	73.5
Elders who were living with two or more diseases	51	20.7

From the table 4.1, it found that a majority of elders or 58.6% of the sampled group, who were living in Mueang District, Roi Et Province, were female. Forty point five percent of the sampled group was between 60 – 65 years old. Their average age was 67 years old. Seventy nine point eight percent of the sampled group finished from primary school. Sixty three point seven percent were married and living with their spouses. Forty seven point nine percent earned less than 5,000 baht income per month. The average income was 6,000 baht. Forty one point nine percent had sufficient income but not enough for saving. Ninety six point three percent earned income by themselves. Fifty seven point two percent had personal illnesses. 46.1% of elders who were having personal illness had diabetes in which 99.3% of them consistent follow-up. Similarly, 98.9% of elders had high blood pressure and 90.3% of elders with osteoarthritis also had consistent follow-up.

Section 2: Data analysis of health behavior of elders including diet, exercise, self care behavior, stress management. The data is presented in the table 4.2 – 4.6 It is noteworthy to state that for negative statements, after converting the score, the word "not" is inserted for clear understanding.

Table 4.2 Overall classification to shows mean value and standard deviation overall of diet behavior, exercise behavior, self care during illness and stress management of elders who were living in Mueang District, Roi Et Province.(n=430)

Health behavior	Frequency of the behavior			$\overline{X}$	S .D.	Level
	Regularly	**Often**	**Seldom**			
1.Diet behavior	390(90.7%)	40(9.3%)	0(0.0%)	2.68	0.25	Good
2.Exercise behavior	149(34.7%)	201(46.7%)	80(18.6%)	2.13	0.69	Fair
3.Self care during illness	377(87.7%)	37(8.6%)	16(3.7%)	2.69	0.39	Good
4.Stress management	256(59.5%)	151(35.1%)	23(5.3%)	2.37	0.41	Good

From the table 4.2, it found that the health behavior of elders, who were living in Mueang District, Roi Et Province, overall was on good level. When we considered each item, the average number of self care during illness was maximum($\overline{X}$=2.69, S.D.=0.39); fallowed by the diet behavior($\overline{X}$=2.68, S.D.=0.25); stress management($\overline{X}$=2.37, S.D.=0.41) respectively and exercise behavior was on fair level($\overline{X}$=2.13, S.D.=0.60).

Table 4.3 Shows mean value and standard deviation of diet behavior of elders who were living in

Mueang District, Roi Et Province.(n=430)

Diet behavior	Frequency of the behavior in 1 week			$\overline{X}$	S .D.	Level
	Regularly	**Often**	**Seldom**			
1. Not having curry with coconut milk	34(7.9%)	135(31.4%)	261(60.7%)	2.52	0.63	Good
2. Not having very Salty food such as fermented food, salted fish, salted cuttlefish	13(3.0%)	126(29.3%)	29(67.7%)	2.64	0.53	Good
3. Having various Types of vegetable	345(80.2%)	75(17.4%)	10(2.3%)	2.77	0.46	Good
4. Not drink alcohol	9(2.1%)	31(7.2%)	390(90.7%)	2.88	0.37	Good
5. Drink at least 6-8 glasses of water per day	342(79.5%)	72(16.7%)	16(3.7%)	2.75	0.50	Good
6. Having completely cooked food	356(82.8%)	65(15.1%)	9(2.1%)	2.80	0.44	Good
7. Having fish for source of protein	301(70.0%)	99(23.0%)	30(7.0%)	2.63	0.61	Good
8. Having fruit	225(52.3%)	156(36.3%)	49(11.4%)	2.40	0.68	Good

From the table 4.3, it found that the health behavior of elders, who were living in Mueang District, Roi Et Province, was on good level($\overline{X}$ = 2.68, S.D.=0.25). When we considered each item, the average number of sampled group who seldom drink alcohol is the highest ($\overline{X}$ = 2.88, S.D.=0.37). The second highest average value is having completely cooked food ($\overline{X}$ = 2.80, S.D.=0.44). The third highest average value is having various types of vegetable ($\overline{X}$ = 2.77, S.D.=0.46). On the other hand, the lower average value is having fruit ($\overline{X}$ = 2.40, S.D.=0.68).This indicated that the sampled group of elders who were living in, Mueang District, had suitable and

positive eating behavior as they tended to consume nourishing and nutritious . Presently, besides chronic diseases or personal illness, good and proper nutrition is another major problem faced by elders. The changes in economic and social situation have greatly affected eating behavior of people. Nonetheless, the interdisciplinary public health officer in all areas have played a crucial role in providing knowledge on appropriate to elders individually and in groups, either in health district office and in the community. Moreover, the government media also reckon the importance of the issue, and cooperated by publicizing accurate information on nourishment. The government also initiates policy to promote positive eating behavior in elders.

Table 4.4 Shows mean value and standard deviation of exercise behavior of elders who were living in Mueang District, Roi Et Province.(n=430)

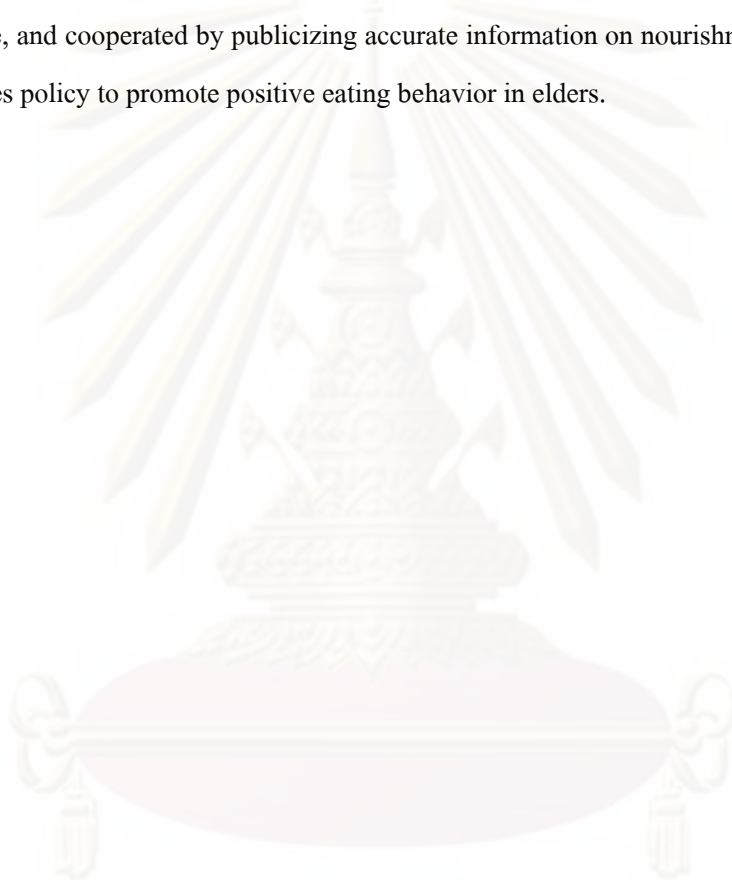| Exercise behavior	Frequency of the behavior in 1 week			$\overline{X}$	S .D.	Level
	Regularly	**Often**	**Seldom**			
1. Exercise at least 3 times per week	139(32.3%)	182(42.4%)	109(25.3%)	2.06	0.75	Fair
2. Spend at least 30 minutes for each exercise session	117(27.2%)	177(41.2%)	136(31.6%)	1.95	0.76	Fair
3. Doing stretching such as bend down to touch the floor with one's hands, , hold both hands over one's head and push, stretch and train muscle strength continuously	127(29.5%)	150(34.9%)	153(35.6%)	1.93	0.80	Fair
4. Exercise muscle by swinging arms and legs, tighten wrist and ankle	181(42.1%)	167(38.8%)	82(19.1%)	0.23	0.74	Fair
5. In the beginning, one should start from light exercise	195(45.3%)	129(30.0%)	106(24.7%)	2.20	0.81	Fair
6. Doing activities such as gardening, farming, house works, planting trees, watering plants, riding bicycle	253(58.5%)	111(25.8%)	66(15.3%)	2.43	0.74	Good

From the table 4.4, it found that the exercise behavior of elders, who were living in Mueang District, Roi Et Province, was on fair level($\overline{X}$= 2.13, S.D.=0.60). When we considered each item, the behavior on 'Activities including gardening, farming, house works, planting trees, watering plants, riding bicycle' has the highest average value ($\overline{X}$= 2.43, S.D.=0.74), a good level. Follow by the behavior on 'Exercise muscle by swinging arms and legs, tighten wrist and ankle' ($\overline{X}$= 2.23, S.D.=0.74), a fair level; and 'In the beginning, one should start from light exercise' ($\overline{X}$= 2.20, S.D.=0.81), a fair level; and 'Exercise at least 3 times per week' ($\overline{X}$= 2.06, S.D.=0.75); and Spend at least 30 minutes for each exercise session ($\overline{X}$= 1.95, S.D.=0.76); and 'Doing stretching such as bend down to touch the floor with one's hands, hold both hands over one's head and push, stretch and train muscle strength continuously' ($\overline{X}$= 1.93, S.D.=0.80), respectively. This indicated that the sampled group of elders who were living in, Mueang District, had practiced exercise by moving their bodies and stretching muscle for a large number. However, they lacked regular and continuous practice due to the fact that most of the elders (77.9%) were still engaging in agricultural works (Mueang District Health Office, 2009). Nonetheless, working would still enable the body parts and muscle to move and consume energy more and better than people who do not do any work at all. Thus, the exercise behavior concept was not suitable for elders who did daily agricultural works. Thus, the standardized exercise behavior concept seemed not to be suitable for elders who do daily agricultural works . The standard of exercise at least 3 times per week and spend at least 30 minutes for each exercise session should not be used to evaluate exercise behavior of elders for this study. The evaluation should base on the fact rather than standard index.

Table 4.5 Shows mean value and standard deviation of self care behavior of elders who were

living in Mueang District, Roi Et Province. (n=430)

Self Care Behavior During Illness	Frequency of the behavior in 1 month			$\overline{X}$	S.D.	Level
	Regularly	Often	Seldom			
1. You will not buy your own medicine even when you experience minor sickness.	217(50.5%)	93(21.6%)	120(27.9%)	2.22	0.85	Fair
2. You only take conventional medicine from a certified public health officer.	328(76.3%)	75(17.4%)	27(6.3%)	2.70	0.57	Good
3. When you have problem taking medicine, you will consult a certified public health officer.	347(80.7%)	62(14.4%)	21(4.9%)	2.75	0.53	Good
4. You receive physical check-up and disease diagnosis annually.	322(74.9%)	63(14.7%)	45(10.5%)	2.64	0.66	Good
5. You check your body for abnormalities regularly	345(80.2%)	70(16.3%)	15(3.5%)	2.76	0.49	Good
6. You meet physician regularly whenever you are ill	367(85.3%)	38(8.8%)	25(5.8%)	2.79	0.52	Good
7. You follow advice of a public health officer when you fallen ill.	364(84.7%)	46(10.6%)	20(4.7%)	2.80	0.50	Good

Table 4.5 (continue) Shows mean value and standard deviation of self care behavior of elders who were living in Mueang District, Roi Et Province. (n=430)

Self Care Behavior During Illness	Frequency of the behavior in 1 month			$\overline{X}$	S .D.	Level
	Regularly	Often	Seldom			
8. You take the prescription according to the instruction given by a public health officer.	377(87.7%)	37(8.6%)	16(3.7%)	2.83	0.45	Good

From the table 4.5, it found that the self-care behavior of elders, who were living in Mueang District, Roi Et Province, was on good level($\overline{X}$= 2.69, S.D.=0.39). When we considered each category, the topic on 'You take the prescription according to the instruction given by a public health officer' has the highest average value ($\overline{X}$= 2.83, S.D.=0.45). Follow by the topics on 'You follow advice of a public health officer when you fallen ill' ($\overline{X}$= 2.80, S.D.=0.50); and 'You meet physician regularly on time' ($\overline{X}$= 2.79, S.D.=0.52); and 'You check your body for abnormalities regularly' ($\overline{X}$= 2.76, S.D.=0.49); and 'When you have problem taking medicine, you will consult a certified public health officer' ($\overline{X}$= 2.75, S.D.=0.53); and 'You only take conventional medicine from a certified public health officer' ($\overline{X}$= 2.70, S.D.=0.57); and 'You receive physical check-up and disease diagnosis annually' ($\overline{X}$= 2.64, S.D.=0.66) respectively. The topic on 'You will not buy your own medicine even when you experience minor sickness' has fair average value ($\overline{X}$= 2.22, S.D.=0.85). This indicated that the sampled group of elders who were living in, Mueang District, realized the importance of self care behavior. They conducted regular physical check-up, checked body for change by themselves, sought information on health, requested assistance from professional when necessary. Nonetheless, some of them still purchase medicine by themselves. This is a normal practice as a person would tend to help themselves when they experience minor sicknesses as drugstore is considered a primary health care level in Thailand as well as in Roi Et Province. Other. Other study on self care behavior of elders also obtained the same result that most of the elders (48%) would buy medicine to alleviate sicknesses

by themselves (Napaporn Chayowan and John Nogel, 1996:178 as referred in Mallika Mattiko, 1997). This might due to the fact that elders do not wish to bother their children and want to save expense. In addition, they also wanted to recover faster so that they could assist their children. Most importantly, elders want to live with dignity, self-worthy and independent.

Table 4.6 Shows mean value and standard deviation of stress management behavior of elders who were living in Mueang District, Roi Et Province. (n=430)

Stress Management	Frequency of the behavior in 1 month			$\overline{X}$	S.D.	Level
	Regularly	**Often**	**Seldom**			
1. You will relax by talking to people inside your house.	268(62.3%)	115(26.8%)	47(10.9%)	2.51	0.68	Good
2. When there is a chance, you will relax by talking to neighbors.	205(47.7%)	157(36.5%)	68(15.8%)	2.31	0.73	Fair
3. You feel frustrated or indulge yourself in the problem or sadness that occur.	55(12.8%)	144(33.5%)	231(53.7%)	2.40	0.70	Good
4. You attend wedding funeral, ordination ceremony and other traditional events.	267(62.1%)	118(27.4%)	45(10.5%)	2.51	0.67	Good
5. You will say Your prayer, pray to god or meditate when you feel stressful.	254(59.1%)	116(27.0%)	60(14.0%)	2.45	0.72	Good
6. You will listen to radio or read books when you feel stressful.	196(45.6%)	132(30.7%)	102(23.7)	2.21	0.80	Fair

Table 4.6 (continue) Shows mean value and standard deviation of stress management behavior

of elders who were living in Mueang District, Roi Et Province. (n=430)

Stress Management	Frequency of the behavior in 1 month			$\overline{X}$	S .D.	Level
	Regularly	**Often**	**Seldom**			
7. On free time, you will occupy yourself with recreational activities such as planting trees and fishing fish	199(46.3%)	138(32.1%)	93(21.6%)	2.24	0.78	Fair
8. You share problems with other elders of your own age.	222(51.6%)	137(31.9%)	71(16.5%)	2.35	0.74	Good

From the table 4.6, when we considered the stress management behavior of elders, who were living in Mueang District, Roi Et Province, on item basis, it is found that the stress management behavior was on good level($\overline{X}$= 2.37, S.D.=0.41). When we considered each category, the topic on 'You will relax by talking to people inside your house' ($\overline{X}$= 2.51, S.D.=0.68) and 'You attend wedding, funeral, ordination ceremony and other traditional events' have the equal highest average value ($\overline{X}$= 2.51, S.D.=0.67),on good level. Follow by the behavior on 'You will say your prayer, pray to god or meditate when you feel stressful.' ($\overline{X}$= 2.45, S.D.=0.72); and 'You feel frustrated or indulge yourself in the problem or sadness that occur.' ($\overline{X}$= 2.40, S.D.=0.70); and 'You share problems with other elders of your own age.' ($\overline{X}$= 2.35, S.D.=0.74),on good level respectively. The behaviors that were on fair level are 'When there is a chance, you will relax by talking to neighbors.' ($\overline{X}$= 2.31, S.D.=0.73); 'On free time, you will occupy yourself with recreational activities such as planting trees and feeding fish.' ($\overline{X}$= 2.24, S.D.=0.78); and 'You will listen to radio or read books when you feel stressful.' ($\overline{X}$= 2.21, S.D.=0.80). This indicated that the sampled group of elders who were living in, Mueang District, had methods to release their stress level, could suitably express their feeling, realized the

importance of building relationship within the family, discussed and shared their thoughts with one another, and gathered together on special occasions. In addition, the Thai society has beautiful culture and traditions, such as an event called "Hit Seepsong, Klong Seepsii" which is carried out by the locals in the Northeastern part of Thailand, and other events that would allow provide opportunities for elders to meet one another. Moreover, praying a prayer and meditation are common practices of the Thais and northeastern people alike. The practices help them to stay calm and feel at ease. Meanwhile, the activities that are commonly practiced by urban people including listening to radio, reading or doing creational activities such as planting trees and feeding fish are not popular among elders who were living in the suburban area.

Section 3: Data analysis of factors association between personal attribution factors of elders (including gender, age, educational background, marital status, income and income sufficiency, main source of income, and personal illnesses) and health behavior of elders (including diet, exercise, self-care behavior, stress management) who were living in Mueang District, Roi Et Province. Chi square analysis was employed. The data is presented in the table 4.7-4.10

Table 4.7 Shows factor association between personal attribution factors and diet behavior of

elders who were living in Mueang District, Roi Et Province.

Variation	Level of Diet Behavior			χ^2	p- value
	Poor-Fair	**Good**	**Total**		
Gender					
Male	20(11.2%)	158(88.8%)	178(100%)	1.346	0.246
Female	20(7.9%)	232(92.1%)	252(100%)		
Age (years)					
60-70	27(9.3%)	264(90.7%)	291(100%)	6.061	**0.048***
71–80	7(6.3%)	104(93.7%)	111(100%)		
Above80	6(21.4%)	22(78.6%)	28(100%)		
Educational Background					
Primary school and lower	29(8.1%)	327(91.9%)	356(100%)	3.278	0.070
Secondary school and higher	11(14.9%)	63(85.1%)	74(100%)		
Marital status					
Single	4(26.7%)	11(73.3%)	15(100%)	5.561	0.062
Married	24(8.8%)	250(91.2%)	274(100%)		
Widow, divorce /separation	12(8.5%)	129(91.5%)	141(100%)		
Income (baht)					
Less than 10,000	25(8.2%)	280(91.8%)	305(100%)	2.591	0.274
10,001 – 20,000	9(14.8%)	52(85.2%)	161(100%)		
More than20,000	6(9.4%)	58(90.6%)	64(100%)		

Table 4.7 (continued) Shows factor association between personal attribution factors and diet
behavior of elders who were living in Mueang District, Roi Et Province.

Variation	Level of Diet Behavior			χ^2	P-value
	Poor- Fair	Good	Total		
Income sufficiency					
Insufficient	19(10.9%)	156(89.1%)	176(100%)	0.853	0.653
Sufficient but not enough for saving	15(8.3%)	165(91.7%)	180(100%)		
Sufficient and have some left for saving	6(8.0%)	69(92.0%)	75(100%)		
Main source of income from family members					
Do not receive income from a family member	10(10.1%)	89(89.9%)	99(100%)	0.097	0.755
Receive income from a family member	30(9.1%)	301(90.9%)	331(100%)		
Personal illnesses					
Do not have personal Illness	25(13.6%)	159(86.4%)	184(100%)	6.998	**0.008***
Have personal illnesses	15(85.5%)	231(93.6%)	246(100%)		

*statistical significance level of 0.05

From the table 4.7, it found that personal attributions factors including age and personal
illnesses have positive association with diet behavior of elders who were living in Mueang
District, Roi Et Province, with statistical significance level of 0.05. Meanwhile, the attributions
factors such as gender, educational background, marital status, income, income sufficiency and
main source of income have no correlation with diet behavior of elders who were living in
Mueang District, Roi Et Province. This indicated that people of age with personal illnesses place
an importance on their diet behavior to maintain in good health so as to save medical expenses
and to remain healthy to avoid being a burden to their family members.

Table 4.8 Shows factor association between personal attribution factors and exercise behavior of elders who were living in Mueang District, Roi Et Province.

Variation	Level of Exercise Behavior			χ^2	p- value
	Poor-Fair	Good	Total		
Gender					
Male	101(56.7%)	77(43.3%)	178(100%)	9.937	**0.002***
Female	180(71.4%)	72(28.6%)	252(100%)		
Age (years)					
60-65	117(67.2%)	57(32.8%)	174(100%)	5.735	0.220
66-70	76(65.0%)	41(35.0%)	117(100%)		
71-75	42(56.8%)	32(43.2%)	74(100%)		
76-80	29(78.4%)	8(21.6%)	37(100%)		
Above80	17(60.7%)	11(39.3%)	28(100%)		
Educational Background					
No education	10(76.9%)	3(23.1%)	13(100%)	10.345	**0.016***
Primary school	234(68.2%)	109(31.8%)	343(100%)		
Secondary school	24(47.1%)	27(52.9%)	51(100%)		
vocational education					
Bachelor's degree	13(56.5%)	10(43.5%)	23(100%)		
Higher than bachelor degree					
Marital status					
Single	10(66.7%)	5(33.3%)	15(100%)	1.163	0.559
Married	174(63.5%)	100(36.5%)	274(100%)		
Widow, Divorce	97(68.8%)	44(31.2%)	141(100%)		
/separation					

Table 4.8(continued) Shows factor association between personal attribution factors and exercise behavior of elders who were living in Mueang District, Roi Et Province.

Variation	Level of Exercise Behavior			χ^2	p- value
	Poor-Fair	Good	Total		
Income (baht)					
Less than 5,000	131(63.6%)	75(36.4%)	206(100%)	4.210	0.378
5,001 - 10,000	63(63.6%)	36(36.4%)	99(100%)		
10,001 - 15,000	29 (80.6%)	7(19.4%)	36(100%)		
15,001- 20,000	17(68.0%)	8(32.0%)	25(100%)		
More than20,000	41(64.1%)	23(35.9%)	64(100%)		
Income sufficiency					
Insufficient	129(73.7%)	46(26.3%)	175(100%)	16.978	**<0.001***
Sufficient but not enough for saving	117(65.0%)	63(35.0%)	180(100%)		
Sufficient and have some left for saving	35(46.7%)	40(53.3%)	75(100%)		
Main source of income came from the elders themselves					
No personal income	13(81.3%)	3(18.7%)	16(100%)	1.856	0.173
Earn personal income	268(64.7%)	146(35.3%)	414(100%)		
Main source of income from family members					
Do not receive income from a family member	58(58.6%)	41(41.4%)	99(100%)	2.598	0.107
Receive income from a family member	223(67.4%)	108(32.6%)	331(100%)		
Personal illnesses					
Do not have personal Illness	113(61.4%)	71(38.6%)	184(100%)	2.200	0.138
Have personal illnesses	168(68.3%)	78(31.7%)	246(100%)		

*statistical significance level of 0.05

From the table 4.8, it found that personal attributions factors including gender, educational background and income sufficiency have positive association with exercise behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. Meanwhile, the attributions including age, marital status, income, main source of income and personal illnesses have no correlation with exercise behavior of elders who were living in Mueang District, Roi Et Province. This indicated that both male and female with primary school education who had sufficient income but not enough for saving , the majority of the samples, valued exercise behavior in maintaining their good health, perhaps with similar reasons as the diet behavior one.

Table 4.9 Shows factor association between personal attribution factors and self care behavior

during illness of elders who were living in Mueang District, Roi Et Province.

Variation	Level of Self Care Behavior during illness			χ^2	p- value
	Poor-Fair	Good	Total		
Gender					
Male	27(15.2%)	151(84.8%)	178(100%)	2.272	0.132
Female	26(10.3%)	226(89.7%)	252(100%)		
Age (years)					
60-70	38(13.1%)	253(86.9%)	291(100%)	2.067	0.356
71-80	10(9.0%)	101(91.0%)	111(100%)		
Above80	5(17.9%)	23(82.1%)	28(100%)		
Educational Background					
Primary school and lower	44(12.4%)	312(87.6%)	356(100%)	0.002	0.963
Secondary school and higher /separation	9(12.2%)	65(87.8%)	74(100%)		

Table 4.9 (continued) Shows factor association between personal attribution factors and self care behavior during illness of elders who were living in Mueang District, Roi Et Province.

Variation	Level of Self Care Behavior during illness			χ^2	p- value
	Poor-Fair	Good	Total		
Marital status					
Single	2(13.3%)	13(33.3%)	15(100%)	6.908	**0.032***
Married	42(15.3%)	232(84.7%)	274(100%)		
Widow, Divorce /separation	9(6.4%)	132(31.2%)	141(100%)		
Income(baht)					
Less than 10,000	37(12.1%)	268(87.9%)	305(100%)	1.005	0.605
10,001 - 20,000	6(9.8%)	55(90.2%)	61(100%)		
More than20,000	10(15.6%)	54(84.4%)	64(100%)		
Income sufficiency					
Insufficient	17(9.7%)	158(90.3%)	175(100%)	4.113	0.128
Sufficient but not enough for saving	29(16.1%)	151(83.9%)	180(100%)		
Sufficient and have some left for saving	7(9.3%)	68(90.7%)	75(100%)		
Main source of income came from the elders themselves					
No personal income	4(25.0%)	12(75.0%)	16(100%)		0.121**
Earn personal income	49(11.8%)	365(88.2%)	414(100%)		
Main source of income came from a family members					
Do not receive income from a family member	8(8.1%)	91(91.9%)	99(100%)	2.144	0.143
Receive income a family member	45(13.6%)	286(86.4%)	331(100%)		

Table 4.9 (continued) Shows factor association between personal attribution factors and self care behavior during illness of elders who were living in Mueang District, Roi Et Province.

Variation	Level of Self Care Behavior during illness			χ^2	*p- value*
	Poor-Fair	**Good**	**Total**		
Personal illnesses					
Do not have personal Illness	27(14.7%)	157(85.3%)	184(100%)	1.641	0.200
Have personal illnesses	26(10.6%)	220(89.4%)	246(100%)		

*statistical significance level of 0.05

** fisher's exact

From the table 4.9, it found that personal attribution which was marital status has positive association with self care behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. Meanwhile, the attributions factors such as gender, age, educational background, income, income sufficiency, main source of income and personal illnesses have no correlation with exercise behavior of elders who were living in Mueang District, Roi Et Province. This indicated that those who stay with spouses have good behavior on their self-care behavior perhaps due to reciprocal assistance to each other in the golden age.

Table 4.10 Shows factor association between personal attribution factors and stress management
of elders who were living in Mueang District, Roi Et Province.

Variation	Level of Stress Management Behavior			χ^2	p- value
	Poor-Fair	Good	Total		
Gender					
Male	62(34.8%)	116(65.2%)	178(100%)	4.001	**0.045***
Female	112(44.4%)	140(55.6%)	252(100%)		
Age (years)					
60-65	76(43.7%)	98(56.3%)	174(100%)	1.148	0.841
66-70	46(39.3%)	71(60.7%)	117(100%)		
71-75	27(36.5%)	47(63.5%)	74(100%)		
76-80	14(37.8%)	23(60.7%)	37(100%)		
Above80	11(39.3%)	17(60.7%)	28(100%)		
Educational Background					
No education	9(69.2%)	4(30.8%)	13(100%)	9.443	**0.024***
Primary school	143(41.7%)	200(58.3%)	343(100%)		
Secondary school	13(25.5%)	38(74.5%)	51(100%)		
Vocational education					
Bachelor degree	9(39.1%)	14(60.9%)	23(100%)		
Higher than bachelor degree					
Marital status					
Single	5(33.3%)	10(66.7%)	15(100%)	0.625	0.732
Married	109(39.8%)	165(60.2%)	274(100%)		
Widow, Divorce	60(42.6%)	81(57.4%)	141(100%)		
/separation					

Table 4.10 (continue) Shows factor association between personal attribution and stress management of elders who were living in Mueang District, Roi Et Province.

Variation	Level of Stress Management Behavior			χ^2	p- value
	Poor-Fair	Good	Total		
Income(baht)					
Less than 5,000	83(40.3%)	123(59.7%)	206(100%)	2.083	0.721
5,001 - 10,000	39(39.4%)	60(60.6%)	99(100%)		
10,001 - 15,000	18 (50.0%)	18(50.0%)	36(100%)		
15,001- 20,000	11(44.0%)	14(56.0%)	25(100%)		
More than20,000	23(35.9%)	41(64.1%)	64(100%)		
Income sufficiency					
Insufficient	83(47.4%)	92(52.6%)	175(100%)	13.416	**0.001***
Sufficient but not enough for saving	74(41.1%)	106(58.9%)	180(100%)		
Sufficient and have some left for saving	17(22.7%)	58(77.3%)	75(100%)		
Main source of income came from the elders themselves					
No personal income	7(43.8%)	9(56.3%)	16(100%)	0.074	0.785
Earn personal income	167(40.3%)	247(59.7%)	414(100%)		
Main source of income from a family members					
Do not receive income from a family member	33(33.3%)	66(66.7%)	99(100%)	2.715	0.099
Receive income from a family member	141(42.6%)	190(57.4%)	331(100%)		
Personal illnesses					
Do not have personal Illness	71(38.6%)	113(61.4%)	184(100%)	0.471	0.493
Have personal illnesses	103(41.9%)	143(58.2%)	246(100%)		

*statistical significance level of 0.05

From the table 4.10, it found that personal attributions including gender, educational background and income sufficiency have positive association with stress management behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. Meanwhile, the attributions including age, marital status, income, main source of income and personal illnesses have no correlation with exercise behavior of elders who were living in Mueang District, Roi Et Province. This indicated that female with primary education who had sufficient income but not enough for saving, again, the majority of the samples, seemed to handle their stress management well.

CHAPTER V

CONCLUSION, DISCUSSION AND RECOMMENDATIONS

Thailand must initiate plans and supportive measures to prepare for the "Aging Society", with the objectives to promote good health among elders, help them to slow aging process, recover body strength and raise living standard. The importance of health promotion of elders are:

1. Having good health is every Thai's fundamental right (Constitution B.E. 2540 section 52).

2. The Ministry of Public Health has mission to promote good health, prevent illnesses, provide healthcare and recovery to all Thai citizens. Realizing that health prevention is better than healthcare and recovery as it can save more cost in the long term, the government has emphasized on prevention rather than curing diseases as well as improving positive health behavior to promote good health among Thai citizens.

3. A good health contribute to efficient overall work productivity of Thailand.

4. Elders can live with dignity, self-worthy, and independent with better living standard.

Mueang District is under the service network of the Roi Et Hospital. Roi Et Province has a total population of 150,145 people out of which 17,720 or 11.8% were elders. Roi Et was considered as one of the provinces with increasing number of elderly population. In addition, 57.2% of elderly population was found having chronic diseases. Due to limit budget, Roi Et Hospital Service Network decided to adopt health prevention policy by promoting good health and reduce risky activities. This study would utilize the information on health behavior of elders to improve and develop more effective health promotional approaches among the elders who were living in Mueang District, Roi Et Province accordingly.

As elderly are valuable and respectful human resources of Thailand, the current research on " Factors influencing health behavior of elders in Mueang District, Roi Et Province, Thailand " had the objectives to study health behavior concerning exercise, diet, self care during illnesses and stress management of elders who were living in Mueang District, Roi Et Province; to learn about each different personal attribution factors (such as gender, age, educational background, marital status, income, income sufficiency, main source of income and personal illness) of elders who were living in Mueang District, Roi Et Province; and to find out factors influencing health

behaviors of elders in Mueang District, Roi Et Province.The studied population were the frame of 17,720 elders, both male and female, aged 60 years and above, who were living in Mueang District, Roi Et Province. A sample size of 391 were systematically sampled. Ten percent were added on to compensate for drop-out cases therefore the total number was 430. This study used face-to-face interview as a data collection tool. The interview guideline was divided into 2 parts. The first part consisted of general information on the elderly. The section consisted of close-ended questions (check-list style), except for age and income which were open-ended questions, for a total of 8 items with nominal scale. The second part was relevant to health behavioral data of the elderly for 30 items with multiple choices for rating scale in 4 perspectives: healthy diet (8 items); exercising (6 items); self-care (8 items); and stress management (8 items). The statistical methods used, to study factors influencing health behavior of elders who were living in Mueang District, Roi Et Province, were frequency, percentage, mean, standard deviation and Chi- Square test χ^2

Regarding eight personal attribution factors, namely, gender, age, educational background, marital status, income and income sufficiency, main source of income, and personal illnesses, it found that female between 60-65 years old with primary school education lived with their spouses and had an income of less than 5,000 baht per month. About 42% of the sample had sufficient income yet not enough for saving. Almost 97% earned their own income. However, about 58% of them had personal illnesses, particularly diabetes mellitus, whereby almost all of DM patients had consistent follow-up. Other diseases of personal illnesses included high blood pressure (98.9%) and osteoarthritis (90.3%).

For the four aspects of elder's behaviors, it found that for diet part, the elders in Mueang District, had good, suitable and positive diet behavior caused by nutritious consumption. The credit should be given to the team of public health personnel in the province comprises of multidisciplinary workforce who provide health education at different sites to the patients. The action is well supported by the Thai government aimed at the establishment of "healthy ageing" on the local level. Taking a look in exercise behavior, as the samples earned their living by doing farm work (as 77.9% of the province elder population are still working at this age), by nature, they could have strong physical activities while on work. Consequently, standard index of exercise might not be adhered strictly to. The lesson learnt at this point is that an evaluation on

exercise habits of the elders in Roi Et Province needs an adaptation for measurement to match with the reality. In terms of self care behavior, the sample put great importance on the issue. However, their practice of purchasing medication at their own judgment is the topic of attention by health personnel. For whatever reasons they may have, this practice may indicate that there is a trend of self-reliance taking place among elderly in Mueang District, Roi Et Province. The last aspect concerns stress management by the samples. Through northeast ancient tradition of "Hit Seepsong, Klong Seepsii", religious-oriented activities preoccupy the time of elderly in Mueang District, Roi Et Province. Backed up with frequent interaction among the neighbors, elderly in Mueang District could rely on natural peer-assistance to relieve their tension. In contrast to urban style of relaxation, the samples did not comply with this type of lifestyle for releasing their stress.

Employing Chi-Square test to find the relationship between independent and dependent variables of the study, it found, with statistical significance level of 0.05, that age and personal illnesses had positive association with diet behavior of the elders. Economic and self-reliant perspective might explain this phenomenon. While gender, educational background and income sufficiency had positive association with exercise behavior of elders, while marital status had positive association with self care behavior of elders, perhaps due to spouse existence, self care behavior is more attentive to. Finally, gender, educational background and income sufficiency had positive association with stress management behavior of the elders.

5.1 Conclusion

The results of the study on factors influencing health behavior of elders who were living in Mueang District, Roi Et Province.

Section 1: The data analysis of personal attribution of elders including gender, age, educational background, marital status, income and income sufficiency, main source of income, and personal illnesses indicated that

From the table 4.1, it is found that a majority of elders or 58.6% of the sampled group, who were living in Mueang District, Roi Et Province, were female. 40.5% of the sampled group were between 60 – 65 years old. Their average age was 67 years old. 79.8% of the sampled group graduated from primary school. 63.7% were married and living with their spouse. 47.9% earned less than 5,000 baht. The average income was 6,000 baht. 41.9% have sufficient income but not

enough for saving. 96.3% earned income by themselves. 57.2% had personal illnesses. 46.1% of elders who were having personal illness had Diabetes in which 99.3% of them were receiving regular aftercare. Similarly, 98.9% of elders with high blood pressure and 90.3% of elders with osteoarthritis also were receiving regular aftercare.

Section 2: The data analysis of health behavior of elders including diet, exercise, self-care behavior, stress management indicated that

Diet behavior of elders, who were living in Mueang District, Roi Et Province, was on good level($\overline{X}$= 2.68, S.D.=0.25). When we considered each category, the average number of sampled group who seldom drink alcohol is the highest ($\overline{X}$= 2.88, S.D.=0.37). The second highest average value is having completely cooked food ($\overline{X}$= 2.80, S.D.=0.44). The third highest average value is having various types of vegetable ($\overline{X}$= 2.77, S.D.=0.46) . The lowest average value is having fruit ($\overline{X}$= 2.40, S.D.=0.68).This indicated that the sampled group of elders who were living in, Mueang District, had suitable and positive eating behavior as they tended to consume nourishing food. Presently, besides chronic diseases or personal illness, nutrition is another major problem faced by elders. The changes in economic and social situation have greatly affected eating behavior of people. Nonetheless, the interdisciplinary public health officer in all areas have played crucial role in providing knowledge on nutrition to elders individually and in groups, in office and community. Moreover, the government media also reckoned the importance of the issue, and cooperated by publicizing accurate information on nourishment. The government also initiated policy to promote positive eating behavior in elders.

Exercise behavior of elders, who were living in Mueang District, Roi Et Province, was on fair level($\overline{X}$=2.13, S.D.=0.60). When we considered each category, the behavior on 'Activities including gardening, farming, house works, planting trees, watering plants, riding bicycle' has the highest average value ($\overline{X}$= 2.43, S.D.=0.74), a good level. Follow by the behavior on 'Exercise muscle by swinging arms and legs, tighten wrist and ankle' ($\overline{X}$= 2.23, S.D.=0.74), a fair level; and 'In the beginning, one should start from light exercise' ($\overline{X}$= 2.20, S.D.=0.81), a fair level; and 'Exercise at least 3 times per week' ($\overline{X}$= 2.06, S.D.=0.75); and Spend at least 30 minutes for each exercise session ($\overline{X}$= 1.95, S.D.=0.76); and 'Doing stretching such as bend down to touch the floor with one's hands, hold both hands over one's head and push, stretch and train muscle strength continuously' ($\overline{X}$= 1.93, S.D.=0.80), respectively. This indicated that the sampled group

of elders who were living in Mueang District, had practiced exercise by moving their bodies and stretching muscle. However, they lacked regular and continuous practice due to most of the elders (77.9%) were still engaging in agricultural works (Mueang District Public Health Office, 2009). Nonetheless, working would enable the body parts and muscle to move and consume energy more than people who do not do any work. Thus, the exercise behavior concept was not suitable for elders who did daily agricultural works. Thus the standard of exercise at least 3 times per week and spend at least 30 minutes for each exercise session should not be used to evaluate exercise behavior of elders for this study. The evaluation should base on the fact rather than standard index.

Self-care behavior of elders, who were living in Mueang District, Roi Et Province, was on good level($\overline{X}$=2.69, S.D.=0.39). When we considered each category, the topic on 'You take the prescription according to the instruction given by a public health officer' has the highest average value($\overline{X}$= 2.83, S.D.=0.45). Follow by the topics on 'You follow advice of a public health officer when you fallen ill' ($\overline{X}$= 2.80, S.D.=0.50); and 'You meet physician regularly on time' ($\overline{X}$= 2.79, S.D.=0.52); and 'You check your body for abnormalities regularly' ($\overline{X}$= 2.76, S.D.=0.49); and 'When you have problem taking medicine, you will consult a certified public health officer' ($\overline{X}$= 2.75, S.D.=0.53); and 'You only take conventional medicine from a certified public health officer' ($\overline{X}$= 2.70, S.D.=0.57); and 'You receive physical check-up and disease diagnosis annually' ($\overline{X}$= 2.64, S.D.=0.66) respectively. The topic on 'You will not buy your own medicine even when you experience minor sickness' has satisfactory average value ($\overline{X}$= 2.22, S.D.=0.85). This indicated that the sampled group of elders who were living in, Mueang District, realized the importance of self care behavior. They conducted regular physical check-up, checked body for change by themselves, sought information on health, requested assistance from professional when necessary. Nonetheless, some of them still purchase medicine by themselves. This was a normal practice as a person would tend to help themselves when they experience minor sicknesses. A study on self care behavior of elders also obtained the same result that most of the elders (48%) would buy medicine to alleviate sicknesses by themselves (Napaporn Chayowan and John Nogel, 1996:178 as referred in Mallika Mattiko, 1997). This might be because elders do not wish to bother their children and wanted to save expense. In addition, they

also wanted to recover faster so that they could assist their children. Most importantly, elders wanted to live with dignity, self-worthy and independent.

Stress management behavior of elders, who were living in Mueang District, Roi Et Province, was on good level($\overline{X}$ =2.37, S.D.=0.41). When we considered each category, the topic on 'You will relax by talking to people inside your house' ($\overline{X}$ = 2.51, S.D.=0.68) and 'You attend wedding, funeral, ordination ceremony and other traditional events' have the equal highest average value ($\overline{X}$ = 2.51, S.D.=0.67) were in good level. Follow by the behavior on 'You will say your prayer, pray to god or meditate when you feel stressful.' ($\overline{X}$ = 2.45, S.D.=0.72); and 'You feel frustrated or indulge yourself in the problem or sadness that occurred.' ($\overline{X}$ = 2.40, S.D.=0.70); and 'You share problems with other elders your own age.' ($\overline{X}$ = 2.35, S.D.=0.74) respectively. The behaviors that were on fair level are 'When there is a chance, you will relax by talking to neighbors.' ($\overline{X}$ = 2.31, S.D.=0.73); 'On free time, you will occupy yourself with recreational activities such as planting trees and raising fish.' ($\overline{X}$ = 2.24, S.D.=0.78); and 'You will listen to radio or read books when you feel stressful.' ($\overline{X}$ = 2.21, S.D.=0.80). This indicated that the sampled group of elders who were living in Mueang District, had methods to release their stress level, could suitably express their feeling, realized the importance of building relationship within the family, discussed and shared their thoughts with one another, and gathered together on special occasions. In addition, the Thai society has beautiful culture and traditions, such as an event called "Hit Seepsong, Klong Seepsii" which is carried out by the locals in the Northeastern part of Thailand, and other events that would allow provide opportunities for elders to meet one another. Moreover, saying a prayer and meditation are common practices of the Northeastern people. The practices help them to stay calm and feel at ease. Meanwhile, the activities that are common practiced by urban people including listening to radio, reading or doing creational activities such as planting trees and raising fish were not popular among elders who were living in the suburban area.

Section 3: The data analysis of association between personal attribution of elders (including gender, age, educational background, marital status, income and income sufficiency, main source of income, and personal illnesses) and health behavior of elders (including diet, exercise, self-care behavior, stress management) who were living in Mueang District, Roi Et Province. Chi- Square analysis was employed. The data indicates that

1. Age and personal illnesses have positive association with diet behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. Meanwhile, the attributions including gender, educational background, marital status, income, income sufficiency and main source of income have no association with diet behavior of elders who were living in Mueang District, Roi Et Province.

2. Gender, educational background and income sufficiency have positive association with exercise behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. Meanwhile, the attributions including age, marital status, income, main source of income and personal illnesses have no association with exercise behavior of elders who were living in Mueang District, Roi Et Province.

3. Marital status has positive association with self care behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. Meanwhile, the attributions including gender, age, educational background, income, income sufficiency, main source of income and personal illnesses have no association with exercise behavior of elders who were living in Mueang District, Roi Et Province.

4. Gender, educational background and income sufficiency have positive association with stress management behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. Meanwhile, the attributions including age, marital status, income, main source of income and personal illnesses have no association with exercise behavior of elders who were living in Mueang District, Roi Et Province.

5.2 Discussion

Researcher would like to make discussion on this study on the following important points:

1. The study of health behavior of elders who were living in Mueang District, Roi Et Province. The study results showed that the overall health behavior of elders, who were living in Mueang District, Roi Et Province, was in good condition. It was because elders knew how to take care of themselves in the aspects of nutrition, self care behavior, and stress management. Nonetheless, their exercise behavior was in satisfactory level. When we considered the results on category and topic basis, we found that

1) The diet behavior of elders, who were living in Muang District, Roi Et Province, was on good level. This result was conforming to result obtained from the study conducted by Tharathorn Duangkaew, Hiranya Dejudom (2007), which determined health behavior of elders who were living in Tambol Prong Madue, Amphur Muang, Nakorn Pathom province and showed that the eating behavior of the elders was on good condition. This was a result of elders' responsibility and attention on their eating habit and thus avoided risking their health. Moreover, the advancement in technology that facilitates wider information dissemination through various media such as radio, television, campaigns of public health organizations, news center in each Tambol in Roi Et Province, enables elders to access information about healthcare easier. Moreover, another positive health behaviors of elders in Mueang District, Roi Et Province, were that they seldom drank alcohol; having completely cooked food; avoid tasty food; consume vegetable and fruit that have vitamin and mineral that is useful to the body, and high fiber content that helps to prevent constipation. This result was conforming to result obtained from the study conducted by Petchara Intarapani (1993), which involved relationship between acknowledgement of health condition, social support and health promotion behavior of elders who were living in Municipality, Udon Thaini Province. The research results showed that, regarding the eating behavior, most of the elders consumed all five food groups at least four meals per day. Majority of them were having vegetable, non-tasty food. Nonetheless the researcher's result was not conforming with result obtained from the study conducted by Tossaporn Sribarigij (2006), which was about the influence of involvement in community to health behavior of elders who were living in Bangkok area. The research results showed that the elders were still drinking tea and coffee beverage regularly because of their preference and habit. Moreover, the elders were still having tasty food as they felt that savorless food was not delicious. In this regard, food is important for elders' well being. Having nourishing food would enable them to stay healthy. Good diet for elders is food with complete nutrients that are needed by a body and content low fat that enable elders to stay in shape. Healthy diet should consist of having five food groups and drinking six to eight glasses of clean water (Ministry of Public Health 2004).

2) The exercise behavior of elders, who were living in Mueang District, Roi Et Province, was on fair level. This result was conforming to result obtained from the study conducted by Kwanjai Tantiwatthanasatien (1991), which involved determining relationship

between selected factors and health promotion behavior of elders who were living in the suburban area in the Northeastern region of Thailand. The study found that the elders had rather good score for activities and exercise behavior. It was because most of the elders were doing exercise in the form of work activities such as gardening, farming, doing house works, planting trees and riding bicycle. Moreover, this study's result also conforming with research's results conducted by Vasana Tuenwong (1997), which studied self care behavior and quality of life of elders who were living in Bangkok area. The research found that most of the elders refused to exercise because of their poor health condition, difficulty in moving their bodies and walk, and afraid that their body condition might get worse after they exercise. Furthermore, it was found that majority of the elders who were still working have no available time for exercise, and that doing some activities such as conducting house works, selling goods were some form of exercise. Thus there was no need for doing additional workout. Nonetheless, doing house works or daily activities are not correct form of exercise. In addition, it was found that elders were lack of consistency in carry out exercise routine. Usually, for a normal person who is above 15 years of age, one should exercise at lease 3 times a week for at least 30 minutes per session. However, this standard is applicable to a normal person, the same standard should not be used to evaluate elders who have less effective physical condition. Elders should receive physical training that is suitable to their body condition and capability, so as not to exert and injure themselves (Niramol Intarith, 2004). Therefore, it can be concluded that elderly exercise does not have to conform to standard for normal person, but should be suitable for the physical condition of elders.

3) The self care behavior of elders, who were living in Mueang District, Roi Et Province, was on good level. This result was conforming to result obtained from the research conducted by Tharathorn Duangkaew, Hiranya Dejudom(2007), which showed that the self care behavior of elders, who were living in Tambol Prong Madue, Amphur Muang, Nakorn Pathom province, was in good level. Moreover, this study result also in consistent with result obtained from the research conducted by Piyanuch Kaewruang, Anfamr Sirito (2007), which determined relationship between health belief and self care behavior of elders who were members of Doklamduan Club, Tambol Koobua, Amphur Muang, Ratchaburi. The study showed that the elders, who were members of Doklamduan Club, had medium-level of health belief and good-level of self care behavior. It was because the elders would check their body for abnormalities

regularly, and would conduct annual physical check-up and disease screening. In this regard, Roi Et Provincial Public Health unit would provide physical check up for elders at the public health center in each community annually. This would allow elders to realize their health condition and determine preventive approaches. Moreover, this would also provide opportunity for elders who have personal illnesses or problem in taking prescription to seek assistance and follow the advice from public health officer correctly as well as meet with the physician on the appointments. Furthermore, it was found that most of elders would not purchase medicine by themselves even for minor sicknesses as they could receive contemporary medicine from public health officers. This result was not consistent with study results obtained by Mallika Mattiko and team (1997) who conducted a study on hygiene and self care behavior regarding hygiene of elders. Mallika's study was taken in the Northern part of Thailand and showed that purchasing medicine for oneself is a common practice among general people when they experience minor sicknesses. Nevertheless, the effective measure for elders to prevent sicknesses is to conduct annual physical check up. Elders who can look after themselves with suitable methods would have good health and live a happy life as well as higher quality of life (Suwimol Panawathanakul, 1991)

4) The stress management behavior of elders, who were living in Mueang District, Roi Et Province, was on good level. A majority of elders prefer to release their stress by talking to their family members. These activities would also create warm and loving atmosphere in the family. Moreover, it was found that elders would rely on their religion to restraint themselves. They would attend temple and practice mediation to calm themselves. In addition, the special occasions such as wedding, funeral, ordination ceremony and other traditional events, especially an event called "Hit Seepsong, Klong Seepsii" which is carried out by the locals in the Northeastern part of Thailand, would allow provide opportunities for elders to meet one another. This would allow elders to release stress and stop indulging themselves in the problems; control their emotion and express their feeling suitably. This result was conforming to the result obtained from the research conducted by Saengduan Promkaewngam (2000) who studied self motivation and health promotion behavior of elders after received coronary bypass surgery. The study found that the stress management behavior of elders was in good level. The elders could suitably release their stress and express their feeling when confronted with problems. This result was in consistent with the research conducted by Tossaporn Sribarigij (2006) who studied about the influence of

involvement in community to health behavior of elders who were living in Bangkok area. The research showed that elders understood and accepted their physical and emotional changes, able to better adapt themselves to the rapid change in the society, as well as could handle problems rationally. In addition, This result was conforming to the research conducted by Chanadda Kerdpae (2007) who surveyed health promotion behavior of elders who were living in Tambol Makarmsoong, Amphur Muang, Phitsanulok Province. Chanadda's study showed that the stress management of the elders was good. Nonetheless, elders should learn to manage their emotion by stay conscious, notice and understand situation that can trigger their anger; control and restrain their emotion; and effectively building relationship with others. Positive relation \ship with people around you would help to reduce emotional stress.

2. The study on the relationship between personal attributes and health behavior of elders who were living in Mueang District, Roi Et Province, showed that

1) Personal attributes that had association with diet behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05, were age and personal illnesses.

Age: From the study, it was found that age has a positive association with diet behavior of elders, who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. In other word, elders in different age group would have dissimilar eating behavior. It is because the older a person is, there is an increasing chance that the person would experience malnourishment. Elders would often face with body deterioration according to natural process. Therefore, food is the most important thing that can slow down elders' body from degeneration. Having food with complete nutrients that are needed by a body would enable a person to stay healthy (Mallika Mattiko and team, 1997). This result was in consistent with the research conducted by Sirima Wonglaemthong (1999) who studied relationship between personal attributes, realizing the importance of health promotion behavior, and health promotion behavior of elders. Sirima's research showed that age and income can be used to predict health promotion behavior of elders. In other word, elders with younger age tend to have much better health promotion behavior than the older one. It was because as a person grew older, the person would experience more body limitation and health problems. Nonetheless, this study was not conforming to the research conducted by Suthinant Jitpanusopol (2000) who studied health

promotion behavior of elders who had long life in Karnchanaburi province. Suthinant's research found that there was no correlation between health promotion behavior and long life. In other word, elders in different age groups did not have dissimilar health promotion behavior. Suthinant's research was in consistent with the study conducted by Chonthida Chantakiri (2003) who determined health promotion behavior of elders who came to do activities in the Lumpini park.

Personal illness: From the study, it was found that personal illness has positive association with diet behavior of elders, who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. In other word, elders with personal illnesses tend to have better diet behavior than those without personal illnesses. It was because having clean and nutritious food in a suitable level to the body's needs would benefit elders' health as nutritious food can cure sicknesses. Nonetheless, elders with certain sickness would not be able to consume particular type of food. Thus elders should be careful on what they eat. As a consequence, elders with personal illnesses tend to look after themselves better and be more careful on what they eat than those without personal illnesses. This result was complying with the research conducted by Malulee Chooned (1995) who conducted factors that influence way of life and nutrition of elders who were living in Amphur Takarnpeedpol, Ubon Ratchathani. Malulee's result showed that personal illness has correlation with nutrition condition of elders. The obtained result also conforming to the researched conducted by Ahijevch and Bemard (1994 referred by Chonthicha Chantakiri, 2006) who studied health behavior of African women. The study used Pender's health promotion behavior concept, and found that history of illness had correlation with health promotion behavior. The result was not consistent with the research conducted by Tossaporn Sribrikij (2006) who studied relationship between involvement in the community and health promotion behavior of elders who were living in Bangkok area. The result showed that personal illnesses was obstacle and problem to health promotion behavior of elders.

2) Personal attributes that had association with exercise behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05, were gender, educational background and income sufficiency.

Gender: From the study, it was found that gender has association with exercise behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level

of 0.05. In other word, elders with different gender would have different exercise behavior. Male elders would have higher exercise behavior than female elders. It was because male and female have different physical figure. Male tend to have more bodily strength and power over the female. Although male elders were confronted with body deterioration and reduction in social responsibilities, they would tend to place emphasis on their physical health by doing regular exercise. This result was conforming to the research conducted by Wandee Yamchanchai (1995) who studied relationship between self perception, health perception and health promotion behavior of elders. Wandee's research showed that gender has positive correlation with exercise behavior of elders. This result, however, was not conforming to the research conducted by Duangjai Pianbumrung (1997) who studied relationship between self care behavior and quality of life of elders who were living in the Southern Border provinces of Thailand. The result showed that gender has no correlation with exercise behavior of elders. Moreover, the study of Sodsai Srisa-ard (1997) who determined factors that influenced health promotion behavior of elders who were living in Amnat Charoen province. The research found that female elders had higher health promotion behavior than male elders.

Educational background: From the study, it was found that educational background had association with exercise behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. In other word, elders with different educational background would tend to have dissimilar exercise behavior. Elders with higher educational background would have better exercise behavior those with lower educational background. In this regard, education is the important source of self improvement, which stimulates change in health behavior in the aspect of knowledge, attitude and action. A person needs to possess accurate knowledge and right attitude in order to carry out correct health behavior practice. Elders with higher educational background would have a better chance to learn and access source of knowledge about exercise than those with lower educational background. As a result, they would have a higher chance to develop their exercise knowledge and potential, and create good attitude toward exercise. Thus, this group of people tend to exercise regularly and continuously (Willis & Compbeel, 1992, referred in Wannipa Assawachaisuwikrom, 2002). The result was in consistent with the research conducted by Vasana Tuenwong (1997), which studied self care behavior and quality of life of elders who were living in Bangkok area. Vasana's

research showed that educational background had correlation with exercise behavior of elders. Similarly, Pirom Tubtimtes (2003), who conducted a study on factors influencing exercise behavior of elders who were members in elderly club, also found that personal attribute that had correlation with exercise behavior was educational background. However, this result was not conforming to the research conducted by Chonthida Chantakiri (2003), who determined health promotion behavior of elders who came to do activities in the Lumpini park, whose research showed that educational background had no correlation with health promotion behavior of elders.

Income sufficiency: From the study, it was found that income sufficiency had association with exercise behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. In other word, elders who had sufficient income and enough for saving tend to have better exercise behavior than those with sufficient income but not enough for saving , and those with insufficient income respectively. It was because elders who had sufficient income and enough for saving, would have stable financial status. Thus, they would have financial power to inquire factors that can benefit their health and enable them to live a happy life. Therefore, elders who had sufficient income and enough for saving would tend to have better exercise behavior than elders with poor economic status. This can be observed from the survey of economic status of elders which was conducted by Suthichai Jitapankul (2001). The survey found that 35.4% of the Thai elders did not have sufficient income to meet household expense. In addition, more than 31.9% of elders still needed to work to help their family earn income. In this regard, income sufficiency had obvious influence on exercise behavior of elders. This result was conforming to the research conducted by Khemiga Yamaratn (1984) who studied factors that created satisfactory for elders. The sampled group was officers in the Ministry of Agriculture and Cooperatives. The research found that elders who had financial problems would also have problems that obstruct health promotion behavior.

3) Personal attribute that had association with self- care behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05, was marital status.

Marital status: From the study, it was found that marital status had association with self care behavior of elders who were living in Mueang District, Roi Et province, with statistical significance level of 0.05. In other word, elders with dissimilar marital status would have

different self care behavior. It was found that elders who were single, widower/window, divorced/separated tend to have better self care behavior than elders who were married. It could be explained that, although elders who were living with their spouses could provide assistance and care to each other, they still had other obligations to bear. Thus, they were unable to fully devote themselves to look after their spouses. This was different from elders who were single, widower/window, divorced/separated, as they did not have partners to look after them. As a result, they had to take better care of themselves and avoid getting sick. A majority of elders in this group were living with their children or relatives. They would still receive various supports from their family members in the aspect of health promotion behavior (Sirima Lilawong, 1998). This result was in consistent with the research conducted by Niranard Witthayachokkitti (1991) who studied self care ability and health condition of elders. Niranard's research found that marital status had correlation with self care ability. Similarly, Suwimol Panawatthanakul (1991), who conducted a study on influence of the physical, emotional and social changes on way of life, health condition, and quality of life of elders. Suwimol's research found that marital status can be used to predict self care ability and quality of life of elders. However, the study was not consistent with the research conducted by Paijitra Lorskulthong and team (2003) who determined relationship between health promotion behavior and health condition of elders who received service of Family Consulting Center in Nan province. The research found that marital status including single, widower/window, divorced/separated led to lack of social support on health promotion behavior.

4) Personal attributes that had association with stress management behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05, were gender, educational background and income sufficiency.

Gender: From the study, it was found that gender had association with stress management behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. In other word, male elders would have better stress management behavior than female elders. It was because, normally, a man would tend to have a leading role in his family, possess power to make decision, have opportunity to meet with people and participate in the social event more often than a woman. This enables man to perceive himself with higher self esteem. Meanwhile, normally, a woman's main responsibilities are to look after

the family, do house chores. She would not have as much opportunity to engage in outside activities as a man. As a result, a woman tend to feel stressful easier than man. This result was conforming with the research conducted by Jitakanya Boonya (1996) who studied psychological condition of elders who were members of the elderly club in Tapanhin Municipality, Pichit province. The research found that, overall, female elders have more mental health problem than male elders. Similarly, Suree Karnchanawong and team (1997) conducted a study on hygienic health condition and self care behavior of elders in the central region. The research found that gender had correlation with mental health of elders. However, the result was not conforming with the research undertaken by Chailai Chaiyaseri (1996) who studied relationship between family, social involvement, content in life, worry about aging condition, social support, and mental condition of elders who were members of Elderly Police Hospital Club. The research found that male and female elders had dissimilar mental health problems.

Educational background: From the study, it was found that educational background has association with stress management behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. In other word, elders with different educational background would tend to have dissimilar stress management behavior. Elders with higher educational background tend to cope up with their stress better than those with lower educational background. It was because education is the important source of knowledge and potential development which help to create positive attitude toward self care behavior. People with higher educational background would have better access to source of information that can be used for decision making than those with lower educational background. Moreover, people with high education would possess ability to seek information, ask questions, and know how to utilize, maintain and look after one's health (Niramol Intarith, 2004). Therefore, elders with high education can manage their stress better than those with low education. This result was complying with the research undertaken by Chonthicha Wangvivek (1994) who studied relationship between physical condition, social support and self care behavior of elders who were members of Thammasat University Hospital Elderly Club. The research found that educational background has correlation with self care behavior regarding mental health of elders. Similarly, Saralrat Pol-in and team (2005, referred in Maitreejit Takwan, 2007), who conducted a study on relationship between personal attributes, social support and mental health of elders who were living Tambol

Thongchai, Amphur Muang, Petchaburi province, also found that educational background has correlation with elders' mental health. Nonetheless, the result was not complying with the research conducted by Chanthima Charanasri (1996) who studied mental health of elders who were living in Bangkok Home for the Age, Bangkok. The research found that educational background has no correlation with mental health condition.

Income sufficiency: From the study, it was found that income sufficiency has association with stress management behavior of elders who were living in Mueang District, Roi Et Province, with statistical significance level of 0.05. In other word, elders who have sufficient income and enough for saving would have better stress management behavior than those who have sufficient income but not enough for saving, and those with insufficient income respectively. It was because income was important factor for living. Money is used to procure things that can satisfy basic needs. Elders with sufficient income and enough for saving would not have to struggle to earn their living after their retirement. This would enable them to look for health service conveniently, without worry on expense and can spend more time looking after themselves. Meanwhile, elders who have insufficient income still needed to work to support their family and meet the household expense. This would increase stress level among elders. This result was conforming with the research conducted by Maitree Tiyarathanakoon (1993) who studied factors that have association with mental health of elders who were living in Bangkok area. The research found that elders who have sufficient income has tend to have better mental health than those with insufficient income. The research's result was in consistent with Sasipatn Yodpetch and team (1997) who studied social support for elders. The research found that if elders can have their own income that they can spend freely, even in significant amount, they would feel secure and be at ease and less stressful. On the other hand, elders who have low income or poor economic status and must struggle to make ends meet, would experience financial constraints and feel stressful. Nonetheless, the result was not conforming with the research undertaken by Chanthima Charanasri (1996) who studied mental health of elders who were living in Bangkok Home for the Age, Bangkok. The research found that elders with different economic status have similar mental health condition.

5.3 Recommendations

    1. Suggestion for the application of the research

        1.1 Screening is carried out by the public health officers at Primary Care Unit at least once a year. The objective is to reduce sickness and risky activities; determine illness at early period; and provide accurate health knowledge. The screening process involve weight and height measurement, evaluate Body Mass Index (BMI), conduct test on urine, blood pressure, blood sugar level, oral cavity examination and conduct stress test in elders

        1.2 Provide accurate information and conduct continuous health promotion behavior among elders and their families. The information should include positive exercise, diet, self care and stress management behavior so that people will understand and apply the concept in the real situation.

        1.3 Encourage all family members to involve in elderly care so as to enable the elders to experience warm and happy family atmosphere during their retirement.

        1.4 Promote mental healthcare for elders by allowing more elders to participate in activities initiated by elderly clubs or other groups.

        1.5 Improve questions regarding exercise in the questionnaire and for interviewing elders to be more suitable. The exercise standard for normal person which is doing exercise at least 3 times a week for at least 30 minutes per session is not applicable to elders' physical condition.

    2. Suggestion for future research

    This study is a quantitative research about health behavior of elders. The study only cover a part of the topic. There are yet problems in other aspect waiting to be explored. Therefore,

        2.1 A study on health behavior of elders in qualitative approach should be conducted so as to be guideline to improve health behavior of elders according to environmental condition and traditions of the community.

        2.2 A study on other factors that have association with health behavior of elders, such as social support, environment, family, psychology etc, should be conducted as well.

        2.3 The sampled group for this study consisted only of elders who were living in Mueang District, Roi Et Province. In order to widen the working scope, a similar study should be

conducted on elders in all area of Roi Et Province or in other provinces. The information gathered should be compared to determine difference of factors influencing health behavior elders.

REFERENCES

Chanadta Kerdpear.2007. Result of the Survey of Health Behavior Promotion of Elders in
    Makamsung District, Amphur Muang, Phitsanulok Province.[Online].Available from:
    http://hpc9.anamai.moph.go.th/research/index.php?option=com
    content&task=view&id=83&Itemid=48 [2009, August 21].

Chailai Chaiyaseri.1996. Relationship between family, social involvement, content in life,
    worry about aging condition, social support, and mental condition of elders who
    were members of Elderly Police Hospital Club. Master's Thesis , Major: Development
    of Psychology Graduate School Srinakharinwirot University.

Chantima Charanasri.1996. Mental Condition of Elders who were living in the Bangkae
    Home for the Age, Bangkok. Master's Thesis , Major: Public Health Graduate School
    Srinakharinwirotprasanmit University.

Chitkanya Boonya.1996. Mental Health of Elders in Elderly Club in Pichit Province: Case
    study on Elderly Club in Tambol Tapanhin. Master's Thesis , Major: Psychology
    advice Naresuan University.

Chonthida Chantakiri.2003. Health promotion behavior of elders who came to do activities
    in the Lumpini park, Bangkok. Master's Thesis, Nursing Program, Chulalongkorn
    University.

Chonthicha Wangvivek.1994. Relationship between Physical Condition, Social Support and
    Self Care Behavior of Elders: Case study on Elders in Thammasat University Hospital.
    Master's Thesis, Major: Family Health Graduate School Mahidol University.

Choosak Vechapat.1988. Physiology of exercise. 2nd Edition. Bangkok: Mahidol University.

Department of the Non-Formal Education.1998. Foundation of non-formal education.
    Bangkok : Mittrapap Printing. Page 37-38.

Duangjai Pianbamrung.1997. Self Care Behavior and Quality of Life of Elders who were
    living in the Southern Border Provinces of Thailand. Master's Thesis's, Nursing in
    Adult Program Graduate School Chiang Mai University.

Foundation of Thai Gerontology Research and Development.2008.Aging Situation in
    Thailand 2007. Bangkok: TQT Company Limited.

Institute for Population and Social Research.2008. Population and Development Newsletter.
	Bangkok: Mahidol University.

Jitapunkul S, Bannag S.1998. Aging in Thailand 1997. Bangkok : Thai Society of
	Gerontology and Geriatric Medicine .

Kalaya Vanijbancha.2006. Statistics for Research Work. 2nd Edition. Bangkok: Chulalongkorn
	University's Publish House . Page 15-16.

Kalaya Vanijbancha.2001. Fundamental Statistics. 6th Edition. Bangkok: Chulalongkorn
	University's Publish House . Page 34-36.

Khemiga Yamarat.1984. Factors that create satisfaction for elders: Case study on officers in
	the Ministry of Agriculture and Cooperatives. Master's Thesis, Sociology
	Graduate School Thammasat University.

Kingchan Tamthong.2003. Factors influencing Nutrition of Elders: Case Study on Tachang
	Village, Amphur Baanlad, Petchaburi Province. Master's Thesis , Anthropology Program
	Chulalongkorn University.

Khunnantha Maranetr and team.2009. Guideline to Health Promotion of Elders.
	[Online].Available from: http://guru.sanook.com/enc_preview.php?id=2441&title=
	[2009, August 21].

Kwanjai Tantiwatthanasatien.1991. Relationship between selected factors and health
	promotion behavior of elders who were living in suburban area of the Northeastern
	part of Thailand. Master's Thesis, Nursing Administration Program Graduate School
	Chulalongkorn University.

Maitree Tiyarathanakoon.1993. Factors that have Correlation with Mental Health of Elders
	who were living in Bangkok Area: Case Study Elders who were Members of Elderly
	Clubs in Bangkok. Master's Thesis , Major: Population and Social Study Graduate
	School Mahidol University.

Mallika Mattiko and team.1997. Report on hygiene and self care behavior regarding
	hygiene of elders in the Northern part of Thailand. Department of Social Sciences
	and Humanities Mahidol University.

Malulee Chooned.1995. Factors influencing way of life and nutrition of elders who were
     living in Amphur Takarnpeedpol, Ubon Ratchathani Province. Master's Thesis,
     Epidemiology Program   Graduate School Mahidol University.

Maitreejit Takwan.2007. Health Behavior of Working Population in Loei Municipality,
     Loei Province. Master's Thesis, Development of Social Sciences Loei Rajabhat
     University.

Ministry of Public Health.2004. Elder Nutrition Evaluation Handbook. Bangkok:
     Agricultural Cooperative Community of Thailand.

Ministry of Public Health, Department of Medical Service, Institute of Aging.2002. General
     and Disease Specific Exercise. Bangkok : The Agricultural Co-operative Federation of
     Thailand, Ltd.

Mueang District Public Health Office.2009. Database Hos xP PCU. Roi Et, Thailand.

National Institute of Aging, Department of Medical Services, Ministry of Public Health.2006.
     Project on Survey and Study on Health Behavior of Elders in 4 Region of
     Thailand. Bangkok: Agricultural Cooperative Community of Thailand.

National Institute of Aging, Department of Medical Services, Ministry of Public Health.2006.
     Approaches to Hold Health-Related Activities for Elders with Heart Diseases.
     1[st]Edition. Bangkok: Agricultural Cooperative Community of Thailand.

National Institute of Aging.2006. A Survey and Study of Healthcare Condition of Elders in
     4 Regions. Bangkok: National Institute of Aging.

Niramol Intharith.2004. Study on Factors that related to Promotion of Self Health Behavior
     in Elders in Chaopraya Apai Phoobeth Hospital, Prachinburi Province. Master's Thesis,
     Faculty of Science Chulalongkorn University.
     [On line].Available from: http:// cuir.car.chula.ac.th/handle/123456789/2496
     [2009, August 21].

Niranard Witthayachokkitti.1991. Self Care Ability and Health Condition of Elders.
     Master's Thesis, Nursing Program, Graduate School Mahidol University.

Non-Formal Education Center in Eastern Region.2000. Report on survey results of less
    fortunate people (less fortunate children, disabled people, elders, women in the high
    risk group) who were living in the eastern region. Rayong: Non-Formal Education
    Center in Eastern Region.

Paijitra Lorskulthong, Chawapornpan Chanprasit and Sirirat Panuthai.2003. Health promotion
    behavior and health condition of elders who received service of Family Consulting
    Center in Nan province. Journal of Gerontology and Geriatric Medicine. 4(2) : 3-10.

Petchara Intarapani.1993. Relationship between acknowledgement of health condition,
    social support and health promotion behavior of elders who were living in
    Municipality, Udon Thaini Province. Master's Thesis, Nursing Program
    Graduate School Khon Kaen University.

Piyanuj Kaewruang, Anfarm Siritho.2007. Study on Relationship Between Health Belief and
    Health Behavior of Elders in Doklumduan Club, Ratchaburi Province. Thesis for
    Bachelor of Science Degree Holder of Public Health, Nakorn Prathom Rajabhat
    University.

Pirom Tabtimtes.2003. Factors influencing Exercise Behavior of Elders who were Members
    Sritanya Hospital Elderly Club. Master's Thesis, Health Education Program
    Kasetsart University.

Praves Vasri.2000. Human Ideology regarding Health. Bangkok: Good Printing. Page 4.

Prapapen Suwan.1989. Perception: Measurement of the Change of Health Behavior. 2nd
    Edition. Bangkok: Sumpanpanij Company .Page 13.

Press Release.World population to exceed 9 billion by 2050. 2009. Globally, population
    aged 60 or over is the fastest growing. [On line]. Available from:
    http://www.un.org/esa/population/publications/wpp2008/pressrelease.pdf[2009,August 6].

Roi Et Public Health Office.2009.Information Center on Strategy Development
    Group. Roi Et, Thailand.

Sasipatn Yodpetch and team.1997. Social Support for Elders. Bangkok:Mahidol University.

Saengduan Promkaewngam.2000. Self motivation and health promotion behavior of elders
    after received coronary bypass surgery. Master's Thesis, Nursing in Adult Program
    Chiang Mai University.

Sirima Leelawong.1998. Relationship between personal attributes, realizing the importance of health promotion behavior, social support and health promotion behavior of elders. Master's Thesis, Public Health Program Mahidol University.

Sirima Wonglaemthong.1999. Personal attributes, realizing the importance of health promotion behavior, and health promotion behavior of elders. Master's Thesis, Nursing in Adult Program Chiang Mai University.

Sodsai Srisa-ard.1997. Factors influencing Health Promotion Behavior of Elders in Amnat Charoen province. Master's Thesis, Health Education Program Graduate School Mahidol University.

Somsak Srisantisuk.1996. Social Science: Aging Situation. The Truth and Projection of Thai Society, Bangkok: Chulalongkorn University's Publishing House. Page7 .

Somchit Hanuchareonkul.1994. Self-Healthcare. 3rd Edition. Bangkok: VJ Printing.

Supat Choo pradit.2006. Definition of Health Behavior.[On line].Available from: http://gotoknow.org/blog/wellness/22590 [2009,August 1].

Surakul Janobrom.1998. Vision and Non-Formal Education for Thai Elders. Bangkok: Nichin Advertising Group.

Suree Karnchanawong and team.1997. Report of a Research on Hygienic Health Condition and Self Care Behavior of Elders in the Central Region, Bangkok: Mahidol University.

Suthinant Jitpanusopol.2000. Health promotion behavior of elders who had long life in Karnchanaburi province. Thesis for Bachelor of Public Health, Mahidol University.

Suthichai Jitapankul.2001. Principle of Medical Sciences for Elders. 3rd Publication. Bangkok Chulalongkorn University Printing House.

Suthichai Jitapankul.2009. Most of elders were found with more than one disease. [Online].Available from: http://www.samuipai.com/show.php?cat=61[2009,August 21]

Suwimol Panawatthanakul.1991. Self-concept and Self Care Ability, and Quality of Life of Elders. Master's Thesis, Nursing Program Graduate School Mahidol University.

Tharathorn Duangkaew, Hiranya Dejudom.2007. Health Behavior of Elders in Pongmadue Subdistrict,Amphur Muang, Nakorn Prathom Province. Thesis for Bachelor Degree Holder , Faculty of Science and TechnologyNakorn Prathom Rajabhat University.

Thanin Siljaru.2008. Data Processing and Analysis by Using SPSS. 9th Edition. Bangkok:

      Business R&D, Page 45.

The National Economic and Social Development Board, Office.2007. Projection of Thailand's

      Population 2000 – 2030. Bangkok: Office of the National Economic and Social

      Development Board.

The National Commission on the elderly.2006. Situation of the Thai elderly 2005 .

      Bangkok: the National Buddhism office's Publisher .

The Royal Institute of Thailand.2003. The Royal Institute Dictionary 1999. 1st Edition.

      Bangkok: Nanmee Book Publication. Page 6-7.

Tossaporn Sribarigij.2006. The influence of involvement in community to health behavior of

      elders who were living in Bangkok area. Master's Thesis, Department of Social

      Development National Institute of Development Administration.

United Nation.1956.The aging of populations and its economic and social implications

      (population studies No). New York: United Nation.

United Nations.1996.Population aging in Asia and the Pacific. New York: United

      Nation.

Vasana Tuenwong.1997. Self care behavior and quality of life of elders who were living in

      Bangkok area. Master's Thesis, Nursing in Adult Program Graduate School

      Mahidol University.

Wanpen Wongchantara.1996. Plan for Elderly Healthcare in Baan Thamapakorn,

      Chiangmai Elderly Care Center. Master's Thesis, Public Hygiene Program

      Chiang Mai: Graduate School Chiang Mai University .Page 10.

Wandee Yamchanchai.1995. Correlation between Self-Efficacy, Self-Perceived Health and

      Health Promotion Behavior of Elders in Nakhon Sawan Province. Master's Thesis,

      Nursing in Adult Program Faculty of Graduate Studies Mahidol University.

Wannipa Assawachaisuvikrom.2002. Research on Factors influencing Exercise Behavior of

      Elders who were living in Tambol Saensuk, Chonbuti province. Faculty of Nursing

      Burapha University.

Wilaiwan Thongchareon.1996. Health Condition of Elders. Mahidol University Newsletter,

      Page 119-122.

Yurick, A.G. ,et al.1980.The aged Person and Nursing Process. New York: Appleton.
Century- Crofts.

Appendices

Appendix A

Questionnaire

Topic: Factors influencing health behaviors of elders in Mueang District,

Roi Et Province, Thailand

Instruction   This questionnaire consists of 2 parts which are

Part 1 General personal information of an elder

Part 2 Questionnaire on Health Behavior of an Elder

The result of this research will be used as approaches for an action plan to promote appropriate healthcare among elders. The information obtained by this questionnaire will not harm the interviewee and will be treated as confidential. Only the analyzed information and overall results will be presented. You, hereby, agree to provide your information for this research accordingly. If you were willing to participate for this questionnaire, please answer all questions.

The researcher would like to offer appreciations for your cooperation.

Part 1 **General personal information of the elder**

This questionnaire is for en elder. Please make a sign / in ☐ or fill in the blank according to your real experience.

1. Gender of the interviewee   ☐ 1.male   ☐ 2. female

2. Current age ……………years old

3. Educational background

    ☐ 1. No education   ☐ 2 . Primary school

    ☐ 3. Secondary school   ☐ 4. Vocational education

    ☐ 5. Bachelor degree   ☐ 6. Higher than Bachelor degree

    ☐ 7. Others (Please specify).....................................

4. Marital status

☐ 1.single   ☐ 2. married   ☐ 3. widower/widow   ☐ 4.   divorce, separation

5. Average household monthly income ……………………… baht/month

6. Do you have sufficient monthly income to your expense?

    ☐ 1. insufficient

    ☐ 2. sufficient but not enough for saving

    ☐ 3. sufficient and have some left for saving

7. What is the source of your income

    ☐ 1. Myself (e.g. professional, pension, compensation, interest from saving)

    ☐ 2. Family members

    ☐ 3. Others (please specify) ………………………..

8. Do you have personal illnesses

    ☐ 1. No

    ☐ 2. Yes

      ☐ Diabetes   ☐ receiving treatment   ☐ No treatment

                             ☐ Buy one own medicine   ☐ receiving regular aftercare

      ☐ High blood pressure   ☐ receiving treatment   ☐ No treatment

                             ☐ Buy one own medicine   ☐ receiving regular aftercare

      ☐ Osteoarthritis   ☐ receiving treatment   ☐ No treatment

                             ☐ Buy one own medicine   ☐ receiving regular aftercare

☐ Others (please specify) ....

Part 2 Information related to health behavior of elders

2.1 Eating behaviors

<u>Explanation</u>: This questionnaire is for en elder. Please make a sign / in the blank of practical table according to your real experience. You must choose only one answer out of the three choices.

Regularly means within the past week, interviewee did at least 5-7 days.

Often means within the past week, interviewee did 3-4 days.

Seldom means within the past week, interviewee did 1-2 days.

No.	Behavior	Frequency of the behavior in 1 week			Code
		Regularly (5-7 days)	Often (3-4 days)	Seldom (1-2 days)	
1	Having curry with coconut milk				D1 [ ]
2	Having very salty food such as fermented food, salted fish, salted cuttlefish				D2 [ ]
3	Having various type of vegetable and fruit				D3 [ ]
4	Drink alcohol				D4 [ ]
5	Drink at least 6 – 8 glasses of water per day				D5 [ ]
6	Having well-cooked food				D6 [ ]
7	Having fish as meat				D7 [ ]
8	Having vegetable and food with starch				D8 [ ]

2.2 Exercise behavior

Explanation: This questionnaire is for en elder. Please make a sign / in the blank of practical table according to your real experience. You must choose only one answer out of the three choices.

Regularly means within the past week, interviewee did at least 5-7 days.

Often means within the past week, interviewee did 3-4 days.

Seldom means within the past week, interviewee did 1-2 days.

No.	Behavior	Frequency of the behavior in 1 week			Code
		Regularly (5-7 days)	Often (3-4 days)	Seldom (1-2 days)	
1	Exercise at least 3 times per week				E1 [ ]
2	Spend at least 30 minutes for each exercise session				E2 [ ]
3	Doing stretching such as bend down to touch the floor with one's hands, hold both hands over one's head and push, stretch and train muscle strength continuously				E3 [ ]
4	Exercise muscle by swinging arms and legs, tighten wrist and ankle				E4 [ ]
5	In the beginning, one should start from light exercise				E5 [ ]
6	Doing activities such as gardening, farming, house works, planting trees, watering plants, riding bicycle				E6 [ ]

2.3 Self Care Behavior During Illness

Explanation: This questionnaire is for en elder. Please make a sign / in the blank of practical table according to your real experience. You must choose only one answer out of the three choices.

      Regularly means within the past week, interviewee did at least 5-7 days.

      Often means within the past week, interviewee did 3-4 days.

      Seldom means within the past week, interviewee did 1-2 days.

No.	Behavior	Frequency of the behavior in 1 week			Code
		Regularly (5-7 days)	Often (3-4 days)	Seldom (1-2 days)	
1	You will not buy your own medicine even when you experience minor sickness.				P1 [ ]
2	You only take conventional medicine from a certified public health officer.				P2 [ ]
3	When you have problem taking medicine, you will consult a certified public health officer.				P3 [ ]
4	You receive physical check-up and disease diagnosis annually.				P4 [ ]
5	You check your body for abnormalities regularly.				P5 [ ]
6	You meet physician regularly on time				P6 [ ]
7	You follow advice of a public health officer when you fallen ill.				P7 [ ]
8	You take the prescription according to the instruction given by a public health officer.				P8 [ ]

2.4 Stress Management

<u>Explanation</u>: This questionnaire is for en elder. Please make a sign / in the blank of practical table according to your real experience. You must choose only one answer out of the three choices.

Regularly means within the past week, interviewee did at least 5-7 days.

Often means within the past week, interviewee did 3-4 days.

Seldom means within the past week, interviewee did 1-2 days.

No.	Behavior	Frequency of the behavior in 1 week			Code
		Regularly (5-7 days)	Often (3-4 days)	Seldom (1-2 days)	
1	You will relax by talking to people inside your house.				S1 [ ]
2	When there is a chance, you will relax by talking to neighbors.				S2 [ ]
3	You feel frustrated or indulge yourself in the problem or sadness that occurred.				S3 [ ]
4	You attend wedding, funeral, ordination ceremony and other traditional events.				S4 [ ]
5	You will say your prayer, pray to god or meditate when you feel stress.				S5 [ ]
6	You will listen to radio or read books when you feel stress.				S6 [ ]
7	On free time, you will occupy yourself with recreational activities such as planting trees and raising fish				S7 [ ]
8	You share problems with other elders your own age.				S8 [ ]

APPENDIXS B

Budget

No	Activity	Price (Baht)	Total Budget (Baht)
1	Pre-testing		
	Questionaire & Photocopy	7x30	210
2	Data collection		
	Questionaire & Photocopy	0.50x9x430	1,935
	Training of interviews	40x100	3,000
	Gasoline	1,000	2,000
3	Document Printing		
	Paper&Printing		1,000
	Photocopy		5,855
	SUBTOTAL		14,000

APPENDIXS C

Time Schedule

Project procedure	Time Frame(month)							
	June09	July09	Aug09	Sep09	Oct09	Nov09	Dec09	Jan10
Preparatory phase								
1.Literature review	←		→					
2.Proposal exam				← →				
3.Ethic consideration from Chulalongkorn University(CPHS)				←		→		
4.Research tool(Set-up and pre-test				← →				
5.Approval for data collection						← →		
Implementation phase								
6.Data collection							← →	
7.Data check							← →	
8.Data analysis							← →	
9.Discussion report writing							← →	
10.Thesis defense								← →

Certification of Research Inspection Tools

After an inspection for suitability of the research questionnaire of Miss Siriwat Chaihanit, Student ID No. 5179159853, Master of Public Health Sciences, College of Public Health Sciences, Chulalongkorn University.

I, hereby, certified that this questionnaire has Content Validity that is suitable for the topic on "Factors Influencing Health Behaviors of Elders in Mueang District, Roi Et Province, Thailand".

……………………..
(Mrs. Rujira Suriyavanagul)
Specialist in Preventive Medicine
Roi Et Hospital
Date 30 / 09 / 10

Certification of Research Inspection Tools

After an inspection for suitability of the research questionnaire of Miss Siriwat Chaihanit, Student ID No. 5179159853, Master of Public Health Sciences, College of Public Health Sciences, Chulalongkorn University.

I, hereby, certified that this questionnaire has Content Validity that is suitable for the topic on "Factors Influencing Health Behaviors of Elders in Mueang District, Roi Et Province, Thailand".

…………………….

(Mr. Wanchai Atthakorn)

Obstetrician and Gynecologist

Roi Et Hospital

Date 30 / 09 / 10

Certification of Research Inspection Tools

After an inspection for suitability of the research questionnaire of
Miss Siriwat Chaihanit, Student ID No. 5179159853, Master of Public Health Sciences,
College of Public Health Sciences, Chulalongkorn University.

I, hereby, certified that this questionnaire has Content Validity that is suitable for
the topic on "Factors Influencing Health Behaviors of Elders in Mueang District, Roi Et Province,
Thailand".

………………………..

(Mr.Wachara Eamratsameekool)

Specialist in Preventive Medicine

Roi Et Public Health Office

Date 30 / 09 / 10

BIOGRAPHY

Name	: Miss Siriwat Chaihanit
Date of Birth	: 31 May 1961
Place of Birth	: Roi Et Province
Educational Achievement	: Cert. in N. Equ. B. N. (1982)
	(Equivalent to Bachelor of Science in Nursing)
	Nakornrajsima Nursing College,
	Nursing College Division,
	Ministry of Public Health, Thailand
	: B.P.H. (1991)
	(Public Health Administration)
	Sukhothai Thammathirat open University,Thailand
Work Experience	: 1982-1999
	Register Nurse, Panomphri Hospital,
	Roi Et Province, Thailand
	: 1999-Present
	Register Nurse, Roi Et Hospital,
	Roi Et Province, Thailand