universität wien

DISSERTATION

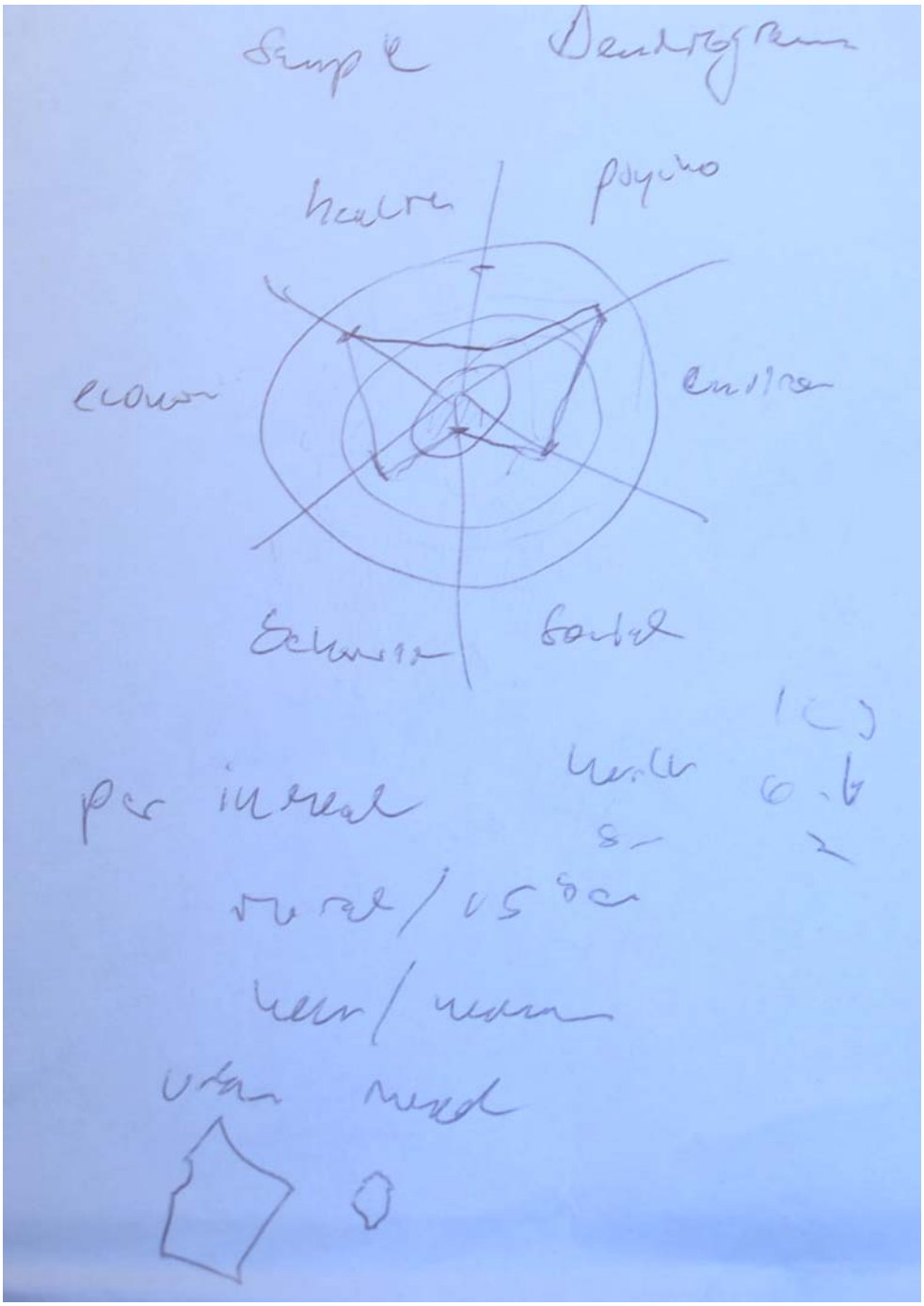
QUALITY OF LIFE OF THE OLDEST OLD
A CASE STUDY OF NONAGENARIANS
IN THAI SOCIETY

angestrebter akademischer Grad
Doktor der Naturwissenschaften (Dr. rer.nat.)

Verfasser:	Mag. Kanvee Viwatpanich
Matrikel-Nummer:	a0409574
Dissertationsgebiet (lt. Studienblatt):	Anthropologie
Betreuer:	Univ.-Prof. Dr. Harald Wilfing

Wien, Oktober 2008

To Viwatpanich's Family



An afternoon to find the research conclusion with my co-supervisor
(Dr. Clemens Mayrhofer- Grünbühel)
Café Merkur, Florianigasse, Vienna, Austria
January 29, 2008

ACKNOWLEDGEMENT

Throughout the several years (October 2005 – October 2008) of carrying out my Ph.D., I have received supports, guidance and encouragements from numerous people. From these persons, I have to acknowledge them for their kindness.

First of all, I would like to express my most appreciate and heartfelt thanks to my supervisors Prof. Dr. Harald Wilfing, Prof. Dr. Karl Husa, Dr. Clemens Mayrhofer -Grünbühel and Dr. Ulrike Bechtold for their supports and challenged me to find my own answers to my questions, and generously offered their excellent recommendations. Without their tremendous guidelines and supervision, it was not possible for me to complete this work successfully.

Importantly, I would say that I had own the huge debt to Prof. Dr. Somboon Kietinun, the first person who believes in my ability to study doctoral degree and reinforcing me to go abroad. Without her inspiration and supports, the fulfillments of this work also could not be possible.

I do recognize the Faculty of Medicine, Thammasat University for the doctoral scholarship and providing the two round trips of air tickets to Thailand for my fieldwork. Additionally, I never forgot to mention to all my colleagues in Department of Community and Family Medicine for their benevolence to take responsibilities all my classes and lectures. They work so hard instead of me during the four years of my study in Austria, thank you very much.

However, this dissertation would not have been possible without the information, time, and co-operation of the people in Mae Sariang district. I am deeply indebted to all my respondents and their families for spent days and times with me, opening themselves, telling their stories, showing their secrets, sharing their experiences, and explaining their problems. It is not only opened me a new chapter of my life, but also gave me an inspiration what to do for the next future in the area of gerontological anthropology.

A special place in my heart is reserved for my new family, which I found them at the beginning of my fieldwork, Khun Kru Junta Suksomchit and her family who broad-mindedly accepted me into their home and shared their everyday life with me.

I also wanted to convey my regards to the staffs from Social and Development Unit 43, in Mae Sariang district. Especially, Phee Nho-Gu and Phee Sriwan, my closed friends who provided me a motorcycle and gave their hands all the time when I asked for help. These things made me completely forgot the loneliness when I lived in Mae Sariang.

Most importantly, I am indebted to my respected father and mother who brought me up with freedom of thought and believe, without coercions and any forces, especially, on the way of thinking in my education improvement. Thank you to give me all the time the family power, which this feeling I can touch wherever I be. Above-all, this success is not only for me, but also goes to others Viwatpanich family members. Thanks that all of you never neglecting me to ask “How are you?” when we met, even on MSN, Webcam, or Oversea calls. In addition, some part of my life in Vienna is more colorful because of “Eufa & Lega” my lovely nephew and niece, thanks kids for bring me sunshine in the cold Viennese winter-days.

Last but not least, I would love to say thank you to all Thai students and Thai people here in Vienna, who helped me in one way or another. Thanks that all you are here, I could not imagine how my life would be if without all of you. Learning the new world, sharing the good and bad times, and making or eating Thai food together were meant a lot to me. I really hope to meet you again in our lovely home country. Please remember that Thailand is waiting us for more development. Please do not be jealous her, my special thank is given to “Ta”, the small Thai lady student who was helping me since the first day I arrived Vienna until the last day when she back to Thailand. Moreover, without my best FARANG friends, “Erwin and Saadia”, this dissertation would also not be possible, thank you very really much that both of you help me to prove and correct my simple English into academic sentences.

Finally, if it possible, I would like to offer all values and merits which can be found from this dissertation to all my teachers and the nonagenarian respondents, who already passed away before this dissertation has been completed and do not have an opportunity to perceive on my success. I really hope all you recognize by yourself that I can use “Dr.” in front of my name and have this great day because of your mercy. Thank you very much, my beloved people, may all you rest in peace.

ABSTRACT

To study the quality of life of the oldest old, the objectives are threefold, first is to investigate factors affected to the increasing number of the elderly in Thai society, second is to explore life situation and quality of life of the oldest old in Thai society and finally is to explain the residential and gender differences in quality of life of the oldest old. The six months of anthropological fieldwork was occurred in Mae Sariang district, Mae Hong Son province. The 35 cases of nonagenarian (90-99 years old) are the respondent for this research.

The first objective; the 14 possible factors which are related to the longevity are explained. The correlation between the increasing number in proportion to the aging people in Thai society and 14 possible factors were tested. The research illustrates that improving hygienic toilet, drug consumption, numbers of doctors, crude death rate, and numbers of professional nurses are statistically significant correlated at the 0.01 level. While improving the poverty, literacy rate, and decreased smoking are statistically significant correlated at the 0.05 level.

The second objective; according to the six domains of active aging framework which is providing by World Health Organization (health condition, behavioral determinant, psychological health, physical environment, social condition, and economic well being), the study illustrates that 55.2% the respondents are associated of active aging at fair level, 28.1% are good and approximate 16.7% are at poor level. Moreover, to identify the most important components of the responses to the 23 factors about active aging, an exploratory factor analysis ware carried out. They are family and social security, psycho-economic well-being, enjoy of life, food consumption, subjective health, accidental risk, physical ability and medical accessibility, and objective health.

The third objective, the study found that there are no statistically significant differences between males and females in the six domains of active aging. While at the social conditions there are statistically significant differences between urban and rural areas. This means the urban nonagenarians are more enjoying with their family members, receiving visits, social contact and support as well as more freedom from domestic violence.

Zusammenfassung

Für das Studium der Lebensqualität der ältesten Bevölkerungsschicht ist das Forschungsziel dreigeteilt. Zum Ersten muss man die stetig ansteigende Bevölkerungszahl der Älteren in Thailand berücksichtigen, zweitens muss man die Lebensqualität und Situation der Ältesten in der thailändischen Gesellschaft untersuchen, und drittens wären noch die Differenzen bezüglich des Wohnstandortes und der Genderaspekt zu erklären. Die sechsmonatige Feldforschung fand im Distrikt Mae Sariang, Mae Hong Son Provinz statt. Dort wurden insgesamt 35 Personen im Alter von 90-99 vorgefunden, die für diese Forschungsfrage in Betracht gezogen werden konnten.

Im ersten Forschungsziel werden 14 Faktoren, die im Zusammenhang mit der Langlebigkeit stehen, erläutert und erklärt. Die Korrelation zwischen der ansteigenden Zahl in Proportion zu dem steigenden Alter der Bevölkerung in der thailändischen Gesellschaft und diese 14 Faktoren wurden getestet. Diese Forschung verdeutlicht, dass Verbesserungen in der Hygiene, Medikamentenkonsum, Anzahl der Doktoren, (rohe) Sterberate und die Anzahl des professionellen Pflegepersonals statistisch korrelierend sind bei einem Level von 0.01. Verbesserungen in Bezug auf Armut, Alphabetisierungsrate, und Rückgänge im Tabakkonsum hingegen korrelieren signifikant auf einem Level von 0.05.

Das zweite Forschungsziel widmet sich den sechs Domänen der Rahmenbedingungen für ein aktives Altern, die von der Welt Gesundheitsorganisation der UNO aufgestellt wurden (Gesundheitszustand, behavioristischen Determinanten, psychologische Gesundheit, physische Umgebung, und ökonomisches Wohlbefinden). Die Studie zeigt, dass 55.2% der Befragten demzufolge sich im angemessen guten Niveau des aktiven Alterns befinden, 28.1% in guten und 16.7% in schlechteren Umständen. Zur Identifizierung der wichtigsten Komponenten der Gesprächspartner, die die 23 Faktoren des aktiven Alterns ausmachen wurde eine erforschende Faktorenanalyse durchgeführt. Diese waren familiäre und soziale Sicherheit, psycho-ökonomisches Wohlbefinden, Lebensfreude, Nahrungsaufnahme, subjektive Gesundheit, hohes Unfallrisiko, physische Leistungsfähigkeit und Zugänglichkeit zu medizinischen Einrichtungen, und objektive Gesundheit.

Als drittes Forschungsziel zeigt die Studie, dass es keine statistischen signifikanten Differenzen zwischen Frauen und Männern in den sechs Domänen des aktiven Alterns gibt, jedoch bestehen bei den sozialen Konditionen signifikante Unterschiede zwischen urbanen und ländlichen Regionen. Das bedeutet, dass die urbane Zielgruppe dieser Studie, mehr Zeit mit ihren Familienmitgliedern verbringt, häufiger Besuch von ihnen erhält, bessere soziale Kontakte pflegt und bessere Unterstützung erhält, und auch weniger unter häuslicher Gewalt leidet.

TABLE OF CONTENTS

TABLE OF CONTENTS

PAGE

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

PAGE

LIST OF TABLES

PAGE

LIST OF TABLES

PAGE

LIST OF TABLES

PAGE

LIST OF TABLES

PAGE

LIST OF FIGURES

PAGE

LIST OF FIGURES

PAGE

LIST OF FIGURES

PAGE

CHAPTER 12

CHAPTER 1

INTRODUCTION

1.1 Background

In population health study, interest in the aged population has grown. This is primarily due to demographic changes, which are leading to an increasing proportion of elderly people in our world society. As people are becoming older and older, the elderly people themselves are aging. The 80 years old or over age group is growing faster than all younger segments. At the global level, the oldest old (80 years or over) are now only slightly more than 1% of the total human population, during the next decades they will rise to 4.1% in 2050. The proportion of the oldest old is significantly higher in more developed region (3% in Europe and Northern America, 0.9% in Asia and Latin America and the Caribbean, and less than 0.4% in Africa). Anyway, the United Nations suggest that soon the majority of oldest old will live in the less developed regions and in some developing countries such as Republic of Korea and Singapore (United Nation, 2002).

Even though the oldest old are small but growing up rapidly. In 1950, there were 14,407,000 persons aged 80 years and over. In 2000 there were 70 million persons throughout the world. The United Nation (2002) estimated that by the year 2050, the numbers of oldest old will be reached to 407,777,000 persons or sharing by 4.4% of world population (United Nation, 2002).

In Thailand, the oldest old populations are also very diminutive populations but rapidly growing up continuously. In 1990 there were approximately 81,000 persons or 0.4%. In the next 50 years the numbers of oldest old will increase to 400,000 persons or 0.7%. Moreover, to the next half of this century, the United Nations estimated that by the year 2050, the numbers of eldest old in Thailand will be 4,354,000 or 5.8% of the total population (United Nation, 2002).

We can say that the oldest old are the best models of successful aging since they have escaped the major age-related disease and have reached the extreme limit of human life (Franceschi & Bonafe, 2003). Some study claimed that 30–50% of the oldest old are in relatively good clinical condition (Vaupel & Lundstrom, 1994). However, at the extremely of the old aged, diabetes, cardiovascular diseases, cancer, immune disorders, dementia, cataracts, chromic bronchitis, chronic lumbago and scelagia, hip fracture, kidney or liver cyst, angiocardiopathy, cerebrovascular diseases, malignant tumors, dementia, cognitive function, oral health, declining physical and functional abilities are generally found at the oldest population (Ranberg et al., 1999; Chen, 2001; Silver et al, 2001; Hagberg, 2001; Ranberg et al., 2001; Gu & Zeng, 2004).

Additionally, the most excellent centres of research for the oldest old are established, but specifically located in developed countries; Sweden, the United State of America and Japan, for example. Moreover, several supportive organizations for successful aging are also emerged in Italy, Denmark, Switzerland, Germany, Sweden, Hungary, France, and Finland. The beneficiations of those researches and activity outcomes gain such interesting information, not only to understand the nature of human life span or the secret of human genetics and demographic transition, but there are also some lessons which should be learned from the do's and don'ts of longevity to inform the young generations or the others of the aged group to prepare themselves before getting old in the next future. Anyhow, only few studies were carried out in Asia (Japan, China and Korea).

Unfortunately, the body of knowledge of the oldest old in Thailand is very rare. The rationale of this statement is threefold. First, it can be seen, that the national policy for the elderly in Thailand placing an emphasis on the pre-old age preparation by improving health behavior, while the elderly who are nearly living at the end of life with extremely old aged are few interested. Second, the characteristics of aging population in Thailand are "young old" (60-74) and "old old" (75-84). Most of researchers and activists are concerned in those majority groups, than in the oldest old sub group. Maybe as a reason there is that these groups are more active to take part in social and health activities. Finally, the systems of record and data resources of the oldest old are nonexistent. Traditionally, the statistical datum almost summarized the oldest old into the 60 years or over category that shape the oldest old hidden in those majority groups.

1.2 The research questions

As mentioned before, that oldest old presents many challenges to society and individuals. With gradual and sustained increase on life expectancy, the numbers of oldest old, both relative and absolute, is increasing all over the world. With this increase are emerged the newer needs for this group as well as challenged to the governmental, social and health services.

To study the oldest old, the first question which comes to my mind is, that Thailand now facing with the transitions of human longevity. The review of literatures found that several explanations, mostly in developed countries, describe the possible factors affecting to the human life span are demographic transition (low birth and death rate), genetic components, food consumption, physical environment, economic development, or improving medical and health care services, etc. Thus, how about Thailand? Why the oldest old are dramatically increased and existed in Thai society.

Secondly, the ways of life of the oldest old are associated with advancing age, physical limitations, and functional impairment. The problematical situations of the oldest old in transitional society are necessary to investigate and explore. Obviously, during the half century, in Thailand not only the population structure

continuously changed, but pattern of health, illness, and treatment consistently transformed. Significance has shifted from infectious diseases to chronic diseases, from curative medicine to health promotion, from acute care to long-term care, and from high-technology medicine to holistic health approach. In holistic point of views, the previous researches, the conceptual framework of healthy aging, successful again, and health aging had been done, which identified the multi-dimension improvement is the best implementation to maintain quality of life of aging people, since the problems of aging are multi dimensional causes. Thus, the second research question is what are their problems? How do they live? How about their life situation in the transitional society? To meet these challenges, the new framework “Active Aging” from World Health Organization (WHO) which included the six main domains (health, psychological, social, behavioral, environmental, and economic determinants) may be interesting to explore their life situation and interpreted that all they are included or excluded from the society.

Finally, if we know the life situation of respondents, the next interesting question should be, if there are some differences of quality of life between residential setting and gender?

1.3 Aims of the study

1) To investigate factors affected the increasing number of the elderly in Thai society.
2) To explore life situation and quality of life of the oldest old in Thai society.
3) To explain the residential and gender differences in quality of life of the oldest old.

1.4 Possible answers and expecting results

The identification of quality of life of the oldest old, the results maybe provide such useful information to the government and stakeholders with additional facts in term of awareness and concern, which can facilitate earlier detection of symptoms of importance and thereby earlier interventions to maintain and improve quality of life. This study is perhaps the primary goal of re-thinking and increasing care for them to live at the end of life with happiness, sustainable standard of living, and adequate right to live in security, peace, and dignity rather than curing or increasing the life span.

1.5 Previews

This dissertation is divided into the following 13 different chapters. The first three chapters are dealing with the conceptualization; the formulation of research questions, aims, and previews are presented in this chapter, the literature reviews and framework are shown in the next chapter. While the research methodology, sampling procedures, finding key informants, and data interpretation are described in chapter three.

In chapter four, the explanations are separated into two parts. First is the situation, trend, and some demographic analyses of the oldest old in Thai society during the years of 1994-2004. Second explains the factors affected to the phenomenon of oldest old in Thai society.

In chapter five, the general characteristic of the respondents, both in social and physical components, are investigated and measured. The details consist with age group, residence, ethnical background, religion, marital status, history of main/longest job, educational qualification, weight, height, body mass index, waist, hip, and waist-hip-ratio.

In chapter six to eleven are the findings from the six main determinants which followed by Active Aging Framework. The health conditions, behavioral determinants, psychological health, physical environment, social conditions, and economic well-being are respectively presented.
In chapter twelve, the conclusion as the picture of quality of life of the oldest old are shown, the residential and gender differences are compared.

In chapter 13, the final part, is the conclusion and recommendation from this research. Some important findings are mentioned and remarked to the Thai government. The suggestions for further research are also given.

1.6 Key finding at a glance

To study the factors affected the increasing number of the elderly in Thai society, the explanations focusing on the five main themes including demographic transition, medical and health care development, economic development, educational development and lifestyle changes. The 14 possible factors of longevity for this analysis were including 1) the percentage of aging population 2) crude birth rate 3) crude death rate 4) number of doctors 5) number of professional nurses 6) drug consumption 7) economic growth 8) improving poverty 9) literacy rate 10) improving sanitation 11) improving drinking water 12) decreased smoking 13) decreased drinking alcohol, and 14) making more exercise.

The research illustrates that the increasing of the proportion of aging people were statistically significant correlation in the same direction at the 0.01 level, including improving hygienic toilet (r=1.00), drug consumption (r=0.99), number of doctors (r=0.88), crude death rate (r=0.84), and number of professional nurses (0.84). But the correlation in the different direction with crude birth rate (r= -0.83). Moreover, improving the poverty (r=0.99), literacy rate (r=0.82), and decreased smoking (r=0.70) correlated with the increasing proportion of aging people at the 0.05 level. For the other factors such as economic growth, improving drinking water, decrease of drinking alcohol, and making exercise were also associated with the increasing proportion of aging people, but none statistical significances.

For the life situation and quality of life of the oldest old in Thai society, The questionnaires, checklist, closed-end and opened-end questions, rating scales, and physical measurements were applied together to obtain the data, while in-depth interviews, observations, or case studies and parallel presentation also were done. The entire variables are classified into six different categories and 23 sub-categories by using the active aging framework from World Health Organization (WHO). The quality of life of each variable can be categorized into three groups including good, fair, and poor.

The research illustrates that social condition was found in the high percentages of good quality of life (68.6%) where they have at least one family member to stay with them and regularly receiving social contact and support. Social networking seems a bit small, as they are unable to move out. Anyways, domestic violence in the old aged should be concerned as 71.4% experienced in their daily life.

Economic well-being seems acceptable (57.1%). Even their monthly income was not much when compare to the other part of the country, but at least they have their own asset and ownership such as home, land and property, gold and other jewellery, saving money, and no debt. Moreover, the living cost in Mae Sariang district is not as high as the area is rich by natural resources which can be used by them for food without paying. Then, when the sufficient income for living was asked, the majorities of the respondents rated themselves as sufficient.

Physical environment factor was found in the third priority in the category of good quality of life (22.8%). Most of them living in good hosing condition and always stay inside the house; very few cases are able to take part in social and community activities. Environmental hazard at home should be mentioned in this research, as more than half of the respondents now are dealing with one to five hazards at home, which might be shape them at risk of fall and accidence.

The forth priority was psychological well-being, where approximately 17.4% were found in good category. Cognitive ability, 66.7% were found in poor circumstances, followed by low happiness (71.4%). Stress and depression were also found at the aged which sharing the percentage of 54.3% and 82.9%, respectively.

Behavioral determinant was found very rare in category of good quality of life (2.9%). Approximately 51.4% were suffering with behavioral limitation (poor quality of life), especially activities of daily living (ADL) and instrumental activities of daily living which sharing the percentages of 51.4% and 88.6%, respectively. More than half of them have only a few teeth, and rated themselves as poor oral health condition, which caused them confronting with nutritional problem.

Health conditions were the big problem of their life. 68.6% were suffering at least on one to five chronic diseases and 40% rated themselves as acceptable. For

medical health care, 42.9% were able to take part in professional, folk, and popular sectors for treatment or healing when they got sick.

The residential and gender differences in quality of life of the oldest old, 23 factors and six domains of active aging were analyzed. The factor analysis, and VENN diagram were applied to identify the gender and residential differences.

Differences between male and female nonagenarians are statistically significant in health condition, the instrumental activities of daily living (IADL), and environmental participation. Generally, it can be said that female nonagenarians have to handle with a lower quality of life than male nonagenarians. For residential setting, the differences between urban and rural nonagenarians are statistically significant in environmental participation, housing condition, environmental hazards at home, living arrangement, and social contact. From this finding it might be claimed, that urban nonagenarians have a better quality of life than their rural counterparts, when considered by mean differences of rural and urban areas.

According to the six domains of active aging which are including health condition, behavioral determinant, psychological health, physical environment, social condition, and economic well being. The research found that, there are no statistically significant differences between males and females in the six domains of active aging. Generally, it might be said that all of nonagenarians even male or female are having the same situation when using active aging approach for measure. While residential setting, the differences between urban and rural areas are statistically significant in social condition, where urban nonagenarians are more enjoying with their family members, receiving visits, social contact and support as well as freedom from domestic violence is higher than in rural areas.

To identify the most important components of the quality of life, an exploratory factor analysis uses principal components extraction; Varimax rotation and Kaiser Normalization of the ratings are carried out. The research found that, the 23 items identify eight new factors and explain approximately 79.51% of the total variance including 1) family and social security 2) psycho-economic well-being 3) enjoying life 4) food consumption 5) subjective health 6) accidental risk 7) physical ability and medical accessibility 8) objective health.

Lastly, this part tried to identify the characteristic of the respondent divided by the level of quality of life. For the nonagenarians with good life, mostly having strong family ties, living in extended families, and daily social contact and support. Most of them were far away from domestic violence and living in good housing condition. Additionally, they enjoyed more security in economic status, as they had their own properties and asset ownerships; they rated themselves as sufficient of income, and receive the medical support from the government which provided free for medical treatment. Anyways, they also were suffering

with the instrumental activities for daily living, where some activities were unable to perform as dealing with physical health limitations.

The characteristic of nonagenarians who are living in fair (acceptable) quality of life were receiving daily contact from family members. The family pattern or living arrangement is different from the first one, as they are living in the imperfect-extended family, but at least they have some adult children or adult grand children to live with them and give them care or support. Anyways, they rated themselves as sufficient of income and living in good quality of housing. The important things which are needed to be developed to increase their quality of life are found in several ways such as support from the caregiver in instrumental activities for daily living. Moreover, the mental health, such as cognitive function and to cheer them up, as well as social integration between them and social environment is needed to be worked out.

The characteristic of nonagenarians with poor life were living alone and suffer from disabilities. Basically, they have their own health right to access the medical services but might be facing with medical accessibility. Even they are poor, but they still have their own land and house, social contacts are also rare, as well as domestic violence normally is found in their life. Most of them are unhappy and unable to perform the activities and instrumental activities of daily living. The mental health such as stress and cognitive function are needed to be solved. Oral health and food consumption are poor and it is needed to sort out the problem. They suffer from a low social integration and live in substandard housing and high risks of fall and accidence.

CHAPTER 2

THEORETICAL FRAMEWORK AND REVIEW OF THE LITERATURE

The literature review of this research is divided into two main sections: (1) meaning of quality of life and active aging (2) the state of the art review on oldest old. The details are as follows:

2.1 Quality of life and active aging: a theoretical concept and framework

2.1.1 Dimensions and meaning of quality of life

Quality of life of the elderly people, attention has been paid to this concept by researchers, government and non-governmental sectors, particularly public health and social planners. There are many definitions and perspectives on quality of life, but a clear message has been that quality of life is complex and widely used in different meaning depending on research question and study design.

Naess and colleagues (1987) claimed that quality of life (QOL) is the feeling of well-being and the satisfaction of the subjects. Some researchers argue that meaning of QOL is closed to “style of life”, which mean the psychosocial characteristics practiced by the people in certain communities. QOL also close to “standard of living” assessed from material surroundings of individuals and an individual’s perception of what constitutes and acceptable standard of living. Another broader meaning word is “way of life”, which includes living status, style of living, living standard and quality of life (Andrews & Withey, 1976; Campbell et al, 1976). Another interesting one is QOL study in Denmark, which Ventegodt and colleagues (2003) interprets the meaning of QOL in term of “good life and living a life with high quality”.

In conclusion, the term QOL has both output and process meanings. The output meaning includes a complete physical, mental and psychosocial well-being, pleasure in life, sense of well being, and life satisfaction. The process meaning covers style of life, living standard, and way of life. Both output and process meaning have interrelationship, that is, style of life affects a complete physical and mental well-being. QOL of individuals requires supportive components contributing to their good QOL.

2.1.2 Components of quality of life

Meaning of QOL is broad, multi-dimensional and varies in both objective and subjective aspects. In the past, QOL measurement focused only on objective outcomes, for example, measurement of per capita income, food, and residence. While subjective measurement is now increasingly widely

implemented, in particular, the dimension of happiness, sense of well-being, or life satisfaction, and other meanings close to happiness, all of which are the sum of internal responses of individuals and make a comparison between the actual situation and expected situation (Campbell et al, 1976).

The components of QOL have been modified, according to the study objective. For example, the macro study of overall regions or nationwide mostly applies objective measurement. The United Nations Development Program (UNDP, 2005) identified the components of human resource development in three aspects: 1) income 2) education 3) health. The quality of life in Asia and the Pacific comprise of five elements and 20 indicators including 1) health 2) marriage and parity 3) education 4) employment 5) social equality. Moreover, the conclusion of the United Nations conferences on "Quality of life in the ESCAP Region" is, that quality of life should comprise three aspects: physical, mental, and social health (United Nations, 1997). In Thailand the Department of Community Development (1998) tried to identify the components of Basic Minimum Needs (BMN), which consists of nine elements and 32 indicators including 1) good health 2) good residence 3) health for all 4) safe family 5) productively 6) few children 7) developing involvement 8) mortality 9) sustained environment.

The subjective measurement and the combination between objective and subjective, QOL was clearer since the definition and strategies have been announced by the World Health Organization (WHO): Quality of life is an individual's perception of his or her position in life in the context of culture and value system where they live, and in relation to their goals, expectations, standards, and concerns. In corporation in a complex way a person's physical health, psychological state, level of independence, social relationships, personal beliefs and relationship to salient features in the environment (WHO, 1994).

Many researches tried to integrate objective and subjective indicators into the QOL study. For example, Stewart and King (1994) presented their conceptual framework and the potential domains which included physical function, self maintenance, self care, usual activities, social functioning, sexual functioning, intimacy, psychological well-being and distress, cognitive functioning, pain and discomfort, energy/fatigue, sleep, self esteem, sense of mastery control, perceived health, and life satisfaction. Ventegodt and colleagues (2003) confirmed that individual QOL can be compared with subjective and objective components in the best way. The objective of his research starting with biological order followed by realization of life potential, fulfillment of needs, and objective factors (such as cultural norms). On the other hand, subjective included meaning in life, happiness, satisfaction with life, and well-being.

It can be concluded that most studies on the components of quality of life have been conducted in both objective and subjective aspects, and that factors associated with the quality of life are typically analyzed. Usually, it is found that different factors affect different dimensions of quality of life.

Anyway, it is important to be cautious when comparing QOL in different countries and researches, because of the lack of definition to different types of quality of life. Moreover, given the plethora of potential domains, content areas and response dimensions, it is apparent that no single definition or conceptual framework of QOL will suit all investigators or studies (Stewart & King, 1994).

2.1.3 Quality of life of aging population

In research of aging population, the concept of quality of life become increasingly reported and explored. Several questionnaires and measurements have been developed. For example, the Profile of Elderly Quality of Life (PEQOL) in Italy (see Leo et al, 1991; Buono et al, 1998), the LEIPAD instrument (the three universities principally involved in the WHO European study that developed the LEIPAD instrument were Leiden, Padua and Helsinki; the instruments name is a combination of “Leiden” and “Padua”) to measure the QOL of the elderly European population (Leo et al, 1994).

The QOL in aging population have been assessed and measured in both community-dwelling and institutional settings. All above is combined with physical, psychological, and social status of the respondents, which included objective and subjective perspective measurement. For example, a study of elderly subjects different perception of QOL, Berglund & Eriksson (2003) showed that living a good life and not being a burden of their family or society were the most important factors (see Anderson, 2006). This was related to the study of Hellstrom et al (2004): In a study of elderly people living at home with and without help he found, that elderly people who got support in their daily living had more self-reported diseases and symptoms and experienced poorer QOL than those who were independent (see Anderson, 2006). The quality of life of Rheumatoid Arthritis patients, investigated by Krol (1996) has shown that good quality of life of the patients should be combined with physical, physiological, social network, and social support. The study of 40 elders in nursing homes in USA found that, from ten QOL domains (comfort, functional competence, privacy, dignity, meaningful activity, food enjoyment, relationships, security, spiritual well-being and autonomy) 28 elders are sufficient to generate a reliable QOL score (Kane et al, 2004).

In Thailand, according to the study of Panichchevakul (1994) on objective and subjective aspect of quality of life, it was found, that both dimensions have a positive interrelation. She also argued that the highest contributor to a negative quality of life in the objective aspects is mental health. Individual factors significantly associated with the quality of life for both objective and subjective aspects are age, marital status, educational level, literacy and occupation. The result is consistent with the study of Abijatabutra (1997), Kongwatmai (1999), Kittipovanonth (2002) and Thongsomboon (2005), that sex, marital status, educational level, employment, health status, residential area, occupation, community involvement, family support and perceived community health services, health insurance and debts had significant positive correlations with

QOL. While the study of Limchairungrueng (1993) revealed, that a good QOL of the elderly is based on well-being, happiness and self care ability. Jinuntuya (1993) studied the perceived feeling and satisfaction of the elderly towards five components of QOL, comprising economic status, health, environment, self-reliance and activities.

2.1.4 Active aging: a new concept of quality of life for aging

The World Health Organization developed “Active Aging” in the late 1990s. It meant to convey a more inclusive message than “health aging”, “successful aging” and “productive aging” and to recognize the factors in addition to health care that affect how individual and population age (WHO, 2002).

Active aging approach is based on the recognition of the human right of older people and the United Nations principles of independence, participation, dignity, care and self-fulfillment. It shifts strategic planning away from a needs-based approach (which assumes, that older people are passive targets) to a rights-based approach that recognized the right of people to equality of opportunity and treatment in all aspects of life, as they grow older. It supports their responsibility to exercise their participation in the political process and other aspects of community right (WHO, 2002).

The word “active” refers to continuing participation in social, economic, cultural, spiritual and civic affairs, not just the ability to be physically active or to participate in the labor force. Older people who retire from work and those who are sick or live with disabilities can remain active contributors to their families, peers, communities and nations. Active aging aims to extend healthy life expectancy and quality of life for all people as they age, including those who are frail, disabled and in need of care. Active aging involves every dimension of one's life, including physical, mental, social and spiritual health. Maintaining health and quality of life across the lifespan will do much towards building fulfilled lives, as well as a harmonious and intergenerational community (WHO, 2002).

2.1.5 Determinants of Active Aging Framework

Active aging concept depends on a variety of influences or “determinants” that surround individuals, families and nations. In this framework, there are eight main domains to concern. First is to deal with two crosscutting determinants (including culture and gender, which surrounds all individuals and populations) that shapes the way in which they age, because it influences all of the other determinants of active aging. On the other hand, culture and gender is the lens through which to consider the appropriateness of various policy options and how they will affect the well-being of both men and women aging. While the other six main determinants are also related to active aging including 1) health and social services 2) behavioral determinant 3) personal determinant 4) physical environmental 5) social environmental 6) economic determinants (WHO, 2002).

1) Health and Social Service Determinants: Health and social services need to be integrated, coordinated and cost-effective. There must be no age discrimination in the provision of services and the service providers need to treat people of all ages with dignity and respect. The particular of this determination includes health promotion and disease prevention, curative services, lone-term care and mental health services (WHO, 2002).

2) Behavioral Determinants: The adoption of healthy lifestyles and actively participating in one's own care are important at all stages of the life course. One of the myths of aging is that it is too late to adopt such lifestyles in the later years. Contrary, engaging in appropriate physical activity, healthy eating, non smoking and using alcohol and medications wisely in older age can prevent disease and functional decline, extend longevity and enhance one's quality of life. The detail inside this determinant includes tobacco use, physical activity, healthy eating, oral health, alcohol consumption, medications, iatrogenesis and adherence (WHO, 2002).

3) Personal Determinants: Personal determinant means refer to psychological factors which included intelligence and cognitive capacity (for example, the ability to solve problems and adapt to change and loss) are strong predictors of active aging and longevity. During normal aging, some cognitive capacities (including learning speed and memory) naturally decline with age. However, these losses can be compensated by gains in wisdom, knowledge and experience. Often, declines in cognitive functioning are triggered by disuse (lack of practice), illness (such as depression), behavioral factors (such as the use of alcohol and medications), psychological factors (such as lack of motivation, low expectations and lack of confidence), and social factors (such as loneliness and isolation), rather than aging per se (WHO, 2002).

4) Physical Environmental Determinants: Physical environments that are age friendly can make the difference between independence and dependence for all individuals, but are of particular importance for those growing older. Additionally, living in the clean environment and safe condition will reduce injuries and accidents of aging people. Thus, in this determinant, WHO suggests, that the indicator to measure could be involved with physical environment, safe housing, falls, clean water, air and safe food (WHO, 2002).

5) Social Environmental Determinant: Social support, opportunities for education and lifelong learning, peace and protection from violence and abuse are key factors in the social environment that enhance health, participation and security as people age. Loneliness, social isolation, illiteracy and a lack of education, abuse and exposure to conflict situations greatly increase older people's risks for disabilities and early death (WHO, 2002).

6) Economic Determinants: The active aging approach argued that there are basically three aspects of the economic environment which have a particularly significant effect on active aging, including income, work and social protection (WHO, 2002).

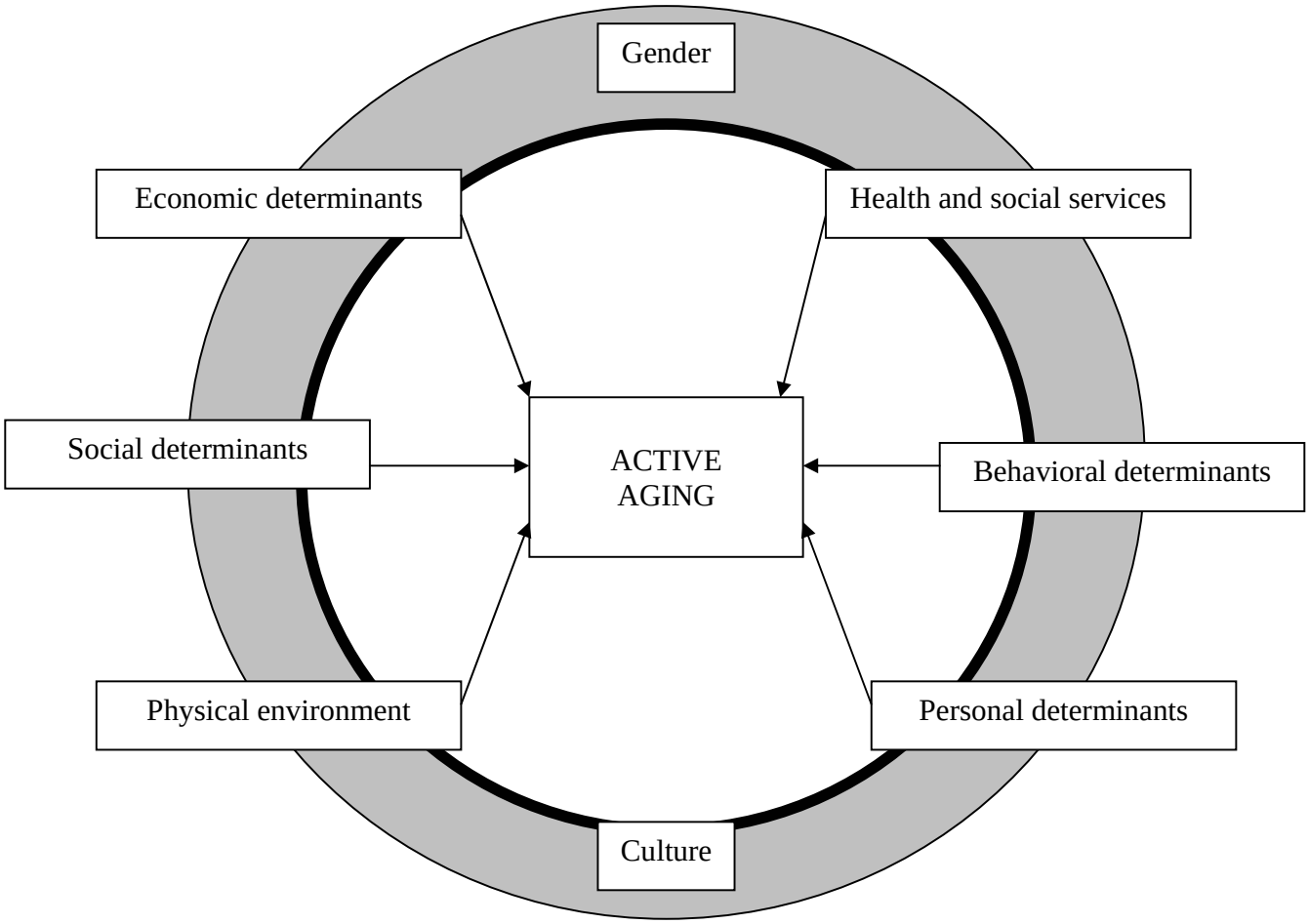


Figure 2-1 Determinants of Active Aging
Source: Active aging: A Policy Framework form World Health Organization, 2002.

2.2 Feature of the oldest old: an inference from the literature reviews

2.2.1 Meaning and definition

There are several technical stratifications to describe aging population. For example, the United Nations has given the standard of age of 60 years to specify older people, and the three sub-groups of older people are classified including, 60 years or over, 65 years or over, and 80 years and over (United Nations, 2002). While the World Health Organization divides aging population by 15 years count, stratified as young old (60-74 years), old old (75-84 years) and oldest old (85 years or over) (WHO, 2006).

Aging population can also be classified by decadal categories including Sexagenarian, which refers to the age between 60 and 69 years, Septuagenarian (70 and 79 years), Octogenarian (80 and 89 years), Nonagenarian (90 and 99 years), Centenarian (100 and 109 years), and Supercentenarian (110 years or over).

2.2.2 Size of the population and personal characteristics

The oldest old are small but rapidly growing and increasing faster than any younger segment of the older population (Taeuber & Rosenwaike, 1992; Harper, 2006). This population group currently comprises more than 3% of the population in Northern America, approximately 3% in Europe, less than 0.9% in Asia, Latin America and the Caribbean, and less than 0.4% in Africa (United Nations, 2002).

The figure 2-1 shows that in 1950, there were 14,407,000 persons aged 80 years and over. The next 50 years (year 2000) approximately fivefold of the oldest old were reached to 70 million in the year 2000. Moreover, the United Nations (2002) estimated that by the year 2050, the numbers of oldest old will be increased to 407,777,000 persons or sharing the percentage of 4.4% of the total world population or 1 in 10 individuals in more developed regions will be aged 80 years old or older, 1 in 30 individuals in the less developed regions, and 1 in 100 individuals in least developed regions (United Nations, 2002). At the mean time, more than half of the current oldest old population is from six countries (China, United States of America, India, Japan, Germany and Russian Federation) (Poon et al, 2005).

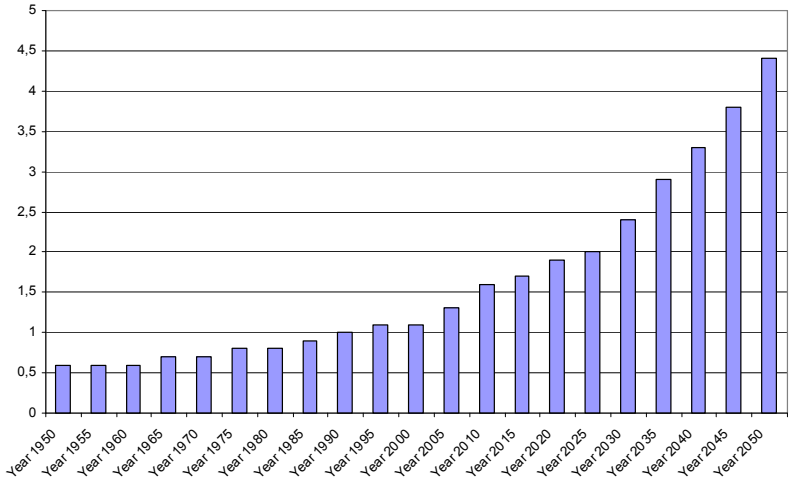


Figure 2-2: Percentage of oldest old: 1950-2050 (Medium Variant), in thousand. Source: The United Nations

2.2.3 Health status

During the past decade, health statuses of the oldest old in both objective and subjective measurement have been explored. The objective studies can be found in medical, biochemical and physical research. (Tietz et al, 1992; Mariotti et al, 1993; Baggio et al, 1998; Franceschi & Bonafe, 2003; Passeri et al, 2003; Ranberg et al, 2004). While the subjective of health and well-being can be found in epidemiological, social and public health survey. Moreover, self-rated health

by the subjects has been one of the most frequently used variables in gerontological and health research because it was mediating roles between human biology and psychology. The previous researches claimed that “self-rated health by the subjects” found to be strongly predicted the survival among the aged, morality, fracture, functional ability, ADL disability (Jylha et al, 1998; Herman et al, 2001; Yi & Vaupel, 2002; Reddy et al, 2004; Gupa & Sankar, 2003; Wu & Schimmele, 2006). Silverstein and Angelelli (1998) indicated that poor self-rated health is associated with living alone, and low emotional support from children.

The numerous studies on health status of the oldest old have been reported, such as dementia, heart failure, stroke, hearing, visual impairment, cataract, chronic bronchitis, chronic lumbago, scelalgia, hip fracture, kidney, liver, hypertension, anemia, osteoporosis, obesity, cardiovascular diseases, malignant, and neoplasia (Drinka & Goodwin, 1991; Dwyer, 1994; Jensen et al, 1997; Samuelsson et al, 1997; Chen, 2001; Jitapunkul et al, 2003). However, there is estimated that approximately one-third of the oldest old are healthy (Poon et al, 2005) and the research which conducted in France reported that 58% from 700 cases of the oldest old still in good and very good health (Larkin, 1999). Moreover, poor oral health among oldest old has particularly been seen in a high level of tooth loss, dental caries experience, high prevalence rates of periodontal disease, xerostomia and oral pre-cancer / cancer (Schou, 1995).

The negative impact of poor oral health of the oldest old reduced chewing performance and affects food choice (Walls et al, 2000) and became important factors on weight loss, obesity, nutritional deficiency and others chronic diseases such as ischemic heart disease, chronic respiratory disease, cardiovascular diseases and ischemic stroke (Shlossman et al, 1990; Joshipura et al, 1996; Mojon et al, 1999; Scannapieco, 1999; Ritchie et al, 2000; Marshall et al, 2002; Joshipura et al, 2003; Lee et al, 2004). In addition to the problem with chewing (Peterson & Yamamoto, 2005) the oldest old may have social handicaps related to communication (Smith & Sheiham, 1979) and mental health (Schou, 1995).

2.2.4 Medical services

According to health limitation and disabilities, over the past two decades, policymakers and practitioners in the field of gerontology have been increasingly challenged to develop appropriate health and social services for the oldest old. Not only the health rights and health care utilization which are provided by the governments, but the holistic and multi-dimensional approaches in either institution or community have been widely developed such as nursing home, long term care, home health care, end-of-life care. Unfortunately, the bodies of knowledge for those cares were practically activated only in more developed countries (Rice, 1989; Diwan et al, 2001; Kane, 2001; Branch, 2001; Pruchno & Rose, 2002; Finlayson, 2002).

For developing countries, the preparations of long-term care and specifically oriented for the oldest old have been initiated. The concentrations mostly paid attention only in health rights, health care utilization, and medical health services by the government in hospital based setting. The previous researches indicated, that health care services in hospital or health care center sometime also generate to another problem for the client such as doctor patient relationship, inability to pay for care, inability to access the care, lack of public transportation and long waiting time spent at the hospital (Kummuansilpa et al, 2000; Ofstedal & Natividad, 2005). In Thailands medical treatment and services for the eldest old attention was paid in physical health only, while mental health was under-diagnosis. Anyway, home visit as well as family medicine to prevent and promote their health were started and activated, which need more time to evaluate (Kummuansilpa et al, 2000; Amatayakul & Viwatpanich, 2002).

2.2.5 Behavioral and functional performance

Physical and functional health in the oldest old are generally associated with the physical capacity to carry out both basic and instrumental activities of daily living (Poon et al, 2005). For more decades, the explanations of behavioral activities of the oldest have been reported, where the activities of daily living (ADL) and the instrumental activities of daily living (IADL) are widely used as the main concept to measure. As the same conclusion, several previous researches affirmed, that behavioral and functional disabilities are influenced by aging process and multiple diseases (Ranberg et al, 1999; Gu & Yi, 2004; Fonda & Herzog, 2001; Gu & Xu, 2007; Fauth et al, 2007).

The gerontologists and leisure researchers have long lasting experiences to investigate behavioral activities in daily living of the oldest old. Solitary activities such as watching television and listening to the radio have been cited as the most popular pursuits among the oldest old (Bevil et al, 1993; Hilleras et al, 1999; Wivatvanit, 2002; Strain et al, 2002). Additionally, spending more time in house chores, older adults are more likely than other age groups to enjoy leisurely meals and are less likely than younger adults to go out to movies, sporting events, exercise programs and other entertainment (Robinson & Godbey, 1997; Armstrong & Morgan, 1998). Robinson (1991) found greater differences in behavioral activity patterns between aging population groups, the oldest old (75 years or over) spent less time in paid employment, eating out and participated in sports and travel less than the other groups. Anyway, Becker & Yost (1991) reported, that some behavioral activities like jogging, walking, sightseeing, picnicking, hiking and swimming were highly ranked for the persons who are living at an age of 75 years and over.

In time budget analysis, Robinson (1991) found, that males were helping out more with house chores, and that television viewing dominates leisure time for older adults and approximately 60% of the oldest old females still do the bulk of house chores (Robinson & Godbey, 1997). Moreover, an interesting study of leisure time of nonagenarians was conducted in Stockholm by Hilleras (1999).

This research indicated, that the intellectual activity had a peak from 1800 h to 2000 h. Physical activity had peak from 1000 h to 1600 h, while social activities peak at 1300 h and from 1700 to 1900 h.

In Thailand, the study of Wivatvanit (2002) observed the physical activities during 24 hours: Thai elderly people aged 70-79 years spend 8.1 hours for sleep at night, 5.8 hours for leisure and personal matters including eating, bathing, listening to the radio, watching television and talking with friends, 1.9 hours for paid work and 1.9 for house chores, 1.5 hours for non-paid work such as taking care of grandchildren and 4.8 hours for other activities such as social and charity work, religion activities and going out.

2.2.6 Food consumption and diet

Several dietary intake factors have been found to be associated with positive physical and functional health outcomes in the oldest old (Poon et al, 2005). Information on food consumption behavior of the oldest old can be divided into two main categories. First is the investigation of food secret of longevity, food habit and food pattern, while another is the analysis of food intake to measure the nutritional status of the oldest old.

The conclusions from the previous researches include such interesting information of diet and longevity. The local and traditional food, such as legume, grain, dry seed, fresh fish etc., is good for aging and might play an important role for living longer. For example, the classical research on centenarian food consumption in Okinawa, Japan, found that Satsuma (sweet potato) that made up some 93% of the everyday diet might be special one of longevity food in this area. Consumed Satsuma four times a day as the main staple food is shaped the centenarians rich in vitamins, minerals, and fiber (Sho, 2001). This finding is very similar to the diet in Chinese centenarians (Chen, 2001). He argued that sweet potato slice play a role in promoting good health and long life. Furthermore, seaweed, Shigi Gusui (a concoction of the food stuff as an herbal medicine), Chimu and Shiniji (a concoction of pig's liver and vegetable as medicinal food) are also practical in Okinawan centenarians to prevent illness and to build up physical strength, maintenance and promotion of healthy lifestyle (Sho, 2001). Another study is occurred in another province of Japan, Okasaki, the longitudinal study on nutrition intakes of the oldest old found that mushroom, fat and oil, n-3 fatty acid (Omega-3 fatty acid) especially alpha-linolenic acid are the great consumption among the survivors (Darmadi et al, 2000).

The relations between health status, food consumption behavior, and cultural geography of the oldest old were reported by the Harvard College: Okinawans lose their actuarial edge when they move to Western countries and, presumably, adopt a more Western lifestyle. Italian researchers reported that healthy centenarians had exceptionally high blood levels of vitamins A and E compared with healthy younger adults (President and fellows of Harvard College, 2002).

In socio-cultural perspective on new trends in dietary habits of the elderly is reported in Indonesia. Darmijo confirmed that the elderly are usually reluctant to change their traditional diet into the new mordenized and westernized diet such as hamburger, pizza, fried chicken, while fruit are consumed less than vegetables (Darmojo, 2002).

For nutritional intake, the 24-h dietary recall, the 24-h weighted food record, the dietary history questionnaire (DHQ), the food frequency questionnaire (FFQ) have been the most frequently used method to assess the nutrient and dietary intake of the oldest old. After the questions of food consumption were asked, measuring or estimating the portion size will be followed, continued to record the quantities of food items, then calculated them by using food composition tables into five basic food groups or micro-macro nutrient, the final step is to compare the means of nutrition intake compare with standardized value of each country (the Recommended Dietary Allowance - RDA) to identify the subjects that are higher or lower than RDA recommendation (Stookey et al, 2000; Shahar et al, 2000; Darmadi et al, 2001; Charlton, 2001 et al; Ohno et al, 2005). Additionally, in clinical research, the correlation among health status, body composition (BMI, Obesity, Triceps skinfold thickness, mid-upper arm circumference) in food consumption of the oldest of are tested (Blazos et al, 1996; Stokey et al, 2000; Charlton et al, 2001, Reddy et al, 2004). Moreover, the physical examination and laboratory tests such as cardiograms, ultra sonic model B rays, blood, urine, hair test, were performed to measure the correlation among food intake and nutritional status of the eldest old (Purba et al, 1999; Chen, 2001). These findings suggest that the nutritional intakes of the oldest old are low in calories, protein and fat, but high in fiber and rich in mineral substances and most of them are not achieved the recommended daily allowance (RDA), especially for females (Blazos et al, 1996; Purba et al, 1999; Horwath et al, 1999; Shahar, 2000; Reddy et al, 2000; Chen, 2001; Charlton, 2001).

2.2.7 Psychological health

The most frequent psychiatric illness in old age is dementia, affecting 14% of those aged 70 years and above, and more than 40%-70% of 90-95 years old are affected. While depressive illnesses are the second most frequent psychiatric diagnosis (Helmchen et al, 1999; Poon et al, 2005) the Mini-Mental State Examination (MMSE) which was developed by Folstein (Folstein et al, 1975) is the most commonly used method to measure dementia and cognitive impairment, which found that females are a vulnerable group at higher risk for dementia and cognitive impairment than males (Excel et al, 2001; Juva et al, 2001; Zhang, 2006). The relation between dementia and cognitive impairment of the oldest old are associated with an increasing of age, educational level, social class, ADLs, IADLs and biological mechanisms (O'connor et al, 1989; Callahan et al, 1996; Excel et al, 2001; Barnes et al, 2004; Dodge et al, 2005).

For depression, there are many form to measure, but the Center for Epidemiologic Studies-Depression scale (CES-D) is a widely used self-report

measure of depressive symptoms (Lee et al, 2001; Chiriboga et al, 2002; Fisky et al, 2003). These researches indicated illustrated that depressive of the oldest old are associated with serious negative outcomes such as increased risk of depressive disorder, increasing of age, increasing of morbidity and mortality, marital status, cognitive status, social support, gender and race or ethnicity. (Bruce et al, 1994; Beekman et al, 1997; Townsend et al, 2001; Chiriboga et al, 2002; Fisky et al, 2003)

Moreover, fear and anxiety are common psychological phenomenon for the oldest old, the studies of fear and anxiety are found in the three main perspectives, including fear of death, fear of fall, and fear of crime (Wiltz, 1982; Carter et al, 1997; Johnson & Barer, 1997; Leichtentritt et al, 2001; Cicirelli, 2002; Hovbrandt et al, 2007; Winks et al, 2005).

2.2.8 Environmental participation and hazards

Rowles (1983) illustrated that the oldest old do not stay far way from their community or living all the time at home, especially, the oldest old in rural area which are associated with the physical limitations and health status. Thus, safe, adequate housing and neighborhoods are essential to their well-being. The World Health Organization (2002) indicated that the environmental hazards and housing condition (including poor lighting, slippery or irregular walking surface and a lack of supportive handrails) increase the risk of falling.

These falls occur mostly in the home environment and are possibly preventable. In Australia, for example, 80% of homes inspected have at least one hazard and 39% have five hazards. For the oldest old, bathroom is identified as the most hazardous room, followed by kitchen and stairs. Moreover, hazards relating to floor surface and absence of appropriate grab or handrails (Cummings et al, 1990; Carter et al, 1997). Safe housing and designed home for the aged have been announced. Those researches suggested that image, to develop housing policies and programs for the elderly; the stakeholders should be concerned in the range and diversity of needs depending upon location, age, income, degree of physical impairment and life style of the elderly. Anyway, it should be noted that the elder people are unwilling to change their habitual physical and social environment that they are involved before (Bednar et al, 1977; Pastalan, 1977).

2.2.9 Living arrangement and social support

The evidence about living arrangement and social support are largely observational; it is commonly believed that family support, social relations, social support and social network influences health and well-being. As humans are social beings, they need contact to others. For the oldest old population, support and care from adult children living within the same household or residential compound is crucial for their psychological, physical, and economic well-being (Ofstedal et al, 1999). Thus, it is not surprising that a major part of the recent

socio-demographic research is focusing on this topic (Knodel & Sangtienchai, 1999; Beardi et al, 2001).

For living arrangement, there are some reports that 45% of the oldest old in USA and 50.3% of the oldest old in Berlin are living alone and most of them are females (Kover et al, 1992, Mayer et al, 1999). While the oldest old in Asian countries such as China, Japan, Indonesia, Korea and Thailand are disproportionately more likely to live in extended family households (Kamo & Zhou, 1994; Knodel et al, 1995; Kim et al, 1997; Beardi et al, 2001).

For social support and network, Litwin and colleagues (2000) indicated that kin, family-intensive, friend-focused, and diffuse-ties are the informal type of social network of the oldest old. But the type and intensity of this help varies greatly within the family unit (Poon et al, 2005). Basically, the oldest old have low pension supported by the government and receive financial assistance from their adult children, especially in Asian countries (Li et al, 1999).

Fung (2001) indicated that size and nature of the networks change as they face dealing health and re-construction of networks due to outliving spouse and other relatives. Poon and colleagues found that on the view on social networks of older persons, they enjoy more few peripheral social partners in comparison to the younger generation. For some cases which are still more engaged in social networks, tend to live with others, to have a child, which is most time also living more near to them. People with less engagement in bigger social networks normally tend more to health problems (Poon et al, 2005).

2.2.10 Domestic violence and elder abuse

The prevalence rate of elder abuse has been studied in only a few countries. Mostly used were cross sectional studies, survey, secondary data or record; the number of prevalent cases was estimated. The area of research interest can be separated into two main groups, where an abuse has happened: domestic and institutional abuse. In case of domestic abuse elderly people are abused by family members or other known to them in their home or community dwelling. The study in Finland by Kivelä and colleagues reported that 3% of men and 9% of women in rural Finnish community have been abused, 46% of men and 75% of women have been ill-treated by their spouse, children or other relatives at home (Kivelä et al, 1992).
A Report in the United Kingdom describes the types of abuse: verbal, physical, and financial abuse with the prevalence rates with 5.4%, 1.5% and 1.5% respectively (Bennet & Kingston, 1993). Moreover, the Canadian centre for justice statistics (2000) indicated that 7% of older people in Canada had experienced some form of emotional abuse, 1% financial abuse, and 1% physical abuse or sexual assault at the hands of children, caregivers or partners.

In Israel, the study among Arabs aged 65 years and over found that 8% of elder Jews are abused and neglected with prevalence rates higher in female than male, urban than rural, widow than married, disability than healthy by sons-in-law,

daughter-in-law, children-in-law, grandchildren, and nephews (Sharon & Zoabi, 1997; Lecovich, 2005).

On the other side of the globe, 27.5% of elderly people (N=276) in Hong Kong experienced at least one abusive behavior committed against them by their caregivers (Yan & Tang, 2004).

Unbelievably, from 400 elderly Thai in Nakhon Phanon province, 60% are reported as the victims. The hierarchical structure of elder abuse: psychological abuse (51.5%), neglect (32%), exploitation (28.25%), violation of rights (23.25%) and physical abuse (5.5%) (Suwannaknom, 2005).

Abuse in institution mean that the elder are abused by persons in professional relationship (institutional setting); such as doctor, nurse and health care provider in hospital, nursing home, health care center or social service agency. According to the scale of health limitation and physical illness the abuse can be damageable and harmful to the client. The previous studies reported that financial abuse, denial of civil rights, neglect, psychological abuse and maltreatments are found in nursing home (Stathopoulos, 1983; Pillemer & Moore, 1989). The prevalence rates of elder abuse had been recorded in other studies. Pittaway and Westhues (1993) interviewed elder people attending various health and social service agencies in Canada, and reported prevalence rates of 14.3% in physical abuse, 14% in verbal abuse, 20% in financial abuse and 14% in neglect. In Greece, a study showed that 15.5% of the elderly surveyed experienced at least one type of abuse during the surveyed year (Pitsiou-Darrough & Spinellis, 1995).

2.2.11 Economic well-being

A sufficient income is an important factor influencing on health behavior, health status, and quality of life of the elderly. Those with good economic status have more opportunities to take care of their health i.e. sufficient food and access to specific medical services and end of life care (Buntin & Huskamp, 2002; Yang et al, 2003; Klein et al, 2004; Chen et al, 2005; Kahn & Fazio, 2005). Members of the oldest generation have less economic resources than younger old aged (Atkins, 1992). For example, the median family income of the Americans oldest old (aged 80 and older) is less than a quarter of that of the young ones (aged 65 to 69), especially for the older black Americans with an income of less than 5,000 dollars per year (Gibson & Jackson, 1992; Atkins, 1992). The explanations of this phenomenon can be separated into two reasons: the first is that income declines with age while another is that the young one have earned better retirement income benefits than their predecessors (Atkins, 1992).

Among the oldest old, females are more likely to experience financial insecurity and poverty than males. There are three factors that contribute to this phenomenon: Firstly, oldest old females, on average, live longer than men. Secondly, women more often work at home without salary (no paid work

histories), have low lifetime earnings and no personal pensions. Finally, oldest old females are not well educated; therefore low income and less of saving (Ginn & Arber, 1991; Gibson & Jackson, 1992; Atkins, 1992; Lee 1998). Moreover, change in marital status also plays an important factor for economic status of the oldest old; the elderly widows are three times more often living in poverty than elder females still married (Atkins, 1992; McGarry & Schoeni, 2005; Angel et al, 2007). Moreover, the study of Link & Phelan (1995) suggested, that financial hardship earlier in life makes it more difficult to gain access to adequate social and economic resources in later life, which in turn reduces the chance for good health.

The study of economic well-being, an attention is also given to the nature and magnitude of their asset holding and their debt position. For the asset, the home is the only and accordingly largest item in an older adult's consumption bundle. In the study of home ownership are found 80-85% of the oldest old in USA (Hermalin et al, 1992), 50% in Taiwan, 66% in Singapore, and 80% in the Philippines and Thailand (Fisher et al, 2007). In addition to the issues of the debt, Hermalin (1992) claimed, that more than 38% of the elderly in the Philippines and and 24.3% of the elderly in Thailand have household dept.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Approach

In this research, the combination between documentary, quantitative, and qualitative research are applied together to gain as much information as possible and to support the reliability of data.

3.1.1 Documentary research is applied to describe the trend and situation as well as to formulate the proper interpretation of population aging in Thai society. The secondary data is drawn from several resources such as the national census, statistical record, vital table, annual reports, and online-population system, either Thailand or international data based.

3.1.2 Quantitative research method is used to identify size of problem and measure the numeric data to ensure objectivity, generalization and reliability. The research instrument of this part is the questionnaire, which is constructed by the researcher. The questionnaire can be divided into seven sections including:

Section 1: General characteristic of the respondents
Section 2: Health condition and medical services
Section 3: Behavioral determinant
Section 4: Psychological measurement
Section 5: Physical environment
Section 6: Social condition
Section 7: Economic well-being

3.1.3 Qualitative research is dedicated to explain behavioral and cultural pattern of the respondents, as well as to confirm and support the critical finding from quantitative data. Moreover, in-depth interviews, observations, and case studies are done during the time of the fieldwork.

3.2 Study design and period of data collection

This cross sectional study regarding inquiry quality of life of the oldest old, and was occurred in Mae Sariang district, Mae Hong Son province, in the northern part of Thailand. The six months of the anthropological fieldwork can be divided into two periods and carried out continuously to the sample areas as long as three month each between July-September 2005 and July–September 2006, during the summer semester break from the university.

3.3 Sampling procedure

First of all, an importance to mention here is that the main subject of this study is the elderly who are living in an extremely old age. The sampling procedure

arises with centenarian (100 years old or over). As part of large sample, sampling stratification comprised with three steps, the details are shown in figure 3-1.

3.3.1 Provincial level: Documentary and secondary data for analyses are retrieved from Ministry of Interior. By the year 2004, the statistical data indicated that the first three provinces which having highest proportions of centenarians compared with total provincial population are Pattani, Yala, and Mae Hong Son (270, 157 and 117 persons per 100,000 populations). Due to the serious conflict of three provinces in the southern part of Thailand, the first two provinces including Pattani and Yala are excluded. For this reason, Mae Hong Son is selected as provincial representation of this research.

3.3.2 District level: For this step, the numbers of centenarians in each district of Mae Hong Son province are computed. Finally, the statistical registration from Ministry of Interior claimed that the vast majority of centenarians in Mae Hong Son province are living in Mae Sariang district.

3.3.3 Sub district level: For this part, the direct contact to Mae Sariang district administration is followed to find out sub districts representation. Then, the numbers of centenarians in every sub district are listed. The result shows that the vast majority of centenarians in Mae Sariang district are in Pha Pae and Mae Hau sub district (both are rural areas), where Mae Sariang sub district is purposively selected as the representative of urban area. Then the selection between the two rural representative sub districts is needed. Pha Pae, even the first priority, but it is excluded according to several restrictions, for example, as there are many kind of ethnical groups where it is hard to communicate and difficult to find translators at that time of the first field work. Moreover, Pha Pae is located in remote area which far from Mae Sariang sub district (purposive selection to represent the urban area) approximately four hours by car or six hours by motorcycle, as well as lack of accommodation. According to these reasons, Mae Hau is selected instead of Pha Pae sub district. Finally, Mae Sariang (urban area) and Mae Hau (rural area) sub district are selected as study areas.

Into this step, the total lists of centenarians in Mae Sariang and Mae Hau are identified in name, date of birth, and address. Unfortunately, after personal verification was done, only two centenarians in Mae Hau are proved as correct, which is to less as a representative sample. This leads again to a new selection for the areas of studies. The next opportunity is Bahn Gad sub district which has the third highest majority of centenarians. Finally, the two sub districts which are representative to this research are Mae Sariang (urban area) and Bahn Gad (rural area). Later on, the personal verification and aged validation follows. The door-to-door visit in every house is next to proof the official personal data and find out the respondents.

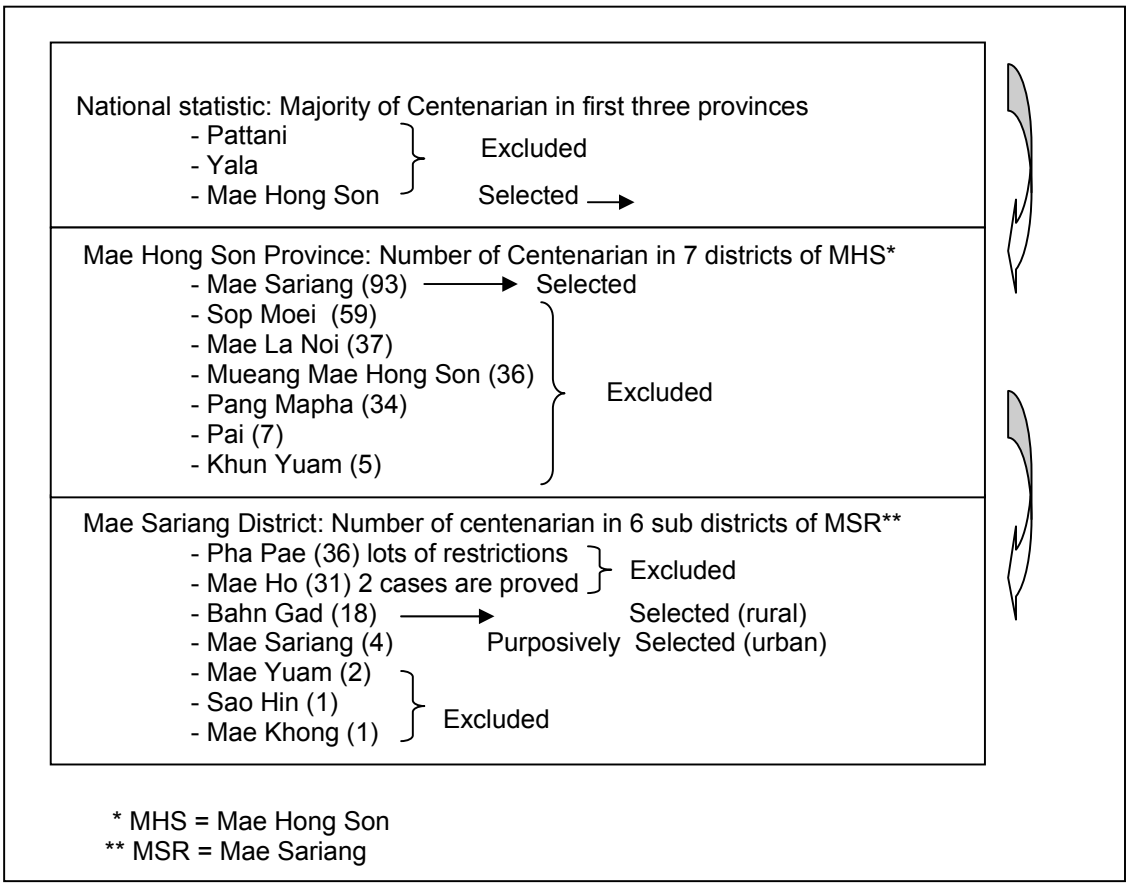


Figure 3-1 Sampling procedures

3.4 Personal verification and aged validation: No centenarians living in the villages

Validating age report is important in study of oldest old (Wang et al, 1998; Perls et al, 1999). Although the number of Thai centenarians had been recorded, either in a census or in official registration, in fact that especially in this study, the data quality on centenarians are absolutely 100% invalidated. Not any single centenarian found in the community dwelling. Such information from the villagers found that most of them already passed away many years ago, without death registration. Some moved out of the village and no confirmed information that those nonagenarians already died or survived. Finally, nobody in the village knows the name from the lists, which are found in few (the details are available in table 3-2).

The informal interviews had been with the village headmen. The three explanations to this phenomenon are elucidated. First is death without report. The proportions of death without death registrations are found 83% in Mae Sariang and 75% in Bahn Gad sub district. Anyways, for better understanding, it should be said that vital registration is implemented in Thailand since 1917 and the civil

registration law of 1991 states that it is a personal obligation that a person who witnesses a death has to make report to a governmental officer during 24 hours (Prasartkul & Vattanawong, 2006). The process of death registration in Thailand can be classified into three categories: (1) death occurring in hospital (2) deaths of natural causes occurring at home (3) death of unnatural causes. Each of these three categories of death demand different process of registration (Prasartkul & Vattanawong, 2006). At that time of those centenarians who died mostly at home in the past, the family member might be incompatible to this obligation, especially the hill tribe who lives in remote area, illiteracy, do not know much about the law or low attention

Second, another hypothesis from informal discussion with Mae Sariang district administrator found that fear of late registration of the death might be another factor in this problematic situation. For delay reports of death, 1,000 baht of the forfeit (approximately 20 Euro) has to be paid by the family members, by law. This money might be quite small for general population, but it is huge money for people in this area, especially the hill tribes or local populations who lives in rural area and low socio-economic status.

Finally, the centenarians who died without death registration have to remain in the system endlessly. According to personal identification is the basic human right of Thai people. By law, the governmental officers neither delete files, nor remove names of the dead persons, without any requests or reports from family members or the witnesses. In case when elimination is needed, the committee set up must be constituted, which could be consist of the head of household or family member, village headman or village chief, head district officer, other personal evidences, and all materials to authenticate the death of those persons. Then, the remove or renewal might be possible.

The next question is even they know this problematic situation and they know how to develop the data system, but why they do not take any action? The explanations of village headmen are twofold. Firstly, the annual budgets, social welfares, and governmental supports are sending to the provincial, district, and sub district by expenditure per head population. To keep the numbers of population, especially the oldest old might be advantages for community benefits. Secondly, low fertility, moving out to find a job, or marriage of young generations shape some village become smaller. Small village may be end and add up to bigger village. Not only sharing such infrastructures, annual budgets, social welfare with the big village, but also several positions, privileges, special rights, and honours of community workers such as member committee of local administrators, village headman, community health volunteers, village policemen, etc. in small village will be terminated. Thus, these reasons are important factors to keep the name of the death persons in the personal registration of these areas.

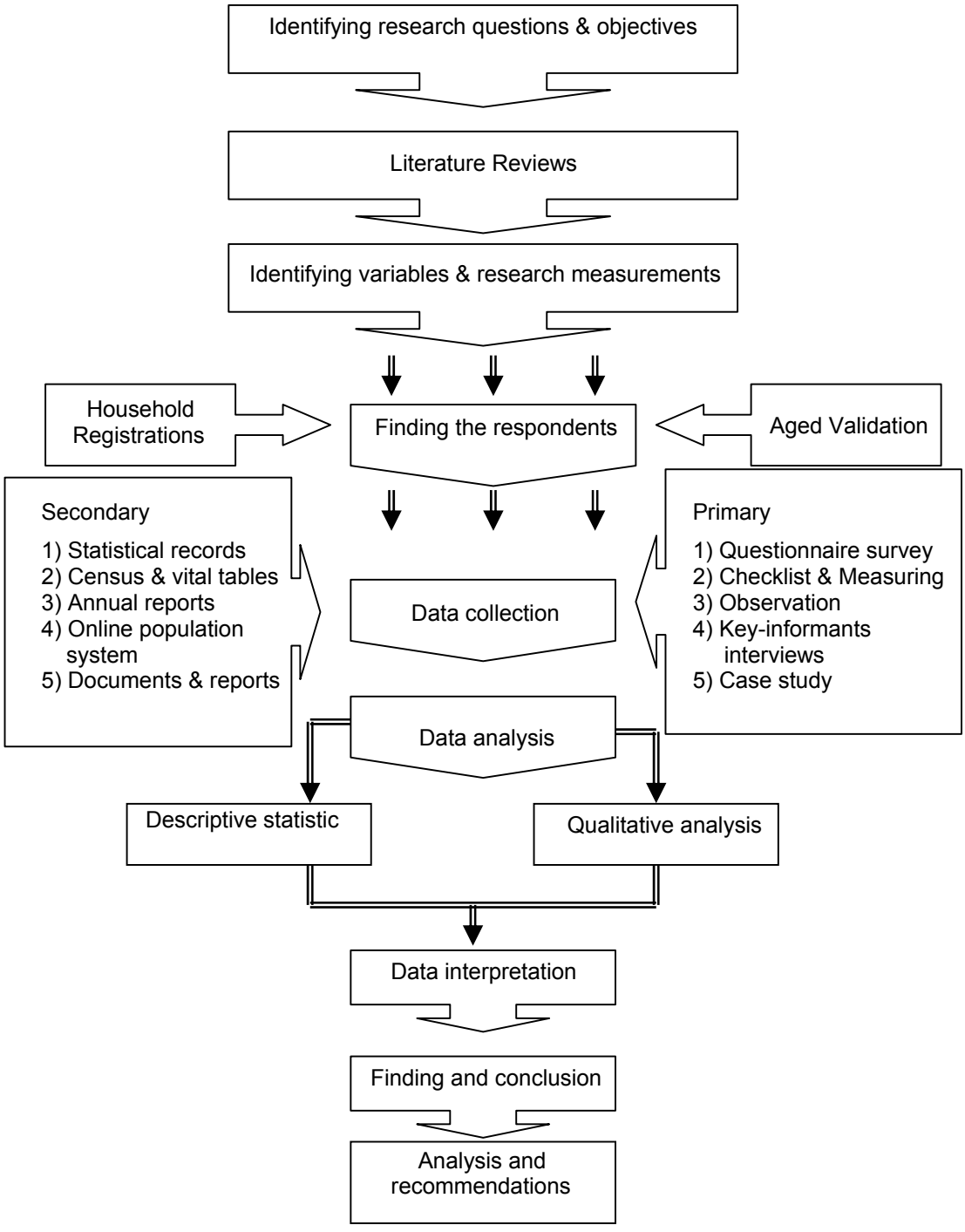


Figure 3-2 Research design

3.5 From centenarians to nonagenarian study: Some authentic, but some exaggerated

The unsuccessfulness of centenarian finding generates the reduction of aged range in this study from 100 years old and over to 90-99 years old. The nonagenarians are the new target population of this research. The finding procedure performs in the same process as centenarians, starting with nonagenarians named lists from Mae Sariang district administration, followed by personal verification and aged validation, which some procedure are adapted from Wang and colleagues (1998) from age validation of Han Chinese centenarians.

As the quality of the registration system in Mae Sariang district is unacceptable. To verify the nonagenarian, the combination of the governmental data based and culturally aged investigation are mixed to increase more the reliability of the respondents. The procedures are as followed:

3.5.1 Contacting the village headman: After the nonagenarian's name from Mae Sariang district administration are listed. The researcher contacts the village headman in each village and asks for nonagenarians, if all of them still survived? Basically, the village headman knows the villagers very well because all they living together in small communities. This primary screening by the village headman helps to make the process of personal identification more short. It is not possible to follow the name and find out the respondents door-to-door, house-by-house at the first short time of the fieldwork, because these areas are mountainous.

Figure 3-3 and 3-4
Personal verification and aged validation with the village headmen

3.5.2 Contacting the active nonagenarian: Not only for the rapport, but also to ask him/her to search for more and other cases (snow ball technique); after the active nonagenarians who are able to communicate have been identified by the village headman. The next procedure is the rapport with him/her and family members. Then, the following question is, do you know someone who is in the same generation like you? According to the registration system in these areas is imperfect, 13 new cases of nonagenarians are found when using this snow ball technique.

3.5.3 Checking the personal identification and other documents: The nonagenarians are asked about date of birth. The personal identification card and other documents such as household registration booklet and aging card are also checked. (The birth certification is not available, since the registration system and birth certificate had been implemented after they were born). Unfortunately, the western date of birth is unanswered by the nonagenarian, but the year of birth in the traditional zodiac calendar year is clearly reported. Thailand, the zodiac can be divided into twelve years of cycle; mouse, cow, tiger, rabbit, dragon, snake, horse, sheep, monkey, rooster, dog, and pig (Figure 3-1). For example, when male nonagenarian reported the year of birth as the tiger, then the possible year of birth should be around 1938, 1926, or 1914, on the other words, probably he is 69, 81, or 93 years old. How to determine their accurate age? The next procedure is the comparison their aged into the first child born.

3.5.4 Comparing age with the first child born and family generations: Basically, when the parents are 90 years old, the age of the first child born should be around 70-80 years. This means that the parents are married when they had been around 15-20 years old, which is possible in these areas, where the nonagenarian marriage was in early age. If the age of the first child born is lower than 70 years old, then the next investigation is needed. If the age of the first child born is around 70-80, then they might be the nonagenarians. The researcher also compare their age with the siblings, age of younger sibling should be around 85-90, if they are younger; these possible nonagenarians still keep in the list, but with some remark and need more verification. Lastly, the family generation is also applied to verify their aged. The nonagenarians should have four or five family generations, if it lowers such as two or three or without grand child or great grandchild, the next investigation is also necessary.

3.5.5 Correlating nonagenarian's life into the important historical event: Another procedure of aged validation is the correlate comparison between their life experience and historical event in Mae Hong Son province and Mae Sariang district. Obviously, the significant historical situation is the Second World War, where the Japanese soldiers used this area as the pathway to Myanmar. The question is that "How old are you when the Second World War was occurred?" (The Second World War occurred in Mae Hong Son during the year of 1941-1945), if they are exactly nonagenarian, at that time they should be around 28-30 years old and they should be able to state this historical details. If the correlation between their life experiences during this war are clear and make sense, means

the possible nonagenarians are selected as the key informant of this research. On the other hand, if they reported that at the time of the Second World War their age were around 10 or 20 years and they are unable to explain this situation, then they might be not nonagenarians, which might be younger than 90 years old. Anyway they are still on the list, which are waiting for the next investigation.

Table 3-1 Table comparison between zodiac year and western calendar year

Zodiac Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
Mouse	1996	1984	1972	1960	1948	1936	1924	1912	1900
Cow	1997	1985	1973	1961	1949	1937	1925	1913	1901
Tiger	1998	1986	1974	1962	1950	1938	1926	1914	1902
Rabbit	1999	1987	1975	1963	1951	1939	1927	1915	1903
Dragon	2000	1988	1976	1964	1952	1940	1928	1916	1904
Snake	2001	1989	1977	1965	1953	1941	1929	1917	1905
Horse	2002	1990	1978	1966	1954	1942	1930	1918	1906
Sheep	2003	1991	1979	1967	1955	1943	1931	1919	1907
Monkey	2004	1992	1980	1968	1956	1944	1932	1920	1908
Rooster	2005	1993	1981	1969	1957	1945	1933	1921	1909
Dog	2006	1994	1982	1970	1958	1946	1934	1922	1910
Pig	2007	1995	1983	1971	1959	1947	1935	1923	1911

*Year of birth in the gray area should be the nonagenarians

This picture shows the correlation between aged structure of nonagenarian and other siblings. An example of this ten sibling's family, the female nonagenarian (right), the first child born of this family aged 94 years old. On the left hand side is the sixth younger sister, aged 85 years old, and the middle is the last sister aged 71 years old.(Picture is permitted by the respondents)

Figure 3-5 Aged verification by comparing age structure of nonagenarian and siblings

3.5.6 Confirming age by the elder neighbors: The last procedure to make a final clear cut is the confirmation by the neighbors; this procedure goes to the elder villagers who have 60 years old or over. The questions such as “Do you think his / her age is higher than 90 years old?” either “Is he/she older or younger than your parents?” or “How old are they when you were a child? If the neighbor strongly confirmed that they are the nonagenarian, such as (1) she is older than my parents (2) he is the same generation of my grandparents (3) when I was a child, I found she already has grandchildren (4) when I was a child, her aged was around 30-40 years old (5) I call his children as aunt or uncle (6) her children are the same generation as my parents. Then, this might be correct that they are nonagenarians.

Finally, the totals of 29 respondents are proved by those six procedures, only six nonagenarians passing three to four procedures. Then, the researcher using the confirmation of the elder neighbors as the main criteria for excluded or included justification. Fortunately, two or three elders of each village strongly confirmed that all they having more than 90 years old. Thus, they are included as the representative respondents of this research. This encourage acceptation of the research, after one month of case finding, the 35 cases are found which can be separated into 13 cases for rural and 22 cases for urban areas.

Table 3-2 Percentages of errors in population data from the registration system

	Centenarian				Nonagenarian			
	MSR	%	BG	%	MSR	%	BG	%
Total report	18	100	4	100	26	100	43	100
Confirmed death	15	83.3	3	75	13	50	10	23.3
Unknown	3	16.7	-	-	-	-	2	4.7
Out migration	-	-	1	25	2	7.7	4	9.3
Aged exaggeration	-	-	-	-	-	-	15	34.9
Still alive	-	-	-	-	11	42.3	12*	28
New cases						2		11
Total of respondents						13		22

MSR = Mueng Mae Sariang sub district BG= Bahn Gad sub district
* One male died during the time of data collection is excluded

From table 3-2, it might be said that, the data based from registration system is significantly unuseful. 34.9% of the name lists are aged exaggerations. From 100%, only 28% are corrected which mean that 72% are completely failed. Not surprisingly, in some household, especially the Karen, aged verification not only the nonagenarian’s age is mistake, but also the age of others family member are incorrect. For example, the aged report from the registration system claimed that the female nonagenarian is 96 years old, and the household registration booklet gave the year of birth of her first daughter as 73 years old, and her son is just nine years old. It is not possible for the female elderly to become pregnant at the

age of 64. The facial estimation by the researcher might be said, that she looks very young, as her age should be around 40-45 years old only.

As the major reason of this situation was found that during the past 20 years, the Karen were not Thai population, even they all were born in Thailand. They did not have any personal identification and had not the right to access social services from the government such as education, hospital and medical care accessibility, etc. Following the human right policy, the Thai government tried to assimilate them into Thai population, the household registration, personal identification were given to them as same as the Thais have. Deal to all they did not have any personal documents before, especially birth certification, when they were in the district office and asked for the personal identification card or to made the household registration booklet, the date of birth or the Thai name were automatically given by the estimation of the officer, without any proving and confirmed by the villager or family member. The suggestion from the research is that the renewal registration system in these areas is needed to be activated as soon as possible.

3.6 Research method and measurement

According to the three main the primary objectives and nature of this research is the combination between documentary and cross-sectional research. The variable in each process is also different, the details are as followed.

3.6.1 Documentary research: To explain the factors affected to the increasing of the elderly in Thai society (the first objective), the variables are including demographic transition, medical and health care development, economic development, educational development, and lifestyle changes. Information and statistical data used for this part are employed from several offices, either in Thailand or international organizations.

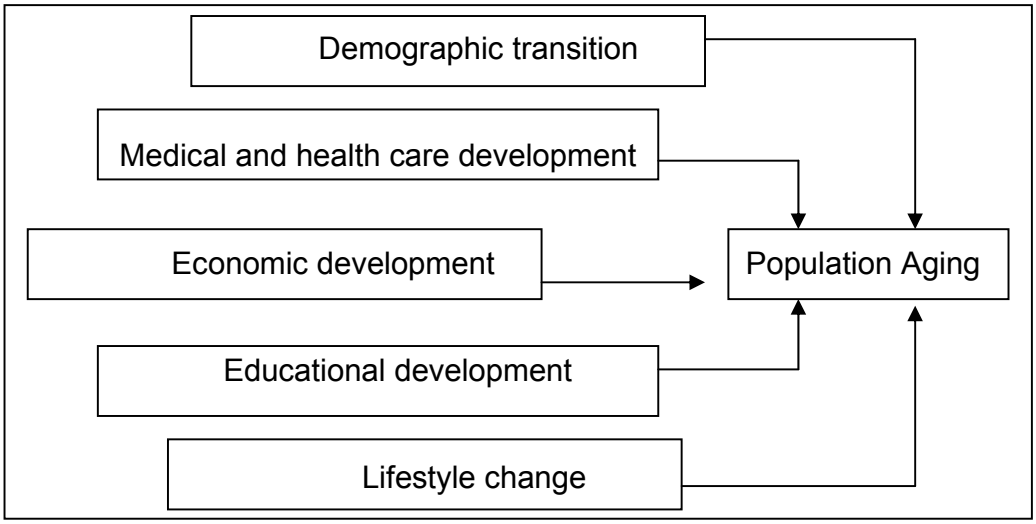


Figure 3-6 Documentary research framework and variables

3.6.2 Cross-sectional research: The quality of life of nonagenarians (the second objective), the numeric data for this research are obtained from the questionnaires (checklist, closed-end questions, opened-end questions, rating scale, and physical measurement). The entire variables are classified into six different categories which is shown in table 3-3. While the situational explanations are investigated as the details from in-depth interviews, observations, or case studies from qualitative study, which are parallel into those categories as above.

3.6.3 A comparison study: Gender and cultural differences (the third objective), the World Health Organization (WHO) indicated that gender and culture is the crosscutting lens that the researcher should concern because these two factors are also affected to the quality of life and well- being of the elderly. For this part, the VENN-Diagram was applied as the main critical conclusion to identify the gender (males and female) and cultural (rural-local people and urban-the Karen) differences in quality of life of the nonagenarian.

Table 3-3 Variables and measurements of quantitative and qualitative research method

Category	Variables
Health conditions and medical healthcare	- Health condition - Self-rated health - Medical health care
Behavioral determinants	- Activities of daily living (ADL) - Instrumental activities of daily living (IADL) - Remaining teeth - Self-rated oral health - Nutritional status
Psychological health	- Cognitive function - Happiness - Stress - Depression
Physical environments	- Environmental participation - Housing condition - Environmental hazards at home
Social conditions	- Living arrangement - Social network - Social contact - Social support - Domestic violence
Economic well-being	- Monthly income - Asset ownership - Sufficiency of income

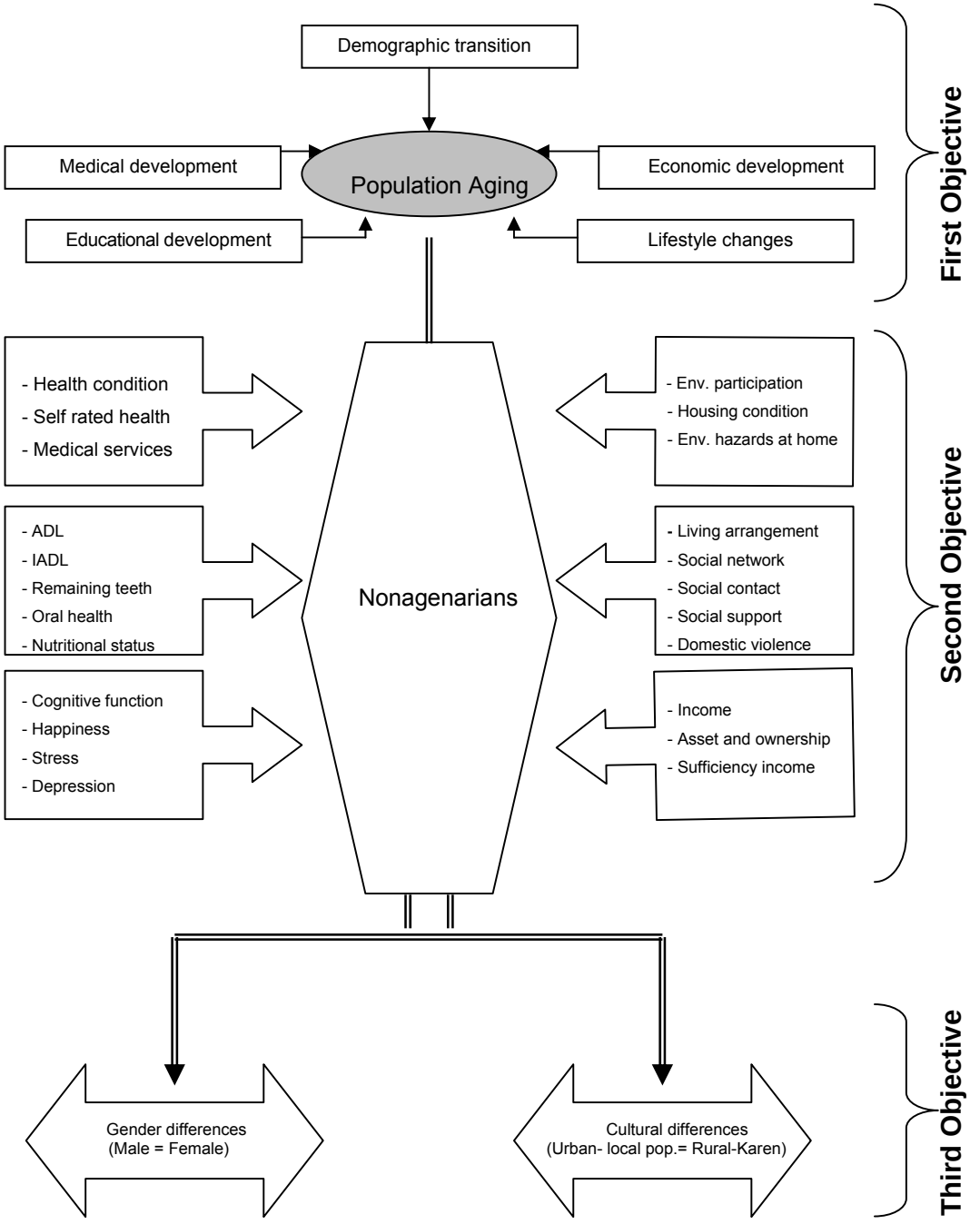


Figure 3-7 Conceptual frameworks

3.7 Data processing

For the documentary research, the content and textual analyses are applied as the main tools for this research. While the cross-sectional study, the numeric data have been processed by using SPSS (Statistical Package for the Social Sciences) Version 15 was used for analyzing the data. Due to small number of the samples, the reports of 23 factors are explained in descriptive statistic (percentages, means, and standard of deviation), to compare mean of quality of life with gender and residence by independent- sample T-test. Moreover, factor analysis using principal components extraction, Varimax rotation and Kaiser Normalization of the ratings was carried out to identify the most important components of the nonagenarians to the 23 factors about active aging. To make the result clearer, VENN diagram of six domains of active aging was drawn and the pair T-test between gender and residence was test. For open ended questions grouping and the simple percentage analysis method has also been adopted. Moreover, content analysis, case studies, and quotations are shown in this research and supported the reliability of the data.

3.8 Characteristic of the study area

3.8.1 Mae Hong Son: The representative province of this research

Mae Hong Son Province (formerly called Mae Rong Son) is located in the north-western corner of Thailand at 17° 38′ - 19° 48′ N and 97° 20′ - 98° 39′ E, covering an area of 12,681.259 sq.km., Mae Hong Son borders Union of Myanmar to the north and west, where Thanon Thongchai mountain, Salawin river and Moei Rivers serve as natural boundaries between the countries, Chiang Mai province to the east, and Tha Song yang sub district, Tak province to the south. The vast majority of the areas are mountainous comprising natural forests and ridges, approximately 88.02% of the areas are conservative forest. The city is divided into seven districts (Mueng Mae Hong Son, Mae Sariang, Pai, Khun Yuam, Mae La Noi, Sop Moei, and Pang Ma Pha) and 415 villages.

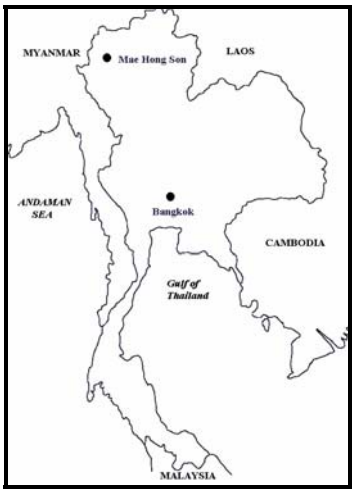


Figure 3-8 Map of Mae Hong Son province

It might be said that the population in Mae Hong Son is divers, but generally can be divided into two main groups, first is Shan or Tai Yai, where their ancestors migrated from Shans region in Myanmar more than hundred years ago. Nowadays, their lifestyles have assimilated into Thai and became local population as well as sharing the vast majority of population in these areas. Second are the hill tribes who live in the mountains and remote areas. The hill tribe ethnic groups can be found in every district, consisting with Karen, Lahu, Lisu, Lua, Hmong, Padaung (Long-Necked Karen) and Haw. Both the Tai Yai (local population) and the hill tribe have their own distinctive cultures; dialect, architecture, lifestyles, costume, tradition, and delicious cuisine.

Agricultural sector plays an important role in the growth of the economy throughout the Mae Hong Son. The important cultivation products are rice, soybean, black sesame, cabbage, garlic, longan, litchi, and banana (office of agriculture and cooperation of Mae Hong Son, 2003). Moreover, the province is covered with mist all year long which is well known in the second name as "the Town of Three Mists", from the fact that it has dewy mist in the winter, forest fire mist in the summer and rainy mist in the rainy season. Mae Hong Son itself is a small sleepy town, neither offering much in terms of entertainment nor excitement, but the ecological tourism is dramatically developed.

3.8.2 Mae Sariang: The representative district of this research

Mae Sariang district is significant in governmental, economical and agricultural activity. According to Mae Sariang is far from Mueng Mae Hong Son (the city) around 146 kilometers, it became the second most important city, where the governmental offices, banks, schools, wholesale markets, etc. are located. Even approximately 90% of Mae Sariang district are surrounded by mountains and forests, but agricultural products such as soybean, peanut, garlic, shallot, and cabbage are also produced. According to Mae Sariang which is rich in natural and environmental resources, it becomes a popular place for eco-tourism, where the travel services such as home stay, hotel, restaurant or travel agency are available, especially in the winter time or others cultural events.

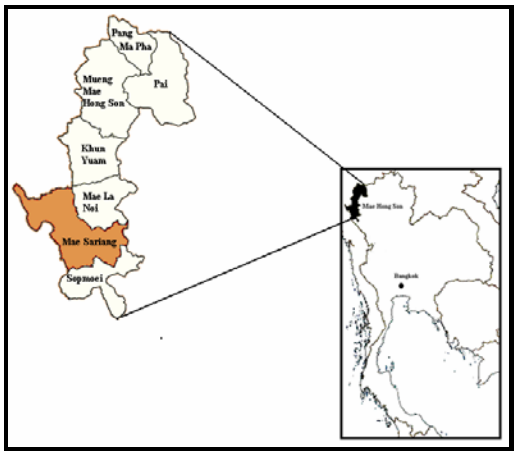


Figure 3-9 Map of Mae Sariang district

Obviously, the population diversities are found in this district, the local people, Karen, Lua, Hmong, and Muslims are living together in harmony, without any cultural conflict. The total populations of Mae Sariang district are 47,133 persons (Ministry of Interior, 2005). In this number, 11,443 hill tribes have been reportedly overlapped. Thus, the hill tribes are approximately 31.3% of the total population or 1:3 in population ratio (Mae Hong Son hill tribe development and welfare center, 2005). From 31.3%, the Karen is reported as the biggest ethnic group in Mae Sariang district (85.2%), which is found in 67 villages, 2098 households, and 9,753 persons, while Lua are reported in seven villages, 301 households, and 1,690 persons or (14.8%) (Mae Hong Son hill tribe development and welfare center, 2005). The Karen in Thailand as well as in Mae Sariang district are seen as honest, righteous, faithful, and honourable people. They love peace, silence, simple life, and peaceful. Anyways, Hmongs are also found during the time of the fieldwork, but they are not reported in this data based. Many developmental projects from the government or non-governmental organizations come to this district, not only to maintain and approve their quality life of the ethnic groups, but also of the local Thai population; such as agricultural extension from the royal project, Mae Hong Son hill tribe development and welfare center, food bank project, eco-tourism development, border market development, etc.

1) Bahn Gad sub district: The representative of the Karen in rural area

Bahn Gad sub district consists with 13 villages, where the population inhabitants (approximately 9,900 persons) are mixed between local Thai people and Karen, but majority are Karen population. The Karen in Bahn Gad are Skaw; they term themselves “Pakanyor” mainly subsistence hill farmers, they practice shifting rice cultivation and crop rotation such as cabbages, peas, beans, coffee, tobacco and tea. Moreover, weaving traditional clothes and handicrafts such as rugs, scarves, shirts, and skirt are the importance of supplementary incomes. During the time of social transitions and community developments, selling traditional clothing, handicraft, silverware, general labor force trade, or home stay for travelers are dramatically increased.

The Karen are influenced by globalization and transition. Nowadays, their lives are not isolated anymore; they have more opportunities to contact with the other groups by car or motorcycle approximately one or two hours instead of walk for six or seven hours like before. Moreover, their lives have become more comfortable, especially through abilities of electricity. This means that in many ways life in the mountains and hills has become easier. Mostly, the television, CD/DVD player are available at home and they can see more about what is happening outside their culture and society. Some remote areas, the solar cell or solar power which are supported by the government are fixed and the settle light are also founded in case of unable to receive the television signal (Danpongpee, 2003).

Some negative impacts of globalization have been arrived in Bahn Gad district as well. Now the young generation enjoys and accepts everything, except Karen culture. Some skip Karen dialect, some neither read nor write their own language fluently. Wearing the traditional Karen clothes is seen very rare. The modern songs on cassette tape or CD/DVD are regularly switched on instead of traditional Karen songs. Cultural participations in community events are unimportant to take part.

Deal to globalization, they have more relationships with others and more academic education. The cultural exchange and assimilation lead them to imitate others and forget who they are as Karen (Danpongpee, 2003). Moreover, moving out for education, work, or marriage is affecting the village. It becomes lonely, silence in the afternoon and smaller. For other generations, their ways of lives are also dramatically modernized, for example, houses are built with good material, and modern furniture are bought instead of bamboo stick, some move the living place from the mountain to the lower hill near the city or plain area and acculturated into local culture, especially Theravada Buddhism. But for those, who still reside on the mountain are retaining animistic beliefs or become a Christian or syncretic. Anyway, agriculture is still a significant occupation of the people in this sub district. Rice, Soybean, cabbage are produced in nearly every household. Merchants are also found in every village. Handicraftsmen are practicing in Karen village, where as making the traditional music instruments are found only in local population village.

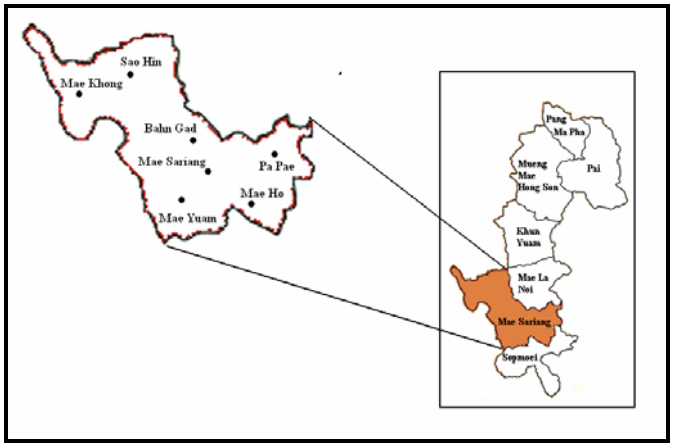


Figure 3-10 Map of Mae Sariang sub district

2) Mae Sariang sub district: The representative of rural area

There are nine villages in Mae Sariang sub district, which are consisting of the local Thai population, Muslim, and other ethnic groups (Hmong, Lua, and Karen) are also found, but only a few. Mae Sariang sub district is the centre of business activities and governmental services. Approximately 60% of Mae Sariang sub district are the plain areas, while 40% are sparse woods. The inhabitants are agriculturists and merchandisers. The main agricultural products are rice,

soybean, garlic, and others vegetables. Industrial factories are also found in this area, which mostly are mechanic factory and garages. The governmental hospital is located in this district as well.

Even Mae Sariang sub district is more developed area than other sub districts, but the people here are having a plain and simple lifestyle. Traditional cultures such as traditional New Year, religious tradition, food consumption, handicraft, traditional costumes are conserved, protected, and promoted by the Mae Sariang administration offices and local population. Nowadays, Mae Sariang sub district is becoming more colorful than in the past. Hotels, guesthouses, and small bars are located along Yuam River. Fortunately, these travel businesses shape themselves only in business area, while the people in another locations still living from natural resources. Even some things are increasing, such as number of cars, new migrants, complex of the city, etc., the people still confirmed that from these things not much has changed and is quite acceptable.

The community change of the local population in Mae Sariang sub district is different from the Karen in Bahn Gad sub district. During the past 10-20 years, lands and properties in this area were bought by the people from other provinces; either for business reason or to live after retirement of the rich persons. The main reason is the natural environment of Mae Sariang district itself (mountain, green area, forest, river, natural resources), as on the other hand the inhabitants are out-migrants. When the lands are increasingly transformed to the newcomers, means that social, culture, identities might be collapsed, and emerged the new trend of economical and industrial cities, which are easy to find in Mueng Mae Hong Son district or other cities in Thailand such as Chiang Mai, Chiang Rai, Chonburi, or Prachuab Kirikhun, for example.

3.9 Limitations of the study

This anthropological fieldwork is not extricated from the primary limitation, especially when the respondents are extremely old and the fieldwork is occurred in the trekking areas as well as the ethnic group, where the language and culture are totally different. The significance of research limitations which might be affecting to the data quality of this research can be divided in to two main causes, the details are as followed.

3.9.1 Using the translator: The translator is required to communicate with the Karen ethnicity; even Franz Boas and other anthropological pioneers in the past suggested that language was an important key to open the door to access another culture, and language learning should be the significant task before doing the fieldwork. Moreover, the cultural interpretation which was dependent on someone as the translator was uncertainly for the fieldwork interpretation. This was neither possible nor practiced for me during the time of my fieldwork; even it was occurred in Thailand, but doing the research on the Karen ethnic group, it is hard to learn their language and also the time was limited. So the translator was needed. Providentially, the translator for this fieldwork is the

young Karen who now is doing the bachelor degree in social development, which all we know very well that, the corrected translation is important for the anthropological interpretation.

3.9.2 Using the proxy: Some nonagenarians who are disabled or from psychological restrictions are unable to communicate. In this research, the disabled nonagenarians, handicapped, and lost of self control or unconscious are also found. For these cases, the caregivers or family members became the main key informant to answer the questions and explain the nonagenarian's life situation. This is acceptable for the research because they are living together and the information also makes more benefit for this research. Moreover, for the loneliness and being unable to communicate, the questionnaire or some questions are going to the neighbors who live nearby as the main primary source of information.

CHAPTER 4

AGING TRENDS IN THAILAND AND POSSIBLE FACTORS OF LONGEVITY: A REVIEW ON LITERATURE

In this chapter, the situation and trend of the aging population in Thailand is explained. The consideration here is shown in a three set of issues. First is an overview of trends of aging of population, second deals with social and health situation, and finally is a review on literature of the possible factors which might be affecting to longevity. The analysis is based on global demographic estimates and projects undertaken by the Population Division of the Department of Economic and Social Affair of the United Nations (UN) Secretariat, World Health Organization, The National Statistical Office, Ministry of Public Health, and governmental surveys as well as academic researches in Thailand.

4.1 Aging trends in Thai society

As same as in other countries, also in Thailand the aging population is continuously increasing higher than in any other sub-groups of the population. Life expectancy at birth of the Thai people has increased from 50.8 years in the years 1950-1955 to 68.7 years in 2000-2005. The forecast for life expectancy in the next fifty years will be rise up to 78.1 by the year 2045-2050, as shown in the figure 4-1 (United Nations, 2007).

4.1.1 Aging population growing much faster than other generations

The figure 4-2 illustrates that in the year 1950 the proportion of aging people (60 years old and over) was only 5% (1,041,000 persons), and increased to 11.3% (7,122,000 persons) in 2005. In the year 2050, the proportion of the aging people will reach to 30%, which means, that at this time they will number more than 20 million aging people in Thai society. While the trends of the younger generation (aged 0-14 years) are nearly decreased to the half, from 42% in year 1950 to 23.6% in year 2000 and will be in more smaller proportion or around 15.8% in the next fifty years (United Nations, 2007).

4.1.2 The oldest old constitute the fastest growing age group among Thai aging

The oldest old (aged 80 years old or over) are also very diminutive part of population, but growing continuously in the same speed. In 1990 there were approximately 81,000 persons, or 0.4%. In the next 50 years the number of oldest old will be increasing to 400,000 persons or 0.7%. Moreover, during the next half decade, the United Nations estimated that by the year 2050, the number of oldest old people in Thailand will be up to 4,354,000 or 5.8% of the total population. (Figure 4-3)

The proportions of oldest old compare with total number of population aging during the years 1994 – 2005 found that octogenarians (aged 80-89 years old) continually increased from 9.4% in year 1994 to 9.8% in year 2005, whereas the nonagenarians (aged 90-99 years old) and centenarians (aged 100 years old or over) are decreased from 2.2 to 1.6% and from 1.4 to 0.4% respectively (Table 4-1).

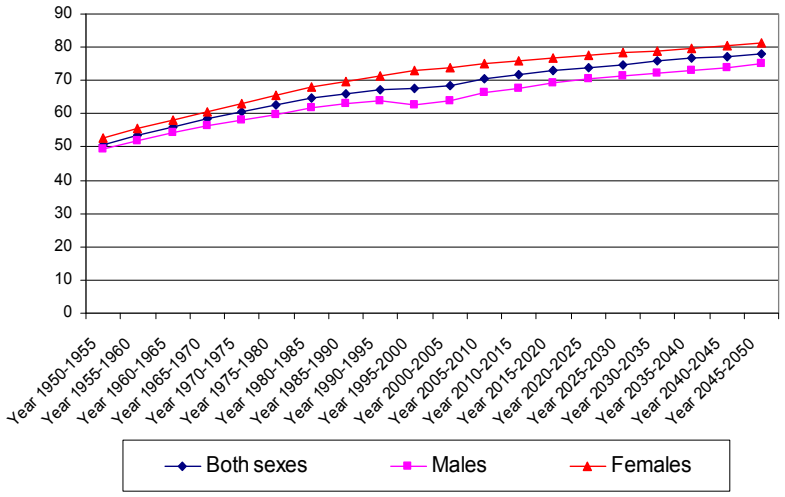


Figure 4-1 Life expectancy at birth of Thai population (1950-2050)
Source: United Nations, Population division

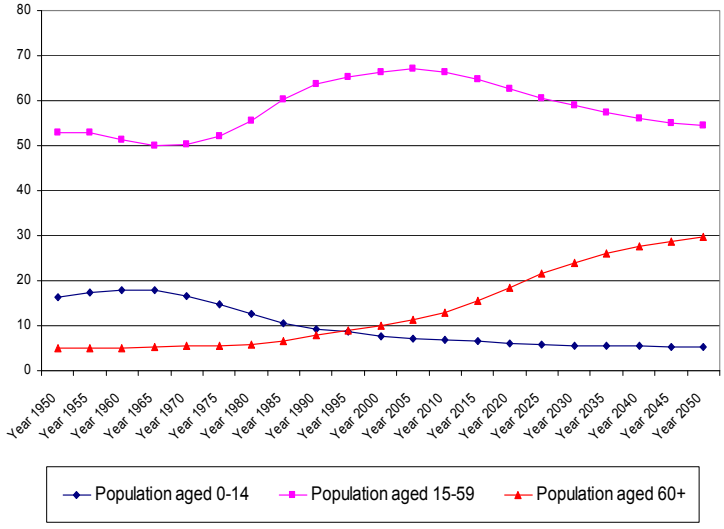


Figure 4-2 Population aged 60 or over in Thailand (1950-2050)
Source: United Nations, Population Division

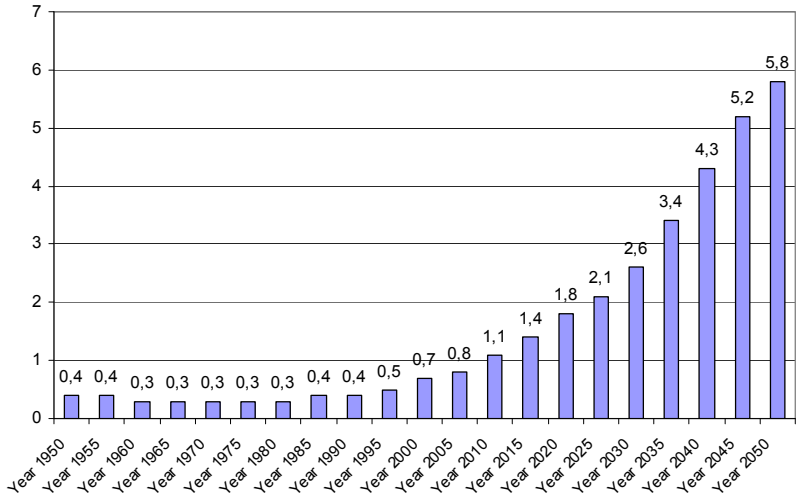


Figure 4-3 Population aged 80 or over in Thailand (1950-2050)
Source: United Nations, Population Division

Table 4-1 Number and percentage of the Thai oldest old divided by aged groups

Year	Total Aging	Oldest Old		
		Octogenarian	Nonagenarian	Centenarian
1994	4,323,688	9.4	2.2	1.4
1995	4,479,415	9.1	2.1	1.4
1996	4,680,576	9.2	2.1	1.3
1997	4,874,357	9.3	2.1	0.8
1998	5,088,379	9.3	2.1	0.8
1999	5,268,938	8.9	2.1	0.8
2000	5,421,999	8.9	1.9	0.7
2001	5,614,392	9.1	1.9	0.7
2002	5,845,689	9.1	1.9	0.7
2003	6,005,133	9.5	1.7	0.6
2004	6,161,172	9.5	1.6	0.4
2005	6,335,988	9.8	1.6	0.4

Source: The department of Provincial Administration, Ministry of Interior

4.1.3 Increasing the old aged, but decreasing the supporters

The potential support ratio is defined as the number of persons aged 15 to 59 per 100 persons aged 60 or older. This ratio is used as an indicator to assess the demographic dependency of the aged on the economically active generation. With declining fertility and increasing longevity over the past decades, this ratio went down considerably in Thai society from ten to five from year 1950 to 2000. Over the next fifty years this ratio will decrease to less than two younger persons to one person over age 60.

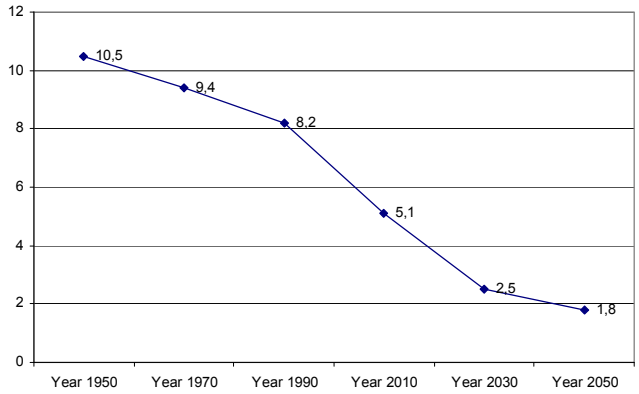


Figure 4-4 Support ratio in Thailand (1950-2050)
Source: United Nations, Population Division

4.2 Social and health situation

4.2.1 Social situation in general

During the last two decades, there have been many studies on the elderly social situations including family, economy, occupation, social situation, loneliness etc. Many of these studies could reflect the overall picture of the elderly such as the vast majority of Thai elderly (81%) live in the rural areas, most of males live with their spouse while 62% of females do not. Around 2.2% of the elderly, who are single, are female mostly and live in Bangkok or urbanized areas. Most of those, who are more then 70 years old, live in the rural areas especially in the north and the south. Around 11.9% of the elderly couples in the rural live without children or other people. From those who live alone, 31.6% have problems concerning their daily lives, especially when they are ill or need help.

1) Marital Status: Observing the marital status of the elderly age over 60 shows that 86% of the male and 64.9% of the females live with their couple. The proportions of widows are three times higher than widowers (30.4% for widows and 10.9% for widowers) (National statistic office, 2007). This shows that at the age of 50-60 males have higher mortality rate, and Chooprapawan (1997) confirmed that males have a higher mortality rate in all causes of death.

2) Education: The survey of Chayowan and Knodel (1996) shows that around one third of 31% of the elderly did not have formal education, especially at the female population. Non-educated and illiterate people are found in urban and rural areas. This is pointed out from Chooprapawan's study (1997) that 86.1% of the elderly never had gone to school, but at least half of them can read and write. The majority of those who can read and write live in Bangkok.

3) Housing: Around 12% of the elderly live in the unhealthy housing conditions, 10% live in shades and 5.9% in cottages. Around 1.5% do not have enough

clean drinking water, and have to use water from the rivers and canals. Some of the elderly have neither electricity, sanitary nor telephone at 4, 4.5 and 81.4% respectively, and most of them live in rural areas (Chooprapawan, 1997).

4.2.2 Family and Care

For the past century the family sizes have been reduced as results from programs for family planning, delay of marriage in urban areas, as well as the change of working conditions (from agricultural to industrial and service sector). More over, as the trend of married couples, number of family members in a household is going down, the households with the elderly people, who are living with spouse, children or alone are increasing. However, the increasing number of the elderly living alone is not only a result of less solidarity for the family, but effecting also that the support and informal care for single elderly family are decreasing (Jitapunkul & Bunnag, 1998).

1) Occupation: Cause of the expansion of urbanization and the trend to reduce the agricultural economic sector towards to industrial economy, the importance to act as the head of the family is influenced by this social transformation, and often the elderly people loose this status beyond their family. More over, the knowledge and experiences of the elderly who used to be significant in decision-making or set up the activities in the family are not cooperative with the global change of the societies and shows its results in dependency and decision-making power transferring it to the younger generation earlier than it was in former times.

Migration caused by conditions of work, in Thailand has been increasing; migration to bigger cities or industrial areas as well as migration to over sea. The reason for the migration is due to the economic, and highest accumulation is seen in urban, industrial areas. This migration causes reduction on the importance and strength of the community and is destroying cultural aspects especially at minority groups and is resulting in loosing their system and cohesiveness of the community to exist and also undermine the independence of the society where the elderly have to be independent even they want their children to care for them.

2) Family relation: There are 86.5% of the elderly who have children or adopt children (Chayowan and Knodel, 1996). 70.9% of these elderly stay in the same house with their children, 9.4% stay near by, 7.4% of the elderly who have children stay by themselves but their children visit them at least once a month. For those who live with their children, 87.8% sometimes feel lonely and their children do not listen to them any more. 98% are happy and feel glad to live with their children. 93% would appreciate if their children would take care of them, anyhow, 9% would like to live in the home for the elderly when they get older (National Statistic, 1995).

From the survey 80 to 85% of the population aged 15-59 years take care of their parents (aged 50 and over). One third of the caregivers are females, 64% are their children, and 27% are spouses. Most of the care is given for medical treatment 90%, preparation of food 84%, financial support 80%, take care in general 65%, provide clothes 60%, pay for medical care 53%.

According to long Thai cultural standing, it is nice to see from many studies that the young generation still have good attitude to the elderly and most of them still think that they should take care of their parents when they are older or when it is necessary (Siriboon, 1992). It is also found that the children support the expenses when the elderly are ill, especially when they are admitted in the hospital (Jitapunkul et al, 1998,1999).

4.2.3 Working and economic situation of the elderly

Around 35.4% of the elderly people do not have a sufficient income to support themselves and the family (National Statistic 1995). There are more of these problems in rural areas than in the urban areas, 0.4% have no income, 3.4% have less than 2,500 baht/year (less than or equal to old age pension 200-300 baht/month), and 13.4% have 2,500-9,999 baht/year. The low income is clearly seen in the rural areas and is higher in both groups, males and females, 70 years and over (Chayowan and Knodel, 1996).

The elderly who have some income can be divided into two groups, one gets payment in term of money; the other gets payment in term of materials. The later group (97.6%) is mostly found at the farmers. More than the halves of those who get paid with money are farmers, followed by people who are merchants, handicraft and working for industrial and service sector respectively. Over 70% are satisfied with their economic situation (Chooprapawan, 1997).

In term of income per capita the elderly who live in Bangkok have higher income than 30,000 baht are around 36.3%, 10,000-30,000 baht, 19.6%, less than 10,000 baht 17.1%. In the central region, the elderly have high-income (63.7%) followed by the southern (50.8%); those who are in the urban areas have higher income than those do in the rural areas (Chooprapawan, 1997). For saving only 31.9% of the elderly have their own saving account in the bank (Chayowan and Knodel, 1996).

4.2.4 Health Situation

Changes of socio-economy in the country causing the health development along with technologies affecting the significance of communicable diseases (except HIV/AIDS, tuberculosis and malaria), while chronic diseases, psychological problems and accidents are increasing. The report from the Research Institute and Development for Thai Elderly shows that 48% of the elderly Thai population is suffering at least from one chronic disease at that time of the survey.

1) Common illness: From the study of "Disability Adjusted Life Years (DALYs) " in Thailand, the most common health problems of the elderly are from non communicable diseases such as hypertension, diabetes, cardiovascular diseases, hypercholesterolaemia, cerebral dystrophy, osteoporosis, stress incontinence, depression, and accidents (Jitapankul, 2000). Each month 43.6% of the elderly suffer from a new illness, mostly it can be found among the rural elderly but not serious ones such as cold or joints pain (Chooprapawan, 1997).

At the national level of this study it is found that one fourth of the elderly have some health problems making them unable to work as they used to be able to do. More than 18.9% have this problems over six months, which is seen as a long term handicap, more over then 1.6% of the elderly are unable to move around their house alone and 3.1% are not able to leave their house (Jitapankul, 2000). Around 1.7-2.1% of the elderly have moderate to severe handicaps (Jitapankul et al, 1999) which need somebody to help them all the time. The important cause of handicap is cardiovascular disease. This study shows that these elderly need daily living assistance such as transportation and cooking. The main focus in this research is on the elderly who need at least one person to support them, 6.9%, like serve and prepare meals, cleaning the faces, put on their clothes, using the toilet, or taking a bath (Jitapunkul & Bunnag, 1997)

2) Health situation and self care when they are ill: Most of the elderly who live in Bangkok feel that they are still healthy and are healthier than other regions. When they are ill, mostly found in back pain 16%, hypertension 13.2%, stomach problem 13%, osteoarthritis or osteoporosis 12.1%, heart disease 5.6%, cataract 3.8%, diabetes 3.5%, pterygium 3%, asthma 2.7%, urogenital problems 2.5%, ear problems1.2%, paresis or paralysis 1.2%, tuberculosis 1.1%, fracture 0.5%, liver disease 0.5%, only 0.3% have cancer, the problems of defecation or urination can be found around 10% (Chooprapawan, 1997). For malnutrition, males with malnutrition (body mass less than 18.5 kg/sq.m) 13-27.8%, 6.8-38.7% and 28-38.9% in age 60-69 years, 70-79 years and 80 and over respectively, while females with malnutrition 5-24.5%,10.9-39.1% and 29.2-53.6% in each age group respectively.

3) Health seeking behavior: For health seeking behaviors of the elderly mostly (49.4%) prefer buying medication, followed by going to health centers 22%, private clinics 11.3%, and governmental hospitals 9.5%. For buying medication, mostly people are found in Bangkok (57.7%) and the northeast 56.2%. Using private clinics and private hospitals are mostly in Bangkok too, using the governmental hospital mostly is in the south which is higher than other regions. According to living locations urban areas buy drugs a little higher than rural areas, males both in the urban and rural areas buy drugs more than females in the urban and rural areas, while females in the urban and rural areas use clinics, private hospitals and governmental hospitals including health centers more than males in the same region. For health care expenditure, 39.8% of the elderly do not have to pay, for those who have to pay, they pay less than 1,000 baht up to 100,000 baht, mostly out of their children's pocket, followed by their own pockets

and their spouse respectively. They can refund their medical expenses 45.7% mostly from government social benefit more than free for the elderly or low-income benefit or health cards (Chooprapawan, 1997).

4) Ability to manage daily life: Most female elderly are able to do the house work more than males, one third are still able to see clearly, sexuality is reducing as age is increasing, males have more sexual desire than females, and also is higher in the rural areas than in the urban areas. By regions the elderly in the central region have lower sexual contact than other regions, (Chooprapawan, 1997). The elderly in the rural areas prefer to drink more alcohol than in the urban areas, males drink 3-4 times more than females, especially in the northeast and the north, the rate is higher than in other regions. Around one fourth drink at least once or twice a week. Bangkok elderly drink alcohol every day, more than in other regions, followed by the southern elderly, the lowest is the northern elderly.

5) Eating habit: Most of the elderly have at least 3 meals a day and each meal contains five complete groups of food. Some only have one meal a day. The portion of 5 groups of food varies such as the elderly in the urban areas take meat more than the rural areas. Having fish is similar between the urban and the rural areas; both groups take fruits more than other types of food. The urban elderly drink fresh milk, tea, coffee, and carbonated soft drinks more than the rural elderly and females drink less than males. Comparing between regions, it found that the Bangkokians take beef, drink fresh milk, tea, and coffee almost every day, which is higher than in other regions. The central elderly take fruits proportionally higher than other regions. The southerners take more fish than other regions; the northerners take fresh vegetables more than other regions. The elderly drink carbonated soft drink almost every day or every day around 10% which mostly are in the central region and Bangkok (Chooprapawan, 1997).

6) Exercise: Males aged 60 and up have regular exercise more than female elderly and the rural elderly exercise more than the urban elderly, while praying and meditating regularly among the elderly is as high as 62.8% (Chooprapawan, 1997).

4.3 Possible factors of longevity in Thai society

This part reviews the various possible factors for improving health and aging of population. The explanations focusing on the five main themes including demographic transition, medical and health care development, economic development, educational development and lifestyle changes. The details are explained as below.

4.3.1 Demographic transition

1) Low fertility rate: The dramatic declines in fertility rate have taken place in Thailand, during the year 1960, as the total fertility rate in Thailand was 5.1 children per woman and continuously decreasing to 1.9 in the year 2000. The data from the Reproductive Health Division, Ministry of Public Health illustrates that at the year 2008, the fertility rate in Thailand is 1.64 (Reproductive Health Division, 2005). These changes are the successful outcome from the national population policy and family planning programs.

Family planning in Thailand had been announced since the Third National Economic and social development plan (1972-1976). Easy access to all kinds of contraceptive measures even in remote areas and a "pull strategy" under the successful slogan "Having Many Children Will Make You Poor" have created a virtual reproductive revolution over the last three decades. The usage of contraceptives among married women were increasing from 15% in 1969 to 60% by 1981 and continuing to 80% in year 2000 (Knodel et al, 1984; Reproductive Health Division, 2005). According to this policy, the population growth rate declined more than three times: 3.3% in 1970 to 0.8 in 2006.

Apart from contraception, delayed marriage, single status and divorce are directly affected to the decline of the fertility rate (Population Reference Bureau Staff, 2004; Prachubmoh & Mithranon, 2003). Thailand is now facing with the rising proportion remaining unmarried. The data found that the proportion of the unmarried females aged 20-24 are raising from 38% to 56% in year 2000 and the mean age at marriage increase from 24.4 years to 27.2 years for males and from 22 years to 24 years for females. Moreover, in case of married persons, the numbers of divorce are dramatically increased approximately 2 times from 46,953 cases in year 1993 to 91,155 cases in year 2006. All these trends might be together lead to increase childlessness.

Abortion is also significant to decrease the fertility rate. As abortion in Thailand is against moral principles and main regulations of Buddhism, not to mention its illegality, then the validity of abortion statistic in Thailand is not available, anyhow one estimate suggests that, in the late 1970s, at least 300,000 illegally induced abortions were performed in Thailand, mostly found in rural areas (United nation, 1999). For spontaneous abortion, the survey in year 1996, approximately 1,711,500 reproductive females (ratio 1:5) lost their children before giving birth (Chareonthaithawee, 2005). Anyhow, either induced or spontaneous abortions reduce the numbers of new child born as well as fertility rate declines in Thai society.

Moreover, sexual preferences such as gays or lesbians in term of same-sex couples and marriage also play the important factor of low fertility. The general director of department of health pointed out that homosexuality are dramatically increasing especially in the group of man love man which is reducing the opportunity of marriage and decreasing the reproductive population group in

Thai society (Post Today, 2008). The research from Ked-Sawang (2003) indicated that 100% of Thai homosexual, 88% are single and 12% are married with women, 7% of them are divorced, and only 5% have children and still living with their wives.

2) Low mortality rate: Thailand has experienced a significant reduction in mortality, from a fairly constant level of 30 per 1,000 in the first half of the century (Goldstein, 1960) to 14 per 1,000 in 1960 and more down to eight per 1,000 in year 2000. The maternal mortality ratio (MMR) in Thailand has declined from 374.3 per 100,000 live births in 1962 to 9.8 per 100,000 live births in 2006 as well as the infant mortality rate (IMR, per 1,000 live births) rapidly declined from 84.3 in 1964 to 40.7 in 1984 and to 11.3 in 2005-2006. The child mortality rate (among children aged less than 5 years per 1,000 live births) has insignificantly changed from 12.8 in 1990 to 10.4 in 2006. These might be the result of governmental and non-governmental policy where they tried to improve and develop medical technologies for the Thai population, which shift the predominance of infectious and parasitic diseases to a profile of chronic, degenerative aliments associated with grater numbers of elder persons (Shrestha, 2000).

4.3.2 Medical and health care development

Medicine and public health in Thailand have made great strides in the twentieth century. Improvement in techniques and increase in knowledge have been constantly accelerated. Using local wisdom for curative, prevention, and promotion in the past was changed to the system which depend on modern medical and health service system. In the new systems, various disciplines of health personal have been produced, and health care technologies procured and developed according to new approaches.

The first importance to consider here is the health resources which are including number of doctors and nurses who are significantly important person to care for health and wellness of the Thai population. There are 14 medical schools in Thailand: (13 public and 1 private). Beginning in 2007, there will be another four state-run universities that will be producing medical graduates. The newly graduated doctors each year are approximately 1,600 and reaching up to 1,752 in the year 2006 (Faramnuayphol et al, 2008). Totally, there are 35,942 medical doctors registered at the Medical Council (Medical Council of Thailand, 2008). While the 74 nursing colleges and institutions (64 public and 10 private) have offered the nursing training programs, where each year more than 4,000 professional nurses can finish their education during a year (Faramnuayphol et al, 2008). The ratios of doctor and nurse to population is 3,182 and 613 at year 2005 which the ratio was decreased from 3,406 and 960 in year 1998, respectively (Bureau of policy and strategy, 2006). Anyways, the doctor's resignation also should be mentioned, as the result in year 2006; approximately 50% were resigned from the civil services to private sector or to other occupations. Even though shifting to the private sector does not mean a loss in

the entire system, the impact is not minimal as most rural residents rely on public services (Faramnuayphol et al, 2008). Moreover, the specialties of medical doctors (residency training) are also significant for health and well-being of the people. There has been also a rising trend for doctors in Thailand to undertake specialty training. In 2006, the proportion of doctors with special certifications was 77.5% of all medical doctors which was higher approximately 1.4 times by the year 1998 (Medical Council of Thailand, 2008).

Another possible influence of longevity is health prevention such as vaccination programs and screening in high a risk population. The program of vaccinations was constantly evaluated for Thai population to eliminate epidemiological diseases and outbreak. For example, an infectious disease like smallpox was totally eradicated from Thailand since 1962 by the vaccination (National Vaccine Committee Office, 2005). Moreover, after routine immunization began in 1977, the incidence of reported diphtheria was decreased from 98% to lower than 0.1 cases per 100,000 persons in 1990. (Tharmaphornpilas et al, 2001) as well as polio disease which is nearly free from Thailand as the last case was found in the year 1997 (WHO, 2004; Cooperative office for polio elimination, 2007). It might be said that Thailand, nowadays, is the most successful country for the vaccination control compared with other Southeast Asian countries, where more than 90% of inhabitants received complete basic vaccination by the government, while another can be accessible from the private hospital (National Vaccine Committee Office, 2005). According to an importance of vaccine on health prevention and control, the National Vaccine Committee Office was established in year 2001. Not only the prevention of epidemiological diseases which leading cause of illness for Thai people such as tetanus, tuberculosis, whooping cough, hepatitis B, measles, German measles, mumps, Japanese encephalitis and rabies, but also the innovation for new vaccines such as HIV, malaria or emerging infectious diseases like influenza, severe acute respiratory syndrome (SARS) or bird flu are also the area of their research.

Screening test in the high risk population is also significant for mortality and longevity as the proverb “prevention or early detection is better than cure”. For some types of illness and diseases, screening test may allow the preclinical detection of beginning precursors of a cause, and thus a screening program could result in reductions in both incidence and mortality. Screening test in Thailand sometime is coded as national policy: Thalassemia screening was established in the 8th national economic and social development plan during the year 1997-2001 to detect the carrier of new married couple, and decrease the risk of Thalassemia in the new child born (Fucharoen et al, 1991; Siwadul & Petphun, 2000; Jaovisidha et al, 2000). For the middle-aged group, especially Thai women, the cervical cancer is the most common cancer for them and it became now the third leading cause of death among Thai population. The effectiveness and the coverage of screening by Pap smear were done in many part of Thailand, either urban-rural areas or community dwelling-institutional settings to reduce the incidence of advance stage of cervical cancer and reduce the death risk of them (Chiamchanya et al, 2004; Suwannarurk et al, 2004;

Wanpira & Tanwandee, 2005). Screening test for middle-aged men is also activated such as hepatocellular carcinoma (HCC) (Viriyaporn et al, 2006). Screening for the elderly is also possible. Generally, physical health problems for the aged such as diabetes, chronic obstructive pulmonary disease (COPD), prostate cancer, and cataract are investigated (Toochinda et al, 1997; Maranetra et al, 1997; Singalavanija et al, 2001; Tantiwong et al, 2002; Hatthachote et al, 2005)

Special attention on the aging population, the institute of geriatric medicine was established in 1992 in Department of Medicine, Ministry of Public Health to increase health and quality of life of the Thai elderly (Institute of geriatric medicine, 2005). The two important policies are the elderly clinic for special treatment and rehabilitation, and the other is elderly club for health promotion and prevention (Amatayakul & Viwatpanich, 2001). The survey from the institute of geriatric medicine found that the elderly club is established approximately around 73% from the total 5,231 districts, while only 54% of the elderly clinic are setting in the hospitals, where those outcomes are not enough to provide the services and supports the elderly who are increasing every year. Then the next goal is that elderly club and elderly clinic cover 100% in each district and hospital. The NGOs also have a significant influence to support the elderly club policy. The Thai National Council on Aging is the big organization to increase the network of elderly club. At the end of the year 2006, 11,398 of elderly clubs are the network and support from this council (The Thai National Council on Aging, 2006). There are many researches found that the activities in elderly club, which include social and cultural participation, recreation activity, health education, sport and exercise, creating supplementary income, travel and field visit, volunteer work, funeral fund, etc., are significant to improve physical, mental, social, and spiritual well-being of the elder. (Chaisee, 1995; Siripanich, 1997; Lopanich,1998; Palungrit, 1998; Boonkhamsaen, 2005).

Lastly, an attention is laid down on drug consumption. In 2005, drug consumption of Thai people accounted for approximately 103,517 million baht in wholesale prices or 186,311 million baht in retails prices, or 42.8% of the overall national health expenditure, where two-thirds of the consumption was done by the decision or advice of health personals and trend of the prescriptions seem to be more escalating. Especially, in group of antibiotics, painkillers, and health tonics where this proportion is rather high, compared with only 10% to 20% in developed countries (Ekachmpaka & Wattanamano, 2008). Buying medicament at the pharmacy without prescriptions can be possible in Thailand, especially in rural or remote areas by means of self-treatment. The medicament is good and effectiveness to improve the health condition, but irrational use and over-use of drugs should be concerned and investigated.

4.3.3 Economic development

In macro system, over the three decades before 1997, the average annual economic growth of Thailand was higher than 7% and the gross domestic product (GDP) per capita increased 28-fold, in particular after 1986. After the

1977 economic crisis, the annual economic growth declined to -1.7% in 1997 and -10.8% in 1998. and the crisis drastically affected the GDP per capita. So Thailand has adopted a number of monetary and financial measures to resolve the problems, resulting in a positive growth of 4.2% in 1999 and 7.1% in 2003, but a drop is expected to 4.5% in 2007 (Ekachmpaka & Wattanamano, 2008).

In micro system, the poverty situation in Thailand has been a positive trend; the proportion of people living with poverty dropped from 57% in 1962 to 14.7% in 1996 as a result of the rapid economic growth during that period. But after 1997 economic crisis, the poverty prevalence rose to 20.9% in 2000, but dropped to 9.6% in 2006 due to economic recovery. However, even although the poverty prevalence has been steadily declining, the proportion of poverty in the rural areas is three times greater than urban areas (Ekachmpaka & Wattanamano, 2008).

According to macro and micro economic it seems to be better than in the past. The trend of good economic and rising income are the main reason to access better food, approving housing condition and medical health care (Costa, 2005). Moreover, after Thai economic has been developed, the annual budget expenditures from Thai government are increasing in every year, especially the budget expenditure of community and social services, which are including five main programs consisting with education, health, social security and welfare, housing and community amenity, and religious culture and recreation. The annual budget of this program was approximately, 2.27 milliard baht in year 1995 were increasing two times to 4.34 milliard baht in year 2005 (Bureau of the Budget, 2006).

There are many several researches confirm the association between economic security and adult health, quality of life, physical health, mental health, health perception, life satisfaction, and mortality (see more Jinuntuya, 1993; Kawachi et al,1999 Hyyppä & Mäki, 2001; Chen, 2001; Nyqvist et al, 2006). Thus, it might be clear that the combination between economical factors into health and well-being are related to longevity.

4.3.4 Educational development

The United Nations give an important explanation that more educated and better informed people live longer, and take more advantage of goods and services. It is also inferred that combined with a rising level of education, the adequacy and availability of medical care is improved, and the amount of substandard housing conditions is reduced (United Nations Development Program, 2000). Education may be related to health either as an indicator of income, of more positive early life experiences (including early preventive care), of patience or ability to delay gratification (and thereby avoid high risk behaviors such as smoking and excessive drinking), of grater knowledge and better ability to process information (and therefore avoid high risk habits), and of reduced stress and environment exposure (Costa, 2005).

Back to Thailand, during the past century has been vast changes in educational system, where more young generations are enrolling in school and advancing their education. The literacy rate can be used as the measurement for this section. The total literacy in Thailand was continuously increasing from 96% at year 1980 to 98% at year 2007, at the same period, the total adult literacy rate were growth from 88% and 94%. These welcome trends are likely to affect health and mortality of Thai populations.

Concerning to the significance of education on health, many studies find evidence of strong positive relationship between education attainments during the young age to health behaviors, health maintenances, quality of life, life satisfaction, food consumption, cognitive function, illness, morbidity, mortality, and abuse when getting older, which has been observed in many countries and time periods and for a wide variety of measures (Liang et al, 1980; Morganti et al 1988; Panawattanakul, 1991; Somboonsit, 1992; Jinunthuya, 1993; Shin et al, 2003; Oh et al, 2003; Tubtimtad, 2003; Thanakwang & Soonthorndhada, 2006).

4.3.5 Lifestyle change

Improving health condition of Thai population, not only medical technologies, economic or educational system change, but the lifestyle of Thai people is also transformed, which the possibly significant factors explain here may account for some of the recent improvements of longevity.

1) Food consumption: Vegetarian and healthy food become more famous again in Thai society since The Institute of Thai Traditional Medicine has been established in year 1989. The traditional food and traditional vegetable have been promoted into every level of Thai society, not only for the health reasons but also protect them against chemical or pesticide from the economic vegetable in farming system (Institute of Thai Traditional Medicine, 1999). Moreover, the concept of food detoxification from complimentary medicine is strongly distributed into Thailand as well as the alternative medicine such as Chinese medicine, homeopathy, food balancing theory are effecting to the new pattern of food consumption. These trends might be appropriated for the middle aged population group who try to skip the western or commercial food, and return to traditional and medical food. If they can keep and continue these patterns, in the long time might be increasing more health and wellness. On the other hand, for the aging people who consumed mostly local food or indigenous vegetables might be an other factor for their longevity.

Many laboratory researches found that traditional Thai vegetables are rich in antioxidant and beta keratin as well as high quantity of vitamin C, which are significant to increase immune and antibody effectiveness against cancer, for example 55.9% from 84 samples from the north, northeast, and south are high in oxidative activity (Butylated Hydroxyanisole equivalent (BHA eq.)>100 mg in 100 g WWB) (Trakoontivakorn & Saksitpitak, 2000), while Tocharus and colleagues investigate the 13 indigenous vegetables in the northern part of

Thailand, which are regularly consumed by the population inhabitants are effected on free radicals, especially, antioxidant potencies of Solanum trilobatun Linn. and Jussiaea repens Linn. are higher and upper range of the potent antioxidant and ascorbic acid. The mechanism of free radical inhibition of these plants may be due to radical scavenging. Hence, these indigenous plants seem to be contained compounds which might prevent many harmful processes in the body (Tocharus et al, 2000).

2) Standard of living: Thailand, even announced itself as agricultural country on the one hand, but on the other hand is urbanized. The standard of living is more and more dramatically developed throughout the country. There are many social indicators to measure those situations, but clearly might be the housing and living condition and percentage of slums.

Starting with housing and living condition, it might be said that after the National Housing Authority (NHA) was established in the year 1973, the Thai populations who got low or medium income had more opportunities to have their own housing, which was supported and provided by the NHA projects. The significance of NHA was not only to build the flats or the houses in the good condition where the costs are lower than the market price, but also relocated slum communities and environment in order to assist people in achieving better living, social and economic conditions. From 1973 until 2006, the NHA has carried out housing development work totaling 544,686 housing units. Almost 75% of those were located in Bangkok and vicinities, and the remaining 25.8% were in the other provinces (National Housing Authority, 2005). The successfulness of NHA not only provided the opportunities for the better life of Thai population, but also improving social and environmental condition. Especially, slum communities that extremely decreased during the year 1990 from 1997.6 slum inhabitants per thousand to 252.9 or shape down approximately eight times at the year 2001 (The United Nations Human Settlement Program, 2003). By the year 2009, approximately 600,000 housing units will be completed as the emergency policy from the government to develop the quality of life and well-being of Thai population.

Anyways, it has been clearly demonstrated that housing conditions influence the incidence of indoor air quality, communicable diseases, and certain other respiratory diseases such as pneumonia, tuberculosis, influenza, streptococcal infections, and certain childhood diseases like measles, mumps, and chicken pox which may be either air-borne or contact infections. Moreover, there are some evidences that housing conditions are affected to physical ailments and mental illnesses (Pond, 1957; Chapin, 1951; Lawrence, 2004). Thus, to live in good housing conditions bring more health and longevity.

3) Improving sanitation: Sanitation and hygiene in Thailand is not far from the truth to develop, but takes time to emerge. For example, the Thai government spent over five decades to achieve a success in expanding sanitation coverage. Which 98.94% of the population nationwide had sanitary latrines or toilets in

2005 and soon will be reached the goal of 100% of sanitary toilet (Water Supply & Sanitation Collaborative Council, 2008). Concerning to the water and food sanitation, in the former times, diarrhea, amoebic dysentery, typhoid, food poisoning, hepatitis-A are the result of illness from poor drinking water and became the significant cause of death for Thai population. To control this burden disease, the universal precaution access to safe water and sanitation such as boiling, filtering before drinking, safe pipe water were the implemented activities into every social classes of Thai population has been promoted for more decades. Nowadays, 97.4% of Thai households can access the improving drinking water, which dramatically increasing when compared with 0.1% in year 1960 (Ekachampaka & Wattanamano, 2008). The water quality development, for sure can safe them far from communicable diseases, illnesses, and mortality outbreak from drinking water

The new trend of drinking water problems in Thailand is not the infectious diseases as before, but increasing the chemical contamination, mostly found in domestic bottled water and ice cubes where the urban or rural Thai people can be accessed in the grocery stores or local markets. This is mainly because of contamination with bacteria and chemicals such as cadmium, iron, lead and manganese, including unacceptable physical quality, i.e. turbidity and color levels being higher than maximum allowable standards. Regarding the quality of bottled water, according to a survey conducted by the Food and Drug Administration and some Provincial Public Health Offices during 1995-2006, 71.7% of the water samples tested met the drinking water standards; no differences in terms of contamination were found among the water with and without FDA-licence logo. It was also found that only 57.3% of ice-cube samples tested met the standard (Ekachampaka & Wattanamano, 2008). With this kind of new problem, the people who are normally buying substandard drinking water are exposed to a risk of gastrointestinal diseases, demands a quality control from the government as well as the promoting GMP (Good Manufacturer Practice).

The next consideration goes to food sanitation; several campaigns from the government had been emerged. The campaigns such as “healthy market” and “clean food good taste” have been promoted and announced to the owner of the markets, the sellers, owner of the restaurants and the cooks as well as in group of street vendors to pay more attention on the sanitation and quality of their products. The criteria of the checklists have been assessed, and the certificate guarantee of healthy market or clean food good taste will be provided by the Ministry of Public Health, if passing the total criteria to ensure that the Thai people will be protected by the basic requirements of sanitary legislation and consumer protection.

All above, might be said that the successfulness of improving sanitation or behavioral changing are obviously effecting from governmental policies and law enforcements. Department of Health, Ministry of Public Health take responsibility for the sanitation throughout the country, setting up the national sanitation plan and policy, and budget lines to sanitation, putting into place a good coordinating and

monitoring system as well as sanitary legislation which directly are affecting to improve quality of life, health and well-being.

4) Decrease smoking: Another changing lifestyle of Thai people is the reduction of tobacco consumption. As it is well known, that smoking is related to serious illnesses and cancer. Approximately 42,000 people die each year (6 deaths per hour) from smoking (Vateesatogkit, 2004). In 2006, Thai people totally smoked 36, 367 million cigarettes or an average of 87.6 packs per person a year, rising from 71 for 2001-2002 and more widely spread among the youth (Ekachmpaka & Wattanamano, 2008). Anyways, Ministry of Public Health also tries to promote the negative impact from smoking to the health, especially the young female as they are more increasing for new smokers as well as providing the consultation and suggestion how to stop smoking. The data from health survey on the proportion of Thai smokers are found in the paper of Ekachampaka and colleagues (2008) which indicated that the proportion of Thai smokers were approximately 30% in year 1976 and decline to 20.3% in the year 2006. In the same direction, the elderly smokers who are addicted for long time when they were young also decreasing from 23.3% in year 1999 to 19.2% in year 2006 (Research institute and development for Thai elderly, 2006).

5) Decrease alcohol consumption: Alcohol abuse is number one cause of burden of disease among males and number nine among females in Thailand. In Thailand, you also can see an increase of alcohol consumption. In the past decade, alcohol use rose from 721.8 million liters in 1988 to 1,604.3 million liters in 1997, a two-fold increase. After the economic crisis, alcohol consumption had a declining trend from 1,689.8 million liters in 1998 to 1,340.9 million liters in 1999. However, after the economic recovery in 2006, alcohol use appears to rise to 2,479.7 million liters (Ekachmpaka & Wattanamano, 2008).

A survey conducted by the NSO revealed a similar result of smoking trend is that the proportion of drinkers increased from 31.5% in 1991 to 35.3% in 2004, but dropped to 29.2% in 2006. Special attention on the elderly, Research institute and development for Thai elderly (2006) indicates that approximately 18% of the elder were regularly drinking alcohol, where males outnumber females and mostly were found in the northeast.

6) Increase exercising: Physical fitness is the one of essential factor for well-being. Unhealthiness of Thai population has long been a major of the government to spend a great deal of the budget to cope with this problem. The 2004 survey of the National Statistical Office revealed that only 29% of Thai people regularly exercised. To gain more the healthiness and protect the controllable illnesses, the Ministry of Public Health tries to integrate the exercise into the daily life as habitual behavior in every aged group. An announcement of “year 2002 is the year of health promotion” was emerged in Thailand and held the nation’s first “the power of exercise” event on the 23rd of November, 2002. At that day, 46,824 of Thai people participated in 61 minutes aerobic exercise, which was recorded by the Guinness book of world record. More or less, the

effectiveness from this policy and event was more increased the percentage of exercise in reproductive age (25-49 years) from 20% in year 2002 to 43% in year 2004, and 3.3% to 8.7% at the same year in elderly population group (The National Statistical Office, 2004).

Moreover, the promotion and support of exercises to the people are simultaneously across the country and organized four major campaigns on exercise for health by using several sources of public relations such as mass media, social marketing, health education and so on (Nakongmuang, 2004). Continuous support has also been provided to organize sports and exercise events, resulting in an increase in the number of people taking exercise from 0.3 million in 2002 to 8.6 million in 2003 and 43.1 million in 2004. As the MoPH set the target of the people participating in the third power of exercise for health campaign at 33 million, but in 2005 the number decreased to only 8.8 million (Ekachmpaka & Wattanamano, 2008).

For aging population, the positive effects from excises activities have been investigated. The experimental researches found that doing exercises of the elderly, only 3 times a week (12 weeks) and each session for half and hour, the grip strength, endurance in exercise, agility, flexibility of the spine, lung capacity are statistically significantly increased (Pombunmee, 1995).

Separating from the types of exercise, Tai Chi Qigong can be reducing dyspnea in elderly with COPD, improved the functional capacity among the elderly with coronary artery disease, controlling blood pressure among the elderly with essential hypertension, as well as effecting to the chest expansion and lung volume in the elderly people. Moreover, with Tai Chi Qigong at least can be healed the depressive symptom and insomnia in the elderly (Maungtoug, 2006; Sonphaiboon, 2005; Khui-apai, 2005; Buranruk, 2000; Pantharuksakul, 2002; Puthsri, 2004) Thai traditional Esan folk dance (Serng) as well as the arm swing exercise can also improved maximal oxygen consumption (VO2 max) and lung capacity of the elderly (Manimmanakorn et al, 2001; Sila, 2003; Petchan, 2006), while western aerobic dance can control the body weight, systolic blood pressures, vital capacity, flexibility, body fat percentages, and the flexibility of the knee joint of the female elderly (Junhasiri, 1993). The study of Klin-ual (2001) indicates that slow walking exercise is effectively encouraging the development of physical fitness and well-being.

According to the increasing of the old age, poor exercise capacity or early dyspnea in aging population are found, which is mostly related to the respiratory muscle recruitment when elevated arm or leg exercise. The inspiratory muscle training (IMT) can be solved and improved exercise tolerance in the elderly population. The study of Laoakka (2007) found that continue training 5 days per week for 8 weeks, the maximum inspiratory mouth pressure (MIP), chest expansion (CE), abdominal expansion (AE) are significant with IMT and elevated arm exercise. The continuous training might be helping the elderly to exercise a bit longer.

4.4 Conclusion

The trends and situational explanations as above are all associated to each other, have positive affect, and continuously dramatic changing in Thai society. To make it clearer between the increasing trend of proportion of aging and possible factors of longevity, the partial correlation is applied to use as the statistical measurement for this part.

The importance things to mention here is that, this part is just only the primary way to explain the correlation between trend of aging population and possible factor which dealing with the numeric and statistical data based. The partial correlation is applied as the way to reduce the bias conclusion of the researcher. Anyways, even the ways to try for the explanations are confronted with several limitations. Mainly is the incompleteness of the data base system in that some surveys are not carry on every year while another is the ranges of times of the data in each factor are inconsistent. To solve this problem the statistical fulfillment from different organizations are applied to gain more reliability of data as much as it should be. According to the limitation of statistical numeric data, in some factors, the partial correlation is unable to compute as at least the one of the variables is constant (Table 4-2)

The 14 possible factors of longevity for this evaluation are including 1) the percentage of aging population 2) crude birth rate 3) crude death rate 4) number of doctors 5) number of professional nurse 6) drug consumption 7) economic growth 8) improving poverty 9) literacy rate 10) improving sanitation 11) improving drinking water 12) decreased smoking 13) decreased drinking alcohol, and 14) making more exercise. The numeric data uses here are employed from several resources, as show in the table 4-3 which focusing during the year 1994-2006.

At the end of the conclusion, the table 4-4 illustrates that the increasing of the proportion of aging people are statistically significant correlation in the same direction at the 0.01 level, including improving hygienic toilet (r=1.00), drug consumption (r=0.99), number of doctors (r=0.88), crude death rate (r=0.84), and number of professional nurses (0.84). But the correlation in the different direction with crude birth rate (r= -0.83).

Moreover, improving the poverty (r=0.99), literacy rate (r=0.82), and decreased smoking (r=0.70) are correlated with the increasing proportion of aging people at the 0.05 level.

For the other factors such as economic growth, improving drinking water, decrease drinking alcohol, and making exercise are also associated with the increasing proportion of aging people, but none statistical significances.

Table 4-2 Statistical data of population aging and possible factors of longevity

Factor	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Population aging (%)	7.8	8.0	8.2	8.5	8.8	9.0	9.2	9.5	9.8	10.0	10.2	10.4	10.6
Crude birth rate (‰)	16.3	16.2	15.8	14.8	14.7	12.3	12.5	12.7	12.5	11.8	13	13	12.7
Crude death rate (‰)	5.2	5.5	5.7	5	5.1	5.9	5.9	6	6.1	6.1	6.3	6.4	6.2
Number of doctors (N)	14,098	14,181	16,209	16,569	17,955	18,140	18,025	18,779	17,529	18,106	18,918	19,546	n.a.
Number of nurses (N)	51,058	54,262	54,207	56,366	63,708	68,008	70,978	77,008	85,392	91,570	95,834	101,465	n.a.
Drug consumption (%)	43	46	52	52	52	58	58	60	60	64	64	64	64
Economic growth (%)	n.a.	8.28	5.5	-1.7	-10.8	4.2	4.6	2.1	5.4	7.1	6.3	4.5	5
Improving poverty (%)	81.1	n.a.	85.3	n.a.	82.5	n.a.	79.1	n.a.	85.1	n.a.	88.8	n.a.	90.4
Literacy rate (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	98	n.a.	n.a.	n.a.	n.a.	98.1	98.1
Improving sanitation (%)	n.a.	80	n.a.	n.a.	n.a.	n.a.	90	n.a.	n.a.	n.a.	99	n.a.	n.a.
Improving drinking water (%)	n.a.	97	n.a.	n.a.	n.a.	n.a.	99	n.a.	n.a.	n.a.	99	n.a.	n.a.
Decrease smoking (%)	74.5	n.a.	76.6	n.a.	n.a.	79.5	n.a.	79.4	n.a.	78.4	78.9	n.a.	79.7
Decrease drinking alcohol (%)	n.a.	n.a.	31.6	n.a.	n.a.	n.a.	n.a.	32.6	n.a.	35.5	35.3	n.a.	29.2
Making exercise (%)	n.a.	n.a.	n.a.	2.7	n.a.	n.a.	n.a.	n.a.	3.3	n.a.	8.7	n.a.	n.a.

Table 4-3 Sources of statistical data

Possible factors of longevity	Sources
Population aging	Department of Local Administration, Ministry of Interior
Crude birth rate	Ministry of Public Health, 1994-2006
Crude death rate	Ministry of Public Health, 1994-2006
Number of doctors	Medical Council of Thailand, Ministry of Public Health
Number of professional nurses	Nursing Council of Thailand, Ministry of Public Health
Drug consumption	IMS Company Thailand
Economic growth	Office of the National Economic and Social Development Board (NESDB).
Improving poverty	Bureau of Economic Development & Income Distribution, Office of the National Economic and Social Development Board
Literacy rate	UNESCO
Improving sanitation	The United Nations
Improving drinking water	The United Nations
Decrease smoking	National Statistical Office (Health and Welfare Surveys 1996, 2001, 2003 and 2006) National Statistical Office (Population's Tobacco and Liquor Consumption, 2001 and 2004)
Decrease drinking alcohol	National Statistical Office (Health and Welfare Surveys 1996, 2001, 2003 and 2006) National Statistical Office (Population's Tobacco and Liquor Consumption, 2001 and 2004)
Making exercise	National Statistical Office (Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1997 and 2002) National Statistical Office (Report on Exercise Behaviour of People Aged 11 Years and Above, 2004)

Table 4-4 The correlation table between population aging and possible factors of longevity

Factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Population aging	1.00													
Crude birth rate	-0.83**	1.00												
Crude death rate	0.84**	-0.74**	1.00											
Number of doctors	0.88**	-0.84**	0.66**	1.00										
Number of professional nurses	0.99**	-0.78**	0.86**	0.81**	1.00									
Drug consumption	0.96**	-0.90**	0.86**	0.91**	0.92**	1.00								
Economic growth	0.23	-0.22	0.66**	-0.15	0.29	0.30	1.00							
Improving poverty	0.70*	-0.31	0.65	0.37	0.59	0.66	0.37	1.00						
Literacy rate	0.99*	0.80	0.92	1.00**	1.00**	1.00**	0.33	1.00**	1.00					
Improving sanitation	1.00**	-0.81	1.00**	0.95	0.99*	0.99	-0.56	1.00**	.(a)	1.00				
Improving drinking water	0.89	-0.99*	0.87	0.98	0.80	0.94	-0.89	.(a)	.(a)	0.88	1.00			
Decrease smoking	0.82*	-0.90**	0.89**	0.97**	0.70	0.90**	-0.41	1.00**	.(a)	.(a)	.(a)	1.00		
Decrease drinking alcohol	0.07	-0.34	0.27	0.63	0.94**	0.29	0.44	-0.19	.(a)	.(a)	.(a)	-0.12	1.00	
Making exercise	0.75	-0.40	0.69	0.95	0.77	0.81	0.66	1.00**	.(a)	.(a)	.(a)	.(a)	.(a)	1.00

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

(a) Cannot be computed because at least one of the variables is constant

CHAPTER 5

GENERAL CHARACTERISTIC OF NONAGENERIANS

The content in this chapter contains the results of basic characteristics and physical body composition of nonagenarians in general. The presentation of the results is arranged in two main sections. The first section presents the general characteristics and the demographic factors of the respondents including age group, residence, ethnical background, religion, marital status, history of main/longest job, and educational qualification. The second section deals with body composition or physical characteristic of nonagenarian incorporated with the details of weight, height, body mass index, waist, hip, and waist-hip-ratio.

5.1 General characteristic of nonagenarians

Table 5-1 illustrates the general characteristics of the respondents. The sample is divided into five sub-groups with reference to age, including 90-91 years, 92-93 years, 94-95 years, 96-97 years, and 98-99 years age group.

The sample comprised of 35 nonagenarians aged 90 to 98 years. There were 14 males and 21 females, with standard deviation of 92.34± 2.24 years. The mean age of males and females were 92.07 ± 2.20 years and 92.52 ± 2.31 years, respectively. The nonagenarian between ages of 90-91 years and 92-93 years constitute the largest proportion of the subjects (31.4%), whereas the nonagenarian between the ages of 96-97 years and 98-99 years (2.9%) are the smallest proportion of the subjects.

Approximately 62.9% of the nonagenarians are living in rural whereas 37.1% in urban. According to the ethnical diversity in Mae Sariang, there are five ethnic groups found from this research, which could be separated in to two main groups, first is the Thai national inhabitants while the others are the international migrant population. The local population, Karen and Lawa ethnicities are associated with Thai national inhabitant group and sharing a percentage of the total in 40%, 34.3% and 17.1% respectively. The Myanmar and Chinese nationalities constitute 5.7% and 2.9% of the international migrant population group.

All the respondents are followers of Theravada Buddhist, which is the state religion. Moreover, most of them also pay respect to the supernatural power. The local population held ancestors, household spirit and spirit shrine as extremely pious and highly respected entities while for the hill tribes female tree, water and jungle spirit are more esteemed and valued.

Table 5-1 Percentage distribution of the general characteristics of the nonagenarians

Characteristics (N=35)	Sex		
	Male	Female	Total
Age			
90-91 years	14.3	22.9	37.1
92-93 years	20.0	17.1	37.1
94-95 years	2.9	14.3	17.1
96-97 years	-	5.7	5.7
98-99 years	2.9	-	2.9
Total (Percentage)	**40**	**60**	**100**
Place of resident			
Urban (Mae Sariang)	17.1	20	37.1
Moo 1	5.7	8.6	14.3
Moo 2	-	2.9	2.9
Moo 3	2.9	2.9	5.7
Moo 4	2.9	-	2.9
Moo 6	2.9	-	2.9
Moo 9	2.9	-	2.9
Moo 12	-	5.7	5.7
Rural (Bahn Gad)	22.9	40	62.9
Moo 1	2.9	5.7	8.6
Moo 2	5.7	5.7	11.4
Moo 3	2.9	5.7	8.6
Moo 4	2.9	-	2.9
Moo 5	2.9	-	2.9
Moo 6	-	2.9	2.9
Moo 8	-	2.9	2.9
Moo 9	2.9	5.7	8.6
Moo 11	-	5.7	5.7
Moo 12	-	2.9	2.9
Moo 13	2.9	2.9	5.7
Total (Percentage)	**40**	**60**	**100**
Religion			
Buddhist	40	60	100
Total (Percentage)	**40**	**60**	**100**
Ethnical background			
Local population	22.9	17.1	40
Karen	11.4	22.9	34.3
Lawa	5.7	11.4	17.1
Myanmar	-	5.7	5.7
Chinese	-	2.9	2.9
Total (Percentage)	**40**	**60**	**100**

Table 5-1 (Continued) Percentage distribution of the general characteristics of the nonagenarians

Characteristics (N=35)	Sex		
	Male	Female	Total
Marital Status			
Married	22.9	2.9	25.7
Widow	17.1	57.1	74.3
Total (Percentage)	**40**	**60**	**100**
History of Main/Longest Job			
Governmental sector	2.9	2.9	5.7
Commercial sector	2.9	25.7	28.6
Workforce sector	5.7	2.9	8.6
Agricultural sector	28.6	28.6	57.1
Total (Percentage)	**40**	**60**	**100**
Educational Attainment			
Formal education			
Less than Pratom 4 (grade 4)	-	5.7	5.7
Prathom 4 (grade 4)	8.6	5.7	14.3
Non-formal education			
Temple school	2.9	-	2.9
No schooling	28.6	48.6	77.1
Total (Percentage)	**40**	**60**	**100**

The nonagenarians are married: 74.3% are widow and 25.7% living with their spouse. This research found that the percentage of widows (57.1%) is higher than widowers (17.1%). This result corresponds to the 2002 survey of elderly in Thailand conducted by the National Statistical Office (NSO, 2002). In that survey, the proportion of widows was higher than widowers, i-e, 39.85% against12.42 % respectively.

For the type of occupation, the nonagenarians were asked to answer a group of question regarding the longest of work history. For those who reported that they are still working or had worked during their adulthood, questions regarding the type of main or the longest job were elucidated. 57.1% of the sample is engaged in agricultural sector that has long been the major occupation of Thai people. The second category, 28.65 are involved in commercial sector and merchandise. The third category constitutes laborers who formulate 8.6% of the total respondents; mostly engaged in agricultural workforce. Lastly, only a small proportion of the sample (5.7%) has worked in governmental sector, one policeman and one teacher.

The majority of the nonagenarians (77.1%) had no schooling. It should be noted that in Thailand 90-100 years ago, education sector was not established. In

nonagenarian's generation, the educational system could be divided into two categories. The first was informal education, given in the temple provided by a Buddhist monk. This kind of education was given to men only. The students can be separated into two groups, first if the Thai males at 20 years of aged and became to be a monk by the ways of traditional and cultural practices. Normally, every young Thai man, before he starts his own family, is expected to spend a period of study and reflection in the temple for a minimum three months, to pay gratitude to their parents. The second group includes boys whom their parents sent to be novice or temple boy. Basically, reading and writing in Thai, Pali, and Sanskrit instruction are taught. It does not provide for occupational training, which is generally handed down within the family or acquired through an apprenticeship. On the other hand, among women literacy seems to be harder to access. Generally, women learn how to be a good housewife; cooking, handicraft, and household management are practiced with their mother or female cousin at home.

Second is the formal education, which is provided by the specific teacher, within a school building and official timetable. The basic structure and schooling accessibility of this kind are mostly profited by the elite group, not the ordinary population, because these schools are established only in capital city and major areas. An elementary mathematics, Thai grammar and Thai writing as well as Thai literature are taught as the principal knowledge for this school type.

The research shows that there are only five out of 35 nonagenarians (three males and two females) or 14.3% graduated from the formal educational system in prathom four. The two females or 5.7% graduated lower than prathom four, whereas only one male or 2.9% had an education from the temple school.
From the emic point of views, there are several reasons to explain factors leading to no schooling of nonagenarians: the details are as followed

1) Agricultural reason and family enforcement: In social and cultural context of Mae Sariang at that time when they were young, the families of most of nonagenarians were engaged in agricultural sector. The family needed workforce. For this reason, 5.7 % of female nonagenarians had and early quit from their classroom i-e at grade three to help their parents in the rice field, which is shown above in table 5-1. Moreover, they said that their parents believed that educational knowledge is not the best tool to increase social values, condition, mobility and status. The meaning of life actually refers to how much money one can save from the living cost? Also how much money one gets from ones agricultural product? Education did not make sense to their parent if they had to pay for everything. The nonagenarian were either requested or forced by their parents to leave their student life and become rice agriculturist. This attitude adversely affected educational opportunities available to others.

2) First child's position in the family: Normally Thai families are characterized by extended family system consisting of several generations living under one roof. In each clan, the first child born is an important person who plays a significant

role to support their family. A sense of responsibility is also inculcated in early childhood (Office of the prime minister, 2000). They are assigned certain duties according to age and ability; boys are usually assigned outdoor duties. These tasks include feeding livestock, hunting, fishing, providing supplementary incomes, gazing the animals in nearby pastures, and helping the parents in the rice fields, By contrast, girls are usually appointed for indoor work, for example, taking care of younger brothers and sisters while parents are at work in the field (Office of the prime minister, 2000). When both of them grow older, the supportive responsibilities increase. According to the several obligations and family's anticipation, the nonagenarians who are the first child usually sacrificed learning opportunity to the younger siblings and laid down on the family's activities with their parent.

3) Sex and gender inequality: Since the Thai society is predominantly patriarchal, there exists gender discrimination with reference to education. There are numerous factors leading to gender inequality resulting in a low enrolment in schools. Few factors that became explicit through the research are as follows:

- Gender role: Generally, the females have to stay at home or work in the field under superintendence of the parent and family. Education opportunities are available to men only. The family financial position and children determine women's status and not her education. They had to work and stay at home with their parent, in the same house until they arrive reproductive age. The five female nonagenarians explained that they neither went outside the village for individual reason nor to school for education as instructed by their father. However, their fathers explained that they forbid for safety reasons. Sending the young girl to school alone was not safe and created anxiety for the family.

- Buddhism and Patriarchy: As mentioned above only Thai men are ordained to education and resources during novice and monk period while girls do not have the same opportunity. Thus, the girls cannot go to the monastery for the informal education. When the informal education takes place in the temple under responsibility of the monk, it is unsuitable for women to enroll. Because of the serious specification and cultural taboo of Buddhist law which clears that a monk cannot directly touch or be in close contact with women. Two female nonagenarians in urban area who had no schooling said that they had no opportunity to learn even though there is a temple school in which they live, the reason is gender differences in Buddhism. Anyhow, the research found that there are only 2.9% of males participating in the temple school.

4) International migration: According to this research there are 2.9% Chinese migrants and 5.7% from Myanmar. All of them had no schooling The Myanmar and Chinese migrated to Mae Mae Sariang when they were adolescent, while another Myanmar could not speak Thai and had no personal identification documents. No personal certificates, language problem and the process of adaptation to the new place are important factors of no schooling.

5) Early marriage life: The family is the significant unit of economic production and the sources of wealth, social learning, social status, and security for its member. The community is confronted with several factors that restrict the educational opportunity. Moreover, there was no role model of educated people to show how successful life should be achieved. For them successful life revolves around family component and agricultural production. Their life begins with childhood and continues till they marry at 15-16 years of age. Marriage refers to the deprivation of the right of education; no time to learn and no right to think. The accessibility laws and regulations of primary school determine that the student must be single.

6) Lack of accessibility and transport infrastructure: In the past, Mae Sariang scenery was not well established like the moment. The city is situated in a lush green landscape surrounded by ravine, mountain, forest, and Nam Yum River. The transportation in the village, district, and sub district was limited. To move from one place to another people used either cart or went by foot; both ways took time. It was impossible for children from the outskirt to go to the city for school every day. One of the nonagenarian in Bahn Gad sub district confirmed that it takes approximately five hours from her village to the city so they would not go to the school in the city. Another school was in Chiang Mai, a neighbor province (the complex city in the northern part of Thailand) which was a distance that took two days by cart. This discouraged the nonagenarians to go to school.

7) Lack of educational distribution and law enforcement: Although the Ministry of Education in Thailand was established since 1892. In the year 1921 an educational law enforced minimum educational requirement of Prathom 4 (grade 4). Nevertheless, the educational distribution during the last 100 years especially in wide and under-developing area like Mae Sariang is still limited. At that time there was only one formal school in Mae Sariang, which took the responsibility of all the children of the whole province. Moreover, the lack of educational law enforcement was not well concerned and regarded. One of nonagenarian who was a policeman at that time, remarked that 90 years ago, Mae Sariang was confronted with the border conflict and international refugee from the neighboring country. The political structure was more concerned with governmental security than individual education.

5.2 Body composition of nonagenarians

An accurate evaluation of body composition includes measuring of body parts by instrumental methods such as bioelectrical impedance analysis and dual X-ray absorptiometry (Perissinotto et al, 2002). Moreover, the various body composition analysis for aged people are reviewed by this research including; hydrostatic weighing, skin fold measurements, near infrared interactance, electro Lipo Graphy (ELG), Anthro-ElectroLipoGraphy (AELG) (Launer & Harris, 1996; Bemben et al, 1998; Sternfeld et al, 2002., Hughes et al, 2004.) Nevertheless, in clinical practice and in epidemiological surveys, body composition can be indirectly estimated by anthropometric measurements

including weight, height, body mass index, waist and circumstance as well as waist to hip ratio, which are non-invasive, easy and inexpensive to collect (Perissinotto et al, 2002)

The physical examination of nonagenarian is performed following the study of Perissinotto and colleagues. The body composition analysis of nonagenarians is based on numeral measurements including weight, height, body mass index (BMI), waist, hip, and waist to hip ratio. The body measurements are taken in the nonagenarian's house before the questionnaires are filled.

Body weight is measured in kilograms, calibrated to the nearest 0.1 kg. Subjects wore loose, none-fitting clothes; shoes and other extra clothing. Especially for the Karen ethnicity, the ornamental dressings were taken off before stepping onto the portable spring scale. The nonagenarians were asked to stand on the scale with help from caregivers or by themselves (if possible). Single reading was taken in order to minimize the discomfort of getting on and off the scale. The nonagenarians with paralysis are excluded from this measurement.

Height (cm) was measured with the nonagenarian standing erect with back against a flat surface, measuring the maximum distance from the floor to the head, without shoes. When the subject was facing directly ahead, a portable freestanding height measuring tape was used and measured to the nearest 0.1 cm. The nonagenarian with paralysis and kyphosis are lied down on the bed with one's side and measured along the lateral line from head to feet. Single reading is taken.

Body Mass Index (BMI) is calculated by the weight and height measure. (wt/ht2, wt=weight in kilograms, ht= height in meters squared). The classifications of BMI according to the World Health Organization (WHO) are as follows.

BMI	< 18.50 kg/m2	= Underweight
BMI	18.50 – 24.99 kg/m2	= Normal range
BMI	≥25.0 – 29.99 kg/m2	= Overweight
BMI	≥ 30.00 kg/m2	= Obese

Waist circumference (cm) is measured under clothing with the narrowest waist level. The measurement was girthed at the mid point between the lowest rib and the top of the hipbone (iliac crest), the record was done during exhale. A plastic measuring tape is used for this measurement.

Hip circumference (cm) is measured over minimal clothing at the level of the greatest protrusion of the gluteal (buttock) muscles. Again the plastic measuring tape was used for measurement.

Waist-hip ratio (WHR) estimates the proportion of fat stored around waist and hip inside the body, which is an important tool to determine overall health risk. WHR is calculated with the formula: waist girth divided by hip girth, both

expressed in centimeters. The outcome can be divided into two distinct ways; first is the pear body shape in which the hips are wider than shoulders because the body stored fat there and on thighs. Pear shaped bodies carry an extra weight below the waistline, and do not seem to have as high a risk of health problems like diabetes, heart disease, stroke, high blood pressure. While another results in an apple body shape. In this case body fat is stored around the middle - i.e. abdomen, chest and surrounds internal organs, such as the heart. Such a body shape is linked with health problems such as coronary heart disease, diabetes, stroke, high blood pressure and gall bladder diseases. The classifications of WHR are as follows;

Male			**Female**		
	< 0.85	= Excellent		< 0.75	= Excellent
	0.85-0.90	= Good		0.75-0.80	= Good
	0.91-095	= Average		0.81-0.85	= Average
	0.96-1.0	= High		0.86-0.9	= High
	> 1.00	= Extreme		>0.90	= Extreme

From the table 5-2 the mean weight of males is heavier than female, i-e, 42.33 ± 6.31 and 36.95 ± 5.87 respectively. The minimum of weight among male is 32 kilograms and maximum is 53 kilograms, while female is 25 kilograms minimum and 47.5 kilograms maximum. This shows significant statistical differences between males and females ($p<0.05$)

Table 5-2 Mean ± standard deviation of weight, height, BMI, waist, Hip, and WHR of nonagenarians

(N=32)*	Male	Min	Max	Female	Min	Max	P-value
Weight (kg)	42.33 ± 6.31	32	53	36.95 ± 5.87	25	47.5	.012*
Height (cm)	152.76 ± 11.40	120	169	144.46 ± 8.96	124	156	.061
BMI (wt/ht2)	18.36 ± 2.99	13.30	23.60	17.52 ± 2.57	12.93	22.90	.465
Waist (cm)	70.82 ± 6.87	59	87	72.78 ± 10.70	53	98	.598
Hip (cm)	83.67 ± 4.51	76	93	82.28 ± 6.12	69	94	.551
WHR	0.84 ± 0.05	0.77	0.93	0.87b± 0.11	75	1.18	.255

* Three cases are excluded due to the physical limitation with in paralysis and unable to measure for weight and height.

In the same direction, nonagenarian males are taller than females with means and standard deviation of 152 ± 11.40 and 144.46 ± 8.96 respectively. The minimum height for male is 120 centimeters and maximum is 169 centimeters. For female, the minimum height is 124 centimeters and 152 centimeters maximum, depicting negligible difference between the heights of the two genders. The mean BMI significant between males and females, the mean BMI for males and females are 18.36 ± 2.99 and 17.52 ± 2.57 respectively. The minimum BMI for male is 13.30 while maximum is 23.60. For female the minimum of BMI is 12.93 and maximum is 22.90. The mean value of waist circumference does not differ significantly between two genders (70.82 ± 6.87 in males and 72.78 ±

10.70 in females). Similarly, the mean value of hip circumference does not show significant differences between the two genders (83.67 ± 4.51 in males and 82.28 ± 6.12 in female). Moreover, there is little difference in the mean waist to hip ratio (WHR) between males and females (0.84 ± 0.05 in males and 0.87b ± 0.11 in females).

According to Lean who studied waist circumference and introduced the basis of defined upper levels of waist circumference of the people aged 25-74 years, the waist circumference should be 88 cm for women and 102 for men (Lean et al, 1995). For nonagenarians the measurement is still under debate. Anyway form this study, the mean waist circumference of nonagenarians are 70.82 for male and 72.87 for females which might support the ideas of the previous researcher who proposed that waist circumference decreases significantly with age (Perissinotto et al, 2002). This research has some limitations; it did not allow evaluation of individual changes for anthropometric characteristic.

Proportional differences of nonagenarians in BMI, underweight (BMI<18.5), normal weight (BMI ≥ 24.99) and, overweight (BMI ≥ 25.0-29.99) categories with reference to rural urban residence can be found in table 5-3. The majority of nonagenarians in both, urban and rural are found as underweight (69.2% and 63.2% respectively). The percentage proportion of normal weight in rural is double than urban (31.6% in rural and 15.4% in rural). In contrast, the overweight in urban are three times higher than rural (15.4% in urban and 5.3 in rural). This result explains that the nonagenarians in rural are more likely to perform outdoor physical activities such as gardening, farming and exercising than urban. The nonagenarians in urban areas are more likely to be engaged in social and cultural activities reflecting their social and economical situation and often not involved in physical exercise. For this reason the nonagenarians in rural areas are often have normal weight and lesser overweight cases compared to the urban areas.

Table 5-3 The percentage proportion of the body shape of nonagenarians categorized by BMI classification

Resident	Male	Female	Total
Urban (N=13)			
Underweight	30.8	38.5	69.2
Normal weight	7.7	7.7	15.4
Overweight	7.7	7.7	15.4
Rural (N=19)			
Underweight	21.1	42.1	31.6
Overweight	5.3	-	5.3

Food consumption is another factor effecting body composition among rural and urban resident. The nonagenarians in urban areas have higher opportunity to receive different kinds of the main and supplementary food than rural. Normally,

the morning markets would be established in many parts of the city which makes it easier for the residents to buy instant food selecting what they consider the best for themselves. On every Saturday there is a market in the morning, selling foodstuff from outside the city such as poultry, pork, meat, fresh fish, seafood, fruits, vegetables and other snacks. Additionally, the western-style food is also available to the nonagenarians as the dietary supplementation such as bread, cake and UHT milk. High consumption of food and limited physical activities are other reasons for overweight of nonagenarians in urban locale. No case of obesity among nonagenarians (BMI ≥ 30.00 kg/m2) has been found.

The gender differentials among the nonagenarians with reference to BMI classification found that the percentages of underweight in females is higher than males whether living in urban or rural area (38.5% for females and 30.8% for males in urban, 42.1% for females and 21.1% for males in rural). In this study, the data is consistent with the previous studies on weight, height, and BMI of the older person. According to which the prevalence of underweight among the oldest old was higher in females (See Launer et al, 1996; Perissinotto et al, 2002; Hughes et al, 2004).

In urban areas, normal weight and overweight are found in the same proportion among males and females (7.7%). In rural areas normal weight among nonagenarian females is more than their male counterparts (21.1% for females and 10.5% for males). In contrast, the overweight is found among males alone. According to the division of labor in Thai rural family females are more active dealing with many kind of family activities than males. They not only work in the rice field with their husband during the agricultural season, but they are also involved in the household chores such as cleaning, washing, cooking, gardening, selling, etc These duties are done since they are in reproductive age till old age which might be a factor that retains their slimness.

Table 5-4 The percentage proportion of the body shape of nonagenarians categorized by WHR classification

Resident		Male	Female	Total
Urban (N=13)				
Excellent	(<0.85)	30.8	-	30.8
Good	(0.85-0.90)	7.7	7.7	15.4
Average	(0.91-0.95)	7.7	7.7	15.4
High	(0.96-1.00)	-	23.1	23.1
Extreme	(>1.00)	0.0	15.4	15.4
Rural (N=22)				
Excellent	(<0.75)	13.6	-	13.6
Good	(0.75-0.80)	18.2	18.2	36.4
Average	(0.81-0.85)	4.5	18.2	22.7
High	(0.86-0.90)	-	9.1	9.1
Extreme	(>0.9)	-	18.2	18.2

When the body composition of nonagenarian is measured by waist-hip ratio (WHR) it found that nearly half of them (46.2% in urban and 50% in rural) are in good shape with normal body composition. While 38.5% in urban and 27.3% in rural areas suffer from extreme health risk.

Men are healthier and more physically fit than women. According the data in table 5-4 women face higher health risk compared to men in both rural and urban areas (38.5% and 27.3%, respectively), as suggested by Perissinotto that 75% of elderly women could be considered obese (Perissinotto et al, 2002). As well as the cardiovascular due to the endocrine and metabolic disorder, subcutaneous and visceral fat distribution which decreased at both thoracic and abdominal level in advance aged; a lean tissue loss, a decrease in total body water and more central distribution of adiposity, and postmenopausal period. (Enzi et al, 1986; Chumlea& Baumgartner, 1989; Schwartz, 1998)

CHAPTER 6

HEALTH CONDITIONS AND MEDICAL HEALTH CARES

6.1 Health condition

For this research, overall health status can be divided into three aspects including type of chronic diseases, number of chronic diseases, and self-rated health. 15 chronic diseases which commonly found in elderly people are examined including: rheumatism, back pain, ear problem, stomach problem, cataract, high blood pressure, asthma, fracture, heart problem, paralysis, liver disease, Parkinson, diabetes, cancer, and kidney problem. The nonagenarians were asked to report on those ailments during the past six months by self report, previous medical investigations from the hospital, daily drug consumptions, and caregiver (in case as the nonagenarians are unable to give the answer).

6.1.1 Type of chronic disease

As illustrated in table 6-1, locomotors and musculoskeletal problem are the most frequent irritating in daily life; approximately 92.3% in urban areas and 100% in rural areas suffer from rheumatism. This symptom is found higher at females than at males, followed by back pain and ear problem.

Table 6-1 Chronic diseases of the nonagenarians

Chronic diseases	Urban			Rural		
	Male	Female	Total	Male	Female	Total
Rheumatism	46.2	46.2	92.3	36.4	63.6	100
Back pain	46.2	38.5	84.6	31.8	59.1	90.9
Ear problem	46.2	38.5	84.6	18.2	45.5	63.6
Cataract	23.1	23.1	46.2	13.6	27.3	40.9
Stomach problem	7.7	30.8	38.5	22.7	27.3	50.0
Asthma	15.4	23.1	38.5	-	22.7	22.7
High blood pressure	-	30.8	30.8	9.1	27.3	36.4
Fracture	-	23.1	23.1	4.5	22.7	27.3
Heart problem	-	15.4	15.4	-	9.1	9.1
Liver disease	-	15.4	15.4	-	-	-
Diabetes	-	7.7	7.7	-	-	-
Cancer	-	7.7	7.7	-	-	-
Urinary problem	-	7.7	7.7	-	-	-
Paralysis	-	-	-	4.5	9.1	13.6
Parkinson	-	-	-	-	9.1	9.1

In urban areas, the incidences of chronic diseases are more pronounced among females than at males, with exception of back pain and ear problem that males are more likely than females, while rheumatism and cataract are similar for both, male and female. Moreover, several diseases such as high blood pressure, fracture, heart problem, liver disease, diabetes, cancer, and urinary problems are found at females only.

These results are concordant with several studies in which the morbidity proportion of the elderly is higher for females than males (Blazos et al, 1996). This can be explained through the difference of physical change between males and females. During the female menopausal period, physical changes causes deterioration to the hormones, bones, heart, and other organs, especially if they did not know how to maintain and take care of themselves to prevent such deterioration.

Moreover, the finding shows that the chronic diseases such as liver disease, diabetes, cancer, and urinary disease in rural area are not reported or found only in few cases. These disappearances do not authenticate that they are all exempted from those illnesses, but might be unknown or due to the lack of physical checkup. As the question of physical checkup was asked, 62.9% in urban and 100% in rural never have checked their health condition. Normally, when the illness is occurred, the diagnosis and treatment is healing in early signs by doctor, but in basic symptom not in sense of physical checking up.

> *"Liver disease, I don't know. Her health is good and nothing happened. She never takes a physical checking up. When we met the doctor, he did not tell anything to us, if yes, he must have told us"*
>
> *(The caregiver)*

> *"Annual physical check-up, ammm…never, when he was sick, we went to primary care center near my village. Just told them what's wrong and took the medicine back, no physical check up in there. I don't know, but I think he is fine and his health is acceptable."*
>
> *(The caregiver)*

> *"Her health is good. She can eat everything she wants. We never controlled or limited her food choices or sugar. No diabetes I think, absolutely not.*
>
> *(The caregiver)*

6.1.2 Number of chronic condition

Chronic conditions are commonly reported among the respondents. As shown in table 6-2 the respondents report that they have at least three chronic conditions. The highest number of chronic condition is nine conditions, which found at females only. There is a significant gender difference in the average number of chronic conditions as is examined by t-test ($p<0.05$). Females, on the average, have 5.66 conditions (S.D.=1.93) while males reported 4.28 conditions (S.D.=1.2). Probably we can say that males are healthier than females, which due to the less number of chronic conditions.

Table 6-2 Number of chronic diseases of nonagenarians divided by gender and residence

Number of conditions	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
3 conditions	21.4	4.8	11.4	7.7	13.6	11.4
4 conditions	57.1	28.6	40.0	46.2	36.4	40.0
5 conditions	-	28.6	17.1	15.4	18.2	17.1
6 conditions	14.3	9.5	11.4	15.4	9.1	11.4
7 conditions	7.1	9.5	8.6	-	13.6	8.6
9 conditions	-	19	11.4	15.4	9.1	11.4
Total	100	100	100	100	100	100
Mean	4.28	5.66	5.11	5.15	5.09	5.11
SD	1.20	1.98	1.79	1.97	1.77	1.79

In residential setting, the proportions of chronic conditions between urban and rural areas are variable. On the average, means of chronic conditions for urban are 5.15 (S.D.=1.9) while rural reported 5.09 (S.D.= 1.77). There is no statistically significance between residential and chronic condition.

6.2 Self-rated health

According to the question “How would you rate your health at the present time?” with the possible responses being good, fair, and poor. Table 6-3 presents self-rated health of the individuals, by gender and residence found that the majority of the respondents answer “poor health” (53.8% in urban and 45.5% in rural areas). Only 7.7% of urban and 13.6% of rural population rate themselves as enjoying good health. Female nonagenarians (both in urban and rural areas) report worse health status than males. This finding is related to previous studies. (See, Herman et al, 2001; Zeng & Vaupel, 2002; Gupta & Sankar, 2003). There are no statistical differences in the self-rated health between gender and residence.

Table 6-3 Proportion of self-rated health of nonagenarians divided by gender and residence

Self-rated Health	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Good	14.3	9.5	11.4	7.7	13.6	11.4
Fair	42.9	38.1	40	38.5	40.9	40
Poor	42.9	52.4	48.6	53.8	45.5	48.6
Total	100	100	100	100	100	100

6.3 Medical health care

In this part, the investigations on medical and health care services of nonagenarians are explored. The concept of three sectors of health care system which provided by Kleinman are classified for this research. Kleinman (1980) suggests studying health care systems at any complex society, the identification of three overlapping and interconnecting system between professional, folk, and popular sector should be concerned.

6.3.1. Professional sector

The result in table 6-4 suggests that the most common of health care utilization in professional sector is to receive the medical treatment at government hospital (91.4%) (Mae Sariang Hospital), where is only one hospital in Mae Sariang district, followed by taking primary care unit and buying drugs from pharmacy, which sharing in the same proportions (40%). Visiting private hospital are few (23.1% in urban and 14.3% in rural areas). The proportions that use primary care unit of nonagenarian in rural areas are extremely small (7.7%), but more than half of nonagenarians in rural areas benefit from it (59.1%).

The gender differences among the nonagenarians with using government hospital and primary care unit found that the percentages of males are higher than females (100% and 85.7% respectively), whereas females are more likely to buy drug from pharmacy and visit private clinic (Table 6-5).

Western medicine or using government hospital is the most common procedure for nonagenarians with life-threatening conditions. For example, monthly monitoring of nonagenarian with high blood pressure and diabetes, the respondents have to follow the standard of treatment starting with registration, weight, measure blood pressure, and waiting on the queue to meet the doctor. After this process is performed, several packs of medicine for next month are given. More complicate for diabetic patients, they have to refrain from eating or drinking anything past midnight in preparation for blood test in the morning. Due to the complex process of monitoring, many of nonagenarians are fading out from this procedure. Receiving the monthly medicines with patient identification card by caregiver or family member can be found in this study which related to

lack of disability themselves, lack of possibilities for transportation, and lack of time to spend at hospital. The nonagenarians who refrain for whole night can not spend much time on the queue. This phenomenon also found in Primary care unit.

Table 6-4 Proportion of health care utilization of nonagenarians divided by residence

Health care utilization	Urban (13)	Rural (22)	Total (35)
Professional sector			
Government hospital	100 (13)	86.4 (19)	91.4 (32)
Private hospital	23.1 (3)	9.1 (2)	14.3 (5)
Private clinic	38.5 (5)	18.2 (4)	25.7 (9)
Primary care unit	7.7 (1)	59.1 (13)	40 (14)
Pharmacy/ drug store	46.2 (6)	36.4 (8)	40 (14)
Folk sector			
Herbal / traditional medicine	38.5 (5)	22.7 (5)	28.6 (10)
Spiritual healing	7.7 (1)	54.5 (12)	37.1 (13)
Popular sector			
Self care	100 (13)	100 (22)	100 (35)

Table 6-5 Proportion of health care utilization of nonagenarians divided by gender

Health care utilization	Male (14)	Female (21)	Total (35)
Professional sector			
Government hospital	100 (14)	85.7 (18)	91.4 (32)
Private hospital	7.1 (1)	19 (4)	14.3 (5)
Private clinic	14.3 (2)	33.3 (7)	25.7 (9)
Primary care unit	57.1 (8)	28.6 (6)	40 (14)
Pharmacy/ drug store	28.6 (4)	47.6 (10)	40 (14)
Folk sector			
Herbal / traditional medicine	21.4 (3)	33.3 (7)	28.6 (10)
Spiritual healing	35.7 (5)	38.1 (8)	37.1 (13)
Popular sector			
Self care	100 (14)	100 (21)	100 (35)

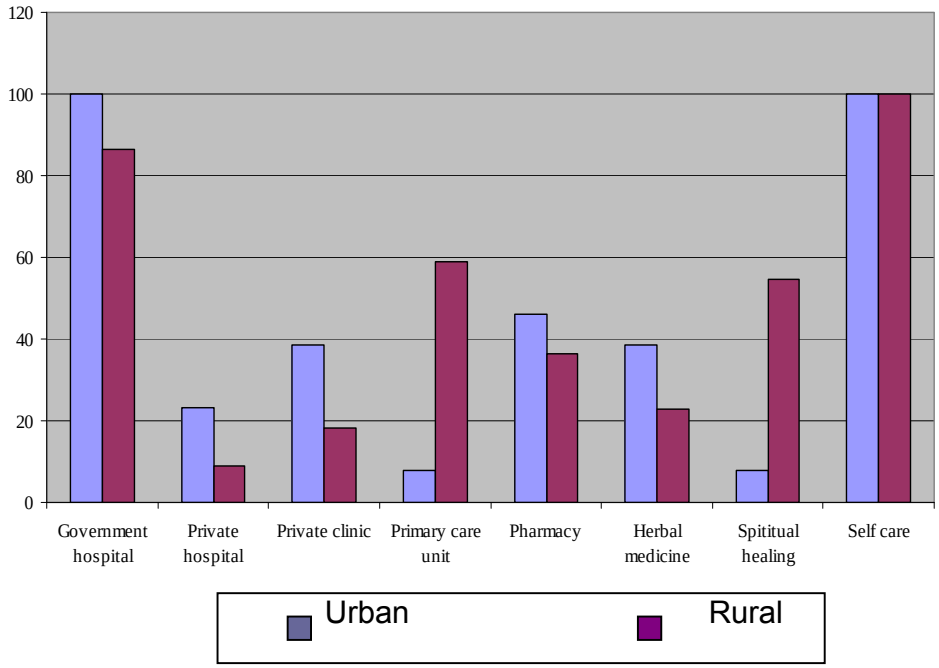


Figure 6-1 Proportion of health care utilization divided by residence

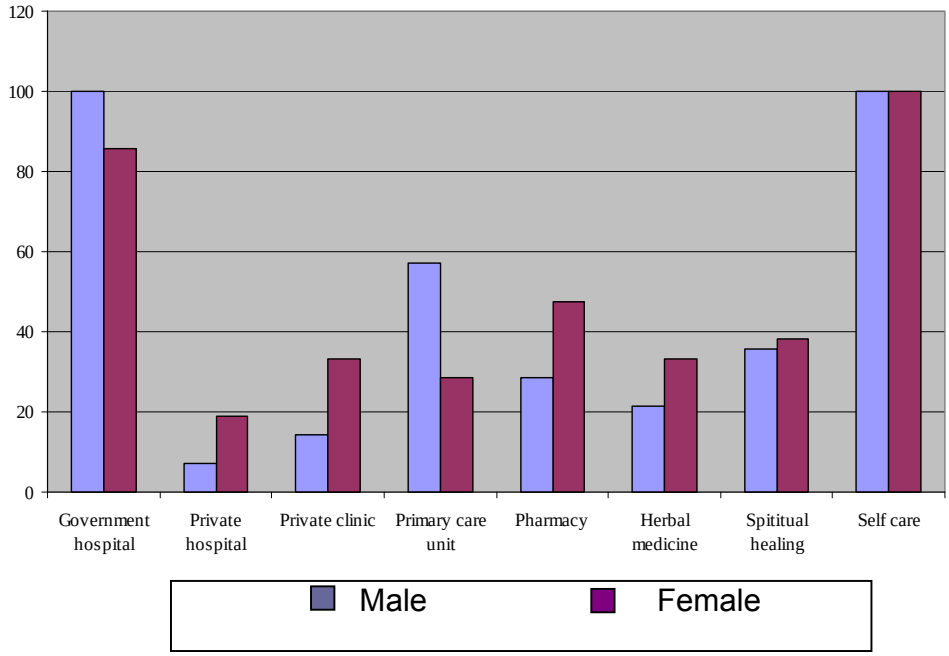


Figure 6-2 Proportion of health care utilization divided by gender

6.3.2 Folk sector

The research found that using herbal and traditional medicine in urban areas is higher than in rural areas (38.5% and 22.7%), while females are slightly more likely than their male counterparts (33% and 21.4%). The majorities of the respondents are reporting to buy herbal medicine (instance form) at local market, local grocery shop, mobile direct sale, and directly from a traditional practitioner. The favorite herbal medicines are used for heart stimulant (Ya Lom), physical debility (Ya Kra Sai Sen or Ya Dong), skin (Ya Mhong), and massage (Nam Mun Plai). They affirmed that in their experiences these herbal drugs are more effective than the Western counterparts. Moreover, the research revealed that physical and geographic environment is influenced on pattern of medicinal usage

> *"Faint is my common illness, I'm sick with it everyday, look! You see I have here one near with me (picks it up from small basket next to her and shows to the researcher). I can not survive without Ya Lom"*
>
> *(Female nonagenarian, 94 years old)*

> *"Faint should take Ya Lom, not medicinal tablet. Hospital doctor gave us once in a tablet form, but it totally did not fit on her. Much stomach gas came out, she belched for a period. After that, I never gave her anymore, its so pity because she's very old. Can you imagine how much afflictive she got? She had to sit on the chair because she could not lie down on the bed, and belched!! Belched!! Belched! In my opinion, yo lom is very good for elderly people and absolutely better than tablet from the hospital"*
>
> *(The caregiver)*

> *"Ya Mhong (Balm) is very necessary, because we live near the forest, many mountains surround, when the rain comes, lots of mosquitoes were here. We could not sleep even we have a mosquitoes net, lighting a mosquito stick, or spray with DDT. Look!!...my house is open, the wind are flow easily. Only Ya Mhong can heal my problem, I cannot scratch so much on my skin because it so dry and thin, its blooding easily"*
>
> *(Male Nonagenarian, 90 years old)*

"We can say Nam Mun Plai (oil massage) is his personal remedy. Let's think that he is aging, not working in the field, no job, never going out, only stay at home, sleep on the bed for whole day and night, of course pain must be occurred. After massaged, his muscles, joints, and tenders became hot, relax and smell is wonderful too, I think he love it very much"

(The caregiver)

Another medicinal used form in traditional medicine is the combination between dried powdered herb and alcohol tincture, which called Ya Dong. From this research, a pack of mixed dried herbs can be bought easily in village grocery stores or local markets. The using of alcohol tincture, liqueur, beer or wine is possible. Mostly, they prefer rice whisky (45% alcohol). They are very easy to prepare, just put the mixed dried herb into the rise whisky. The macerate is preserved in cold dark place for at least seven days. They believe that the alcohol is more catalytic to absorb herbal efficiency than normal water. Ya Dong can be mixed by several herbal ingredients and conceivable for a single one. An efficacy of Ya Dong is able to heal either back and muscle pain, or joint and tender inflammation. Anyways, the satisfaction with test and the frequency of consumption should pay attention, especially for the nonagenarians who have limitations in health.

I really don't know he need the efficiency from Ya Dong or he need to gulp a medicinal wine? I think he already addicted to Ya Dong. He asked for it every evening after dinner, but just small glass I think its ok! I can give to him if he want, but sometime he cannot wait he walked to the kitchen by himself (laughing), However, if it not effect on his physical debility but at least it can be control on his emotion, for me it fine and acceptable. If he asking for but have no respond, we are on the fighting, always.

(The caregiver)

"In the past, He was a traditional healer, he drunk a lot of rice whisky because it was used in the process of treatment (to communicate with the super nature-the researcher). Now not much work for treatment, but he has to drink everyday. We tried not to give him but he goes to Ya Dong. He said for his health, but I don't think so, I think he addicted. Ya Dong is more worse, because I don't know what ingredients inside.

(The caregiver)

Herbal medicine, in practices, neither receives government support nor quality control for decades. Especially, local laid people who run a business with herbal medicine. Nowadays, mobile direct sale is easy to find in the village and local market. Informal observation found that each product has a drug label, but only used for advertisement. Good information such as active and inactive ingredients, warnings, directions, expiration date, addresses, or license are undefined. Moreover, others household remedies, either traditional or western medicine, which are imports from Burma and China are sold by mobile direct sale as well. This phenomenon might be harmful for the villagers. There are some evidences that government should be concerned.

> *"Sometimes I don't know, if buying herbal medicine from grocery shop, local market, or a mobile direct sale is good enough? We don't know exactly how old are they? When they are made? Warnings from the news said perhaps steroids are mixed. But the seller said that they are so good and many people go to buy there. If these products are so bad, we have friends to die with; we do not need to die alone, (laughing). So I bought follow them because he need (nonagenarian)...Moreover, I have no car to go and buy these medicines in the city"*
>
> *(The care giver)*

> *"Once around last year, the lady next to my house is allergic by herbal cosmetic, her face became red, pimples and blemishes are emerged, and her face became black at the end. She said because of the herbal cosmetic. Yes, sometime I'm scared, but I think for normal herbal medicine like Ya Mhong, Ya Lom might be safe, what you think? Because it's very normal and easy to make, not necessary to mix such a chemical inside, I think"*
>
> *(The caregiver)*

> *"Mobile direct sale like this, oh…they come here, I don't know how often a day (laughing) waiting for the weekend you can see. They come and show the products, if you need to buy an expensive one or buy a big lot, but have no money, you can pay by installment"*
>
> *(The caregiver)*

Another pattern of traditional medical care in folk sector is spiritual healing which related to culture and way of life of the respondents. Especially, Karen hill tribe in rural area. Table 6-4 and 6-5 illustrates that 54.5% of the respondents in rural areas seek the care of a spiritual healer. While males and females follow closely in this form of treatment, 35.7% and 38.1% respectively. In this study, three male nonagenarians in rural area are used to be the traditional and spiritual healers. Both, increasing old age and personal limitations, all of them have stopped as spiritual healer and trend to act as advisors for anybody who needs help.

In traditional belief, each person possesses 37 Souls (Kwan), which reside in the body and the remainder in the environment. The Kwan is constantly in danger of being lost or taken by the spirits, and the Karen believe that losing Kwan puts a person in danger of illness. One way of keeping one's Kwan is through the tying of string around the wrist, usually by spiritual healer (Barron et al, 2007) or religious shaman (most of nonagenarians are on this way). Additionally, offering foods to the spirits can be followed to increase more health or luck.

> *"We did, even small thing happened we invited the healer to call Kwan back. Look at her wrist, just last week, she was nightmare. At the beginning I don't know why she got up so late. Normally 6 am she awaked, but that day nearly at 8 am I could not see her. Then we went to her bed room, she cried and peed on the bed. Means she was very afraid"*
>
> *(The caregiver)*

Apart from Kwan, supernatural powers also play an important ideology of the Karen identity. Spirits (Phe) are omnipresent in social and cultural context. Even some of them are follower of Buddhist or Christian religion, but animism is still strongly practiced. Important spirits found from this research are guardian spirits (Phe Bahn) and ancestor spirit (Phe Ruean). Phe Bahn is the spirit who are saving the community and protecting the villagers. They believe this guardian spirits can make harm to animals, property, agricultural land, gains, and individuals. Moreover, they can harm to the whole community if the villagers do not pay respect on them. Phe Ruean are the souls of ancestors who still protecting from bad things and taking care for family members. Therefore, numeral spirits are also found in rivers, rocks, trees, animals etc.

> *"Normally, we do 2 times a year to offer the foods for Phe Bahn and Phe Ruean, Never forgot, of course not because we have elderly people in this house, if we not respect and unfortunately bad things happen to my mother, it is not worthwhile "*
>
> *(The caregiver)*

"I have a picture of my mother on the bed. I adored her every night before sleep, I'm so sad that I don't have a picture of my father, he died for long times. I have only one mother if I not respect her, so whom I should respect, she protects me and my family, so I get my family to adore her too"

(Male Nonagenarian, 90 years old)

The Karen believe that illness can be caused by these spirits, for example, disrespect to the ancestors, cutting the tree or urinating to the river without beg, or never offering food to them, etc. These kinds of behaves are expected to be followed by punishment, usually in form of greatest misfortunes and health deterioration. To cure the sick person, a traditional healer may establish the ritual which mainly focuses on the supernatural power to beg them and make balance both to confirm unity and to ensure well-being. This picture is clear that respect is based on the world view of the Karen, which pivots on harmonious unity between individuals, supernatural forces and the kinship system.

"I can not tell you exactly, what kind of symptoms can be happened if you not pay respect on them. It depends how much bad luck you have. Somebody, for example, pee in the river, cut the big wood, or do bad thing inside their house. Perhaps pain, weak, headache, or stomachache can be occurred, even visit the hospital but these symptoms still remains, this we call sick without reason. If you not do anything to apologize, badly you can dead because of the punishment from Phe (the spirit)"

(The caregiver)

"If we do the good thing for them, good thing from them will return to us, I am thinking"

(The caregiver)

In some cases where it is hard to find the cause of illness, a traditional healer may offer a female living-chicken to the spirit and asks for the cause, he observes this chicken at least for three days, and compares physical symptoms of the chicken to the sick person. If it is not shown obviously, an operational organic inside may be followed. After that, certain herbs, plants, and concoctions may also be used as cures by traditional healers Barron et al, 2007).

From this research, nonagenarians, caregivers, or the family members who profound faiths in supernatural powers are very much embed in their worldview. Besides this, belief in spirit gives answers to those questions of life that are unexplainable like serious illnesses, family problems, decrease of agricultural

products, climate changes, misfortunes, etc. but spirits provide explanations and way of healings for people suffering. Even if, spiritual healing may not be able to regenerate completely in physical health, but the security well-being from spirits perhaps support them in sense of individual, family, and communal psychology.

6.3.3 Popular sector

In this sector, it is the real site of primary self care which undertaken by individual or family or community to maintain, promote, prevent, detect, and treat health problem, without any payment and without consulting either folk healers or medical practitioners. They may, for example, take more rest, self treatment, self medication, advice or treatment given by relative, friend, neighbor, or work mate, or self help groups, or consultation with another lay person who has special experience of particular disorder (Kleinman 1980, Haug et at 1991, Dean 1992).

The research found that all respondents have their own self-care at home and takes place between the nonagenarians linked to one another by ties of kinship, friendship, and neighborhood. The main providers are daughters or daughter-in-laws who diagnose most common illnesses and treat them with materials at hand. For kinship, the investigation found that the individual beliefs, learning from ancestors or relatives play an important role to inform their knowledge, on the other hands, learning from news and magazines are significant information for friendship and neighborhood.

The presentations in self care of nonagenarians, the outcomes cluster the detail responses into three categories; self care related to self treatment, self care related to health maintenance, and self care related to health prevention. Within, each of these categories is a specific set of activities used by nonagenarians themselves or receives these healing from caregivers.

Self treatments are found in every household. The trend of material usage is a combination between traditional and modern knowledge. For herbal medicine, the question of “what herbs do you normally use when you are sick?” were asked, even they are normally used in everyday life, but it was so difficult for them to recall and explain the pattern of usage. To resolve this problem, the Lanna Medicinal Textbook, Mahidol University is presented to ask which one you normally used today. After the problem is asked, several kinds of medicinal plants are emerged (Table 6-6). Moreover, some religious activities and cultural values, such as offering foods to the monks, making a merit in the temple, or giving arms to the beggars or homelessness are also found as cultural activities that able support in the sense of psychological and spiritual well-being.

Therefore, nonagenarians now are living in the midst of transitions; cultural confusions between old and new lifestyles take part in their life. The modern perspective of active aging and well-being has arrived at these villages. In new pattern and lifestyle of medicinal used forms, it may say that the nonagenarians

are usually reluctant to use or change their traditional lifestyles into the new modernized, that are more popular among the younger generation. Most are found in self prevention (Table 6-7). The influence of advertising on caregivers and family members play a significant role to develop this knowledge (televisions, magazines, news papers, direct sales, and neighborhoods).

> *"She bought a lot of milk in the fridge and always asking me "do you drink milk today?" I hate this very much, I told her so many times don't buy it, I don't like. But she said "doctor told me you should drink" or "Have you never seen the television that all elder are drink milk and you don't want to live longer?" Ok drink is drink, I follow her because I don't want to waste her money. Even I really don't like"*
>
> *(Male nonagenarian, 93 years old)*

> *"Have you ever tasted it before?" (The nonagenarian asks the researcher) it is very stinking and the taste is so bad too, it's very fishy (chicken soup in ready to drink form). Nobody in my family is drinking it; they said this drink is not for them but for elder. So, I have to drink because I'm old, if not it will be expired and I don't want to waste the money"*
>
> *(Female nonagenarian, 94 years old)*

> *"My son, he didn't want me to go with him, if I need to go, I have to ware the diaper. He feels ashamed when I pee on skirt. What do I have to do? I can't control this. He said to me, "every elder uses but why you don't like", I don't like its mean I don't like. We are always fighting. So, now I decided ok you go, I will stay home if I have to ware it (diaper), no I don't want to go to any places, please don't think, forget it. You know, he bought, I don't know how many packs here, but I never used, only if a special day like Thai Traditional New Year, Buddhist Lent Day, End of Buddhist Lent Day that we went to temple, I appreciate to do then"*
>
> *(Female nonagenarian, 92 years old)*

From table 6-6, the first-tenth species of herbs are presented. The hierarchical of herbal treatments and symptoms can be concluded into 3 main parts including; herb of respiratory system (coughing, cold, running nose, expectorant, etc.), herb for gastrointestinal (G.I.) tract (laxative, diuretic, anti-

flatulent, etc.) and herb for skin (insect bite, burn, wound, inflammation, abscesses, etc). The conclusion may say that the geography and individual aging play an important factor to the pattern of illness and treatment. As already mentioned in the chapter 3, Mae Sariang district is located in mountain and cool area. Aging people, especially nonagenarians can weak from cold easily. Moreover, the impact of edentulousness on digestive system is the main factor for G.I. tract. Finally, according to nonagenarian are live near the mountain, some live in the forest which hardly to protect themselves against insects or reptiles. Skin effect is easily to find and herbal treatment is acceptable to heal. The last finding also projected that the decoction of herbs and drink as tea, cool drink and hot drink, are normally found form this research.

Table 6-6 Self treatment of the nonagenarians

Thai Name	Scientific Name	Usage	%
Hom Daeng	*Allium ascalonicum* Linn.	The bulbs are used as part of traditional cuisine in these areas. For medical reasons bulbs of shallots are used to cure an anti- flatulent, cold, running nose, improving digestive system and increasing apprized	75%
Kra Teaam	*Allium sativum* Linn.	The bulbs are used to regulate blood sugar level, to prevent heart disease, atherosclerosis, high blood pressure and cholesterol, digestive, diuretic, and healing wound	75%
Yha Nuead Maew	*Orthosiphon aristatus* Miq.	A decoction of leaves is drunk to improve digestive system, diabetes, and gallstone.	61%
Ma Kham Poom	*Phyllanthus emblica* Linn.	The ripe fruit are used as antiscorbutic, coughing, expectorant, cold, tonic, and stimulant.	52%
Som Poi	*Acacia rugata* Merr.	The leaves can use as an expectorant and coughs. The leaves and pods are used as part of ingredients for bathing.	43%

Table 6-6 (Continued) Self treatment of the nonagenarians

Thai Name	Scientific Name	Usage	%
Ma Kam	*Tamarindus indica* Linn.	A decoction of leaves is drunk to cure coughing. The ripe pods are used as laxative, expectorant, and coughing. The branches are another ingredient for herbal bath.	37%
Kan Plu	*Syzygium aromaticum* Linn.	The decoction of flowers is drank to improve indigestion, and as a remedy for biliousness. Holding some piece of Kan Plu dried flower in the mouth can solve the oral problems	29%
Ma Kua Puang	*Solanum Torvum* Sw.	The pounds of fresh leaves are used in a compound poultice as an astringent, diuretic, inflammation, and laryngitis. A decoction of ripe fruits is drunk for coughing and expectorant.	28%
Lin Nghu Hao	*Clinacanthus siamensis* Brem	The fine pound leaves are used in compound poultice to sooth inflammation, abscesses. While pond roots, with or without rice whisky, are specially used for centipede and scorpion bites.	24%
Chum Mariang	*Lepisanthes Fruticoa* Leenh.	A decoction of roots is drunk to treat aphthous ulcers.	15%

From table 6-7 the conclusion of self maintenance can be identified into two main parts. Firstly, the concern on accident and fall from caregivers and family members, the pattern of maintenance are reported in term of reduction on several activities. According to the old aged and having the numeral physical limitation, if it happened, the level of injury might be increased into several times

than other aged group. Secondly, an attention is paid on food consumption to find the way or procedure to improve health status of nonagenarians. In this case, hot-cold theory and balancing theory in local perspective are found. To maintain health situation, drinking hot water and balancing of mineral inside the body are practiced by nonagenarians.

Table 6-7 Self maintenance of the nonagenarians

Self maintenance	Reason
Drinking hot water	to clean the digestive system, especially, oil and lipid which received from foods and diets (detoxification). The high temperature from the water is also good to improve the balance of body which related to the hot-cold belief system
Preferring soy sauce	to maintain the quality and balance of salt in the body (especially the kidney patients), soy sauce, thin soy sauce, and soy paste are used to cook, in stead of fish sauce and salt.
Preferring hot taste	to keep up the balance of the body, hot chili, pepper and others traditional spices are added into the foods and are used to protect the cold.
Drinking more milk	to maintain physical health and well-being, fresh milk, powdered milk, condensed milk, are served as supplementary food.
Modifying daily activities	to protect unexpected accident and fall, avoiding heavily housework, such as house cleaning, laundry,
Modifying social activities	to protect unexpected accident and fall, restrict outdoor activities, walk slowly, less distance, do less in meeting, religious activities, cultural celebration or social event to shelter health risk.
Self-help cooperation	to protect unexpected accident and fall, such as getting help with bathing, dressing, using toilet, getting out of chair/bed, and moving.
Using material aids	to increase life security and protect unexpected accident and fall, applying material aid and basic medical technology into everyday life such as the wooden cane, walker, wheelchair, toilet seat, and diaper are employed.
Making daily exercise	to improve health maintenance and physical ability, walking in the morning on private road, on the fresh green grass to increase the vitality.

For self prevention, the research found that the concern on food consumption is the pattern of self prevention in the way of nonagenarians, only found in Karen Hill Tribe is that living with fire is the way of preventive themselves. The details are available in table 6-8.

Table 6-8 Self prevention of the nonagenarians

Self prevention	Reason
Bathing with herbs	to protect skin diseases and improve the condition of skin. An aroma from herbal bath is revitalized that can produces dull, increased blood circulation, and healing insomnia.
Cooking at home	to ensure those foods are safe, clean, healthful, and no preservative and additive ingredients, some avoid instant food.
Avoiding snack foods	to defend monosodium glutamate (MSG) into the body which can make a trouble cause of headache, stomachache, vomit, pain, and insomnia
Avoiding raw food	to prevent the digestive syndrome and epidemic diseases that can be contaminated by consumption raw meat such as bird flu, mad cow disease, and parasites
Living with fire	to prevent cold and keep warm to stay in cool area (found in Karen hilltribe only). Burning wood and lighting frame in the traditional oven at the centre of the small hut are operated. “Without fire, life became sick”

6.4 Conclusion

Table 6-9 shows the code and characterization of three main variables of health determinants (health condition, self-rated health, and accessibility of medical health care) which are divided into three sub categories including good, fair, and poor.

Table 6-9 Code and characterization of health determinant variables

Name of variables	Code	Characterization of the variable
Health condition	3 = good 2 = Fair 1 = Poor	none chronic disease 1-5 chronic diseases 6-10 chronic diseases
Self-rated health	3 = good 2 = Fair 1 = Poor	Rated good health Rated fair health Rated poor health
Medical health care	3 = good 2 = Fair 1 = Poor	Accessibility all 3 health care sectors Accessibility for 2 health care sectors Accessibility only 1 health care sector

The figure 6-3 indicates that, more than 60% of respondents are in average of health condition which having at least one to five chronic diseases. Nearly 50% are reported poor health when using the self-rated health measurement (Figure 6-4), and more than half of the respondents can access or have a chance to choose a proper medical health care at least one to two sectors when the treatment is needed.

Finally, in the top view of health determinant, the variable items are summarized with the possible scores can be ranged form three to nine scores. (1-3=poor, 4-6 = fair and 7-9 = good). The figure 6-6 illustrates that vast majority of the respondents are living in the middle situation between poor and good health determinant. In another way, it can be mentioned that the nonagenarian in this study are living in an acceptable health determination. But more than one quarter are reported in poor health situation, while good health condition is not found from this investigation.

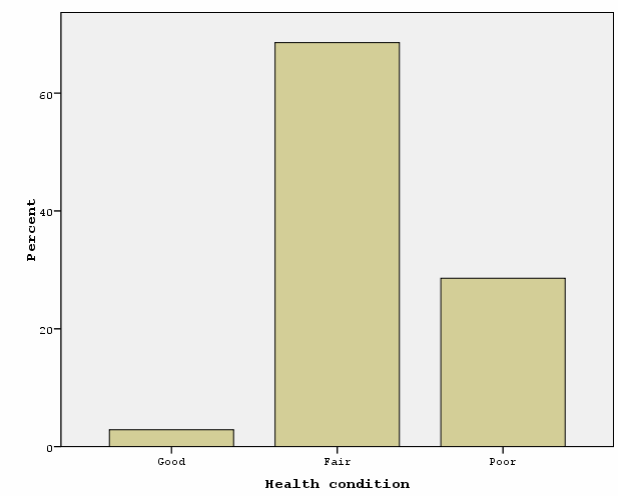


Figure 6-3 conclusion of health condition

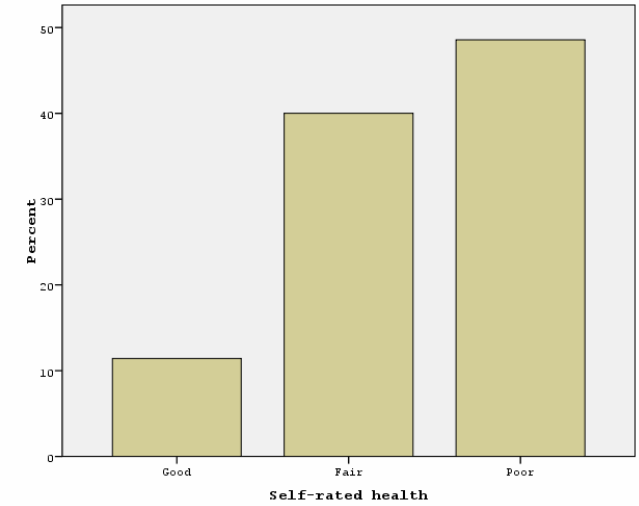


Figure 6-4 conclusion of self-rated health

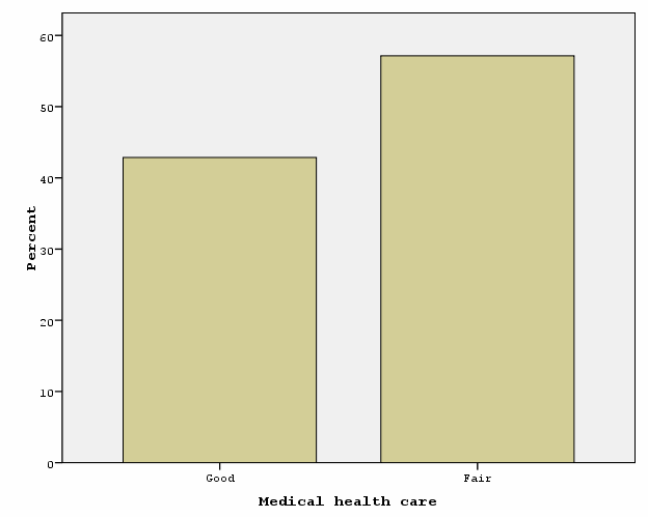


Figure 6-5 conclusion of medical health care

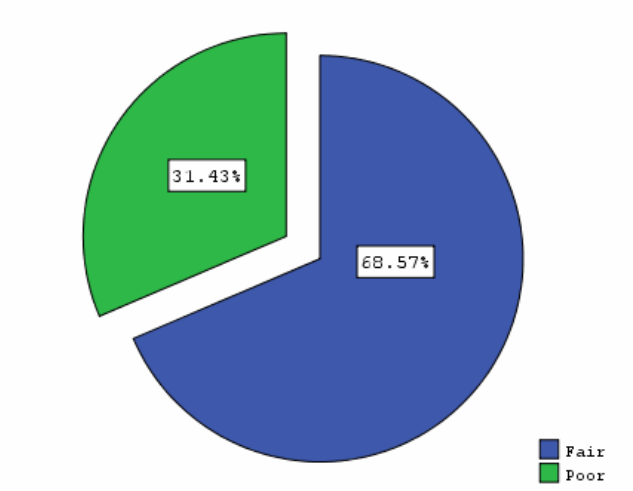


Figure 6-6 Main finding in health determination

CHAPTER 7

BEHAVIORAL DETERMINANTS

For this part, the behavioral determinant of nonagenarians is measured to identify the activities of daily living (ADLs), instrumental activities of daily living (IADLs), oral health behavior, self-rated oral health, and food consumption behavior. The details are as follows.

7.1 Type of ADL limitations and number of ADL disabilities

To investigate the functional status, items include six activities daily living tasks (ADLs) (bathing, toileting, walking upstairs, eating, dressing, and transferring) and eight IADL tasks (cleaning house, washing clothes, preparing food, using public transportation, shopping, money management, drug management, and reading/ writing abilities) are examined. In each item, the self-rated health on level of competence is measured on a three-point hitch capacity. First is “excellent” which means refer to the respondents can accomplish those activities by themselves without any difficulty, second is “need help” which means the activities of the respondents can be success by receiving a little help from someone. Lastly, “disability” denotes that the respondents are completely unable to perform the activities. For this study, if none of ADL and IADL activities is impaired, the respondents are classified as “active”.

The data in table 7-1 shows that the percentage proportions of nonagenarians in rural area are lower in active status than urban in every activity. The highest proportion of active status in rural is eating (54.5%), while the lowest is walking upstairs and transferring which shares in the same proportion (27.3%). For nonagenarians in urban, the highest proportion of active status is also found in eating as well, whereas the lowest proportion is walking upstairs (76.9% and 53.8% respectively). Additionally, the data indicates that more females are in active status than males, except walking up-stairs.

Table 7-1 Percentage distribution of the nonagenarian by level, type of ADL disabilities

Type of ADLs (N=35)	Level of Difficulty			Total
	Active	Mild Disability	Severe Disability	
Bathing				
● Urban	61.5	30.8	7.7	100
Male	50.0	50.0	-	100
Female	71.4	14.3	14.3	100
● Rural	40.9	45.5	13.6	100
Male	25.0	62.5	12.5	100
Female	50.0	35.7	14.3	100

Table 7-1 (Continued) Percentage distribution of the nonagenarian by level, type of ADL disabilities

Type of ADLs (N=35)	Level of Difficulty			Total
	Active	Mild Disability	Severe Disability	
Toileting				
● Urban	61.5	38.5	-	100
Male	50.0	50.0	-	100
Female	71.4	28.6	-	100
● Rural	40.9	45.5	13.6	100
Male	25.0	62.5	12.5	100
Female	50.0	35.7	14.3	100
Walking upstairs				
● Urban	46.2	46.2	7.7	100
Male	50.0	50.0	-	100
Female	42.9	42.9	14.3	100
● Rural	27.3	54.5	18.2	100
Male	25.0	50.0	25.0	100
Female	28.6	57.1	14.3	100
Eating				
● Urban	76.9	23.1	-	100
Male	66.7	33.3	-	100
Female	85.7	14.3	-	100
● Rural	54.5	36.4	9.1	100
Male	25.0	62.5	12.5	100
Female	71.4	21.4	7.1	100
Dressing				
● Urban	61.5	30.8	7.7	100
Male	50.0	50.0	-	100
Female	71.4	14.3	14.3	100
● Rural	31.8	54.5	13.6	100
Male	25.0	62.5	12.5	100
Female	35.7	50.0	14.3	100
Transferring				
● Urban	53.8	38.5	7.7	100
Male	50.0	50.0	-	100
Female	57.1	28.6	14.3	100
● Rural	27.3	59.1	13.6	100
Male	25.0	62.5	12.5	100
Female	28.6	57.1	14.3	100

For mild disability, the details demonstrate that in every single activity the nonagenarians in rural area have more difficulties of daily living than in urban area. The majority of activity limitation in rural is transferring (59.1%) followed by dressing and walking upstairs, which found in the same proportion (54.5%), while as eating is the lowest of mild disability in both rural and urban (36% and 23.1% respectively). For gender differences, the research shows that males are

more limitative than females in every activity, except walking upstairs (in rural area), which females are even more agile than males.

In the same as severe disability, the data still to be confirmed, that nonagenarians in rural are arduously performing in activities of daily living than urban. In rural, the highest proportion of functional disability is walking upstairs (18.2%) followed by bathing, toileting, dressing, and transferring in the same proportion (13.6%). At urban inhabitants, toileting and eating disability are not found.

Anyway, the proportions of functional disabilities are low when comparing with active and mild disability status. The hierarchical disability can be arranged by the series of percentage proportions as walking upstairs (25.9%), dressing, bathing, and transferring (21.3%), toileting (13.6%), and eating (9.1%). Fortunately, when summarized the total of severe disability in each activity, only a few of the nonagenarians have severe disability in eating (9.1%) which are considered as the most severe physical function. It is interesting to note that when looking at severe disability, the gender differences are larger at females, which can clarify that males do ADL activities better than females. Similar gender differentials in physical disability have been found in other studies, as well. For example, based on the data from U.S. long term care survey (1982-1994) (see Monton 1988, 1997), ând Ranberg et al (1999) found that, although women have a longer total life expectancy by ages of 80 and 85, males active life expectancy is longer than females, and also many previous studies claimed that mostly at the old age females are seriously disadvantaged in terms of ADL than males. On the other hands, this finding indicates the hierarchical pattern of disabilities that is similar to the previous studies that the majority of functional limitation or disability of the oldest old is walking requires locomotors functioning. It involves lower extremity strength while bathing, dressing and eating require more upper extremity strength. (Kartz et al., 1963; Dunlop et al, 1997; Kennedy & LaPlante, 1997, Kachondham 2000). Anyways, for this finding, there are non-statistically significant differences between male and female in ADL activities.

The number of ADL disabilities can be assessed by the number of individual having report on physical limitation of each item. Overall, the majority of functional disabilities are 6 ADL disabilities (37.1%) followed by 5 ADLs (14.3%). 3-2 ADLs (5.7%) and 1 ADL (2.9%).

Generally, males are in a better active status (none ADL) than females (35.7% and 33.3% respectively). On the other hands when the numbers of ADL are computed, males are reporting to have severity of 6 ADL disabilities higher than females (57.1% and 23.8% respectively). When ADL disabilities compared by residential setting, the research shows those nonagenarians in urban are more active than rural in regard of number of none ADL disability 46.2% while 27.3% are reported in rural. Moreover, the magnitude of 6 ADL disabilities in rural is nearly twofold of urban (45.5% in rural and 23.1% in urban).

Table 7-2 Number of ADLs disability of nonagenarians divided by gender and residence

No. of ADLs Disability	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
None ADL	35.7	33.3	34.3	46.2	27.3	34.3
1 ADL	-	4.8	2.9	7.7	-	2.9
2 ADL	-	9.5	5.7	7.7	4.5	5.7
3 ADL	-	9.5	5.7	-	9.1	5.7
5 ADL	7.1	19.0	14.3	15.4	13.6	14.3
6 ADL	57.1	23.8	37.1	23.1	45.5	37.1
Total	100	100	100	100	100	100

7.2 Type of IADL limitations and number of IADL disabilities

Another measurement, instrumental activities of daily living or IADL, such as cleaning the house, washing clothes, preparing food, using public transportation, shopping, money management, drug management, and reading/ writing are examined in this study. The respondents were asked about those activities. Anyways, for those who answered they “did not do” these activities, a question about the reason was asked. Only the nonagenarians, who stated that they did not do these activities, were due to health problems or functional limitations, are identified as having IADL disability.

The table 7-3 illustrates that the large majority of nonagenarians in urban area is active in shopping and money management (38.5%) followed by reading and writing (23.1%), where females perform better than male in these functions. While in rural area, the active IADL functions are still found, but very rare, the first majority is found in money management (28.6%), followed by reading and writing (22.7) and cleaning the house (18.2%). Mostly, female nonagenarians in rural area are more active than males, except reading.

For severe IADL functions, the result in table 7-3 shows that all of them (100%) are having the problematic function in drug management which deal to the problem of dementia and difficulties or are unable to read the prescriptions, etc. The second is due to the problem of using public transportation (84.6% in urban area and 95.5% in rural area), which is related to the functional limitation of the old aged. At the same direction as already explained in active function from above, money management seems to be found in few of severe IADLs of the nonagenarians (46.2% in urban and 45.5 in rural). There is no statistically significant difference between gender and residence on IADL limitation from this study.

Table 7-3 Percentage distribution of the nonagenarian by level, type of IADL disabilities

Type of IADLs (N=35)	Level of Difficulty			Total
	Active	Mild Disability	Severe Disability	
Cleaning house				
● Urban	-	15.4	84.6	100
Male	-	-	100	100
Female	-	28.6	71.4	100
● Rural	18.2	27.3	54.5	100
Male	-	25.0	75.0	100
Female	28.6	28.6	42.9	100
Washing clothes				
● Urban	7.7	15.4	76.9	100
Male	-	-	100	100
Female	14.3	28.6	57.1	100
● Rural	13.6	31.8	54.5	100
Male	-	25.0	75.0	100
Female	21.4	35.7	42.9	100
Preparing food				
● Urban	7.7	15.4	76.9	100
Male	-	16.7	83.3	100
Female	14.3	14.3	71.4	100
● Rural	13.6	22.7	63.6	100
Male	-	12.5	87.5	100
Female	21.4	28.6	50.0	100
Using public transportation				
● Urban	15.4	-	84.6	100
Male	16.7	-	83.3	100
Female	14.3	-	85.7	100
● Rural	-	4.5	95.5	100
Male	-	12.5	87.5	100
Female	-	-	100	100
Shopping				
● Urban	38.5	7.7	53.8	100
Male	33.3	16.7	50.0	100
Female	42.9	-	57.1	100
● Rural	13.6	36.4	50.0	100
Male	12.5	50.0	37.5	100
Female	14.3	28.6	57.1	100
Money Management				
● Urban	38.5	15.4	46.2	100
Male	33.3	33.3	33.3	100
Female	42.9	-	57.1	100
● Rural	22.7	31.8	45.5	100
Male	12.5	50.0	37.5	100
Female	28.6	21.4	50.0	100

Table 7-3 (Continued) Percentage distribution of the nonagenarian by level, type of IADL disabilities

Type of IADLs (N=35)	Level of Difficulty			Total
	Active	Mild Disability	Severe Disability	
Drug Management				
● Urban	-	-	100	100
Male	-	-	100	100
Female	-	-	100	100
● Rural	-	-	100	100
Male	-	-	100	100
Female	-	-	100	100
Reading and writing				
● Urban	23.1	-	76.9	100
Male	16.7	-	83.3	100
Female	28.6	-	71.4	100
● Rural	22.7	-	77.3	100
Male	37.5	-	62.5	100
Female	14.3	-	85.7	100

Table 7-4 Number of IADL disabilities of nonagenarians

Number of IADLs Disability	Gender			Residence		
	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
NONE IADL	-	-	-	-	-	-
2 IADL	-	4.8	2.9	-	4.5	2.9
3 IADL	-	9.5	5.7	7.7	4.5	5.7
4 IADL	-	4.8	2.9	-	4.5	2.9
5 IADL	14.3	4.8	8.6	23.1	-	8.6
6 IADL	7.1	4.8	5.7	7.7	4.5	5.7
7 IADL	21.4	19.0	20.0	7.7	27.3	20.0
8 IADL	57.3	52.4	54.3	53.8	54.5	54.3
Total	100	100	100	100	100	100

As demonstrated in table 7-4, most of the nonagenarians have problems with instrumental activities of daily living or no active IADLs are found from this study. Compare with table 7-2, around 70% of the nonagenarians have many problems to do basic activities of daily living (ADLs). ADLs are considered as more basic activities that are essential to survive, while IADLs are necessary and need help or care from families and caregivers. For those who have IADL disabilities, the majority of them have 8 IADL disabilities (54.3%) and very few in 2 and 4 IADL disabilities (2.9%). Therefore, for sexual differences, females are healthier than their male counterparts, which have a proportion of numbers of IADL disabilities lower than males. While the nonagenarians in urban perform IADLs better than nonagenarians in rural area, but there are no statistical differences between gender and residence of IADL disabilities.

7.3 Oral health status

7.3.1 Teeth remaining

The main finding, regarding to oral health status, is the highest proportion of those who have less than 20 teeth (68.6%), particularly among males (71.4%). Moreover, the finding shows that the edentulousness (22.9%) is more prevalent among females than at males (28.6% and 14.3%). For those who have more than 20 teeth (active) are few (8.6%), where males outnumber females around threefold. The teeth remaining are significantly different between gender ($p<0.05$). Moreover, the mean of remaining teeth in male and female nonagenarians are 10 (S.D.=8.05) and 5.61 (S.D.=6.81) respectively, maximum of teeth is 23 for male and 24 for female. Anyways, it should be note here is that in this generation the number of remaining teeth is quite low as during previous decades toothache was treated by extraction and high prevalence of oral neglect and low of dental treatment.

For residential differences, the rural nonagenarians who have more than 20 teeth are higher than urban counterparts (9.1% and 7.7%). In emic point of view, the rural nonagenarians believe that chewing betel nuts, which is a cultural lifestyle of the people in these areas, play an important factor of remaining teeth at the old aged. Anyways, the mean of teeth of the betel nut chewers are 7.8 while the nonagenarians who never chew the betel nuts are 6.5, there are no statistical differences between the betel nut chewers and number of remaining teeth among rural and urban areas.

Table 7-5 Remaining teeth remaining of the nonagenarians

Remaining teeth	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
>20 teeth	14.3	4.8	8.6	7.7	9.1	8.6
<20 teeth	71.4	66.7	68.6	69.2	68.2	68.6
No teeth	14.3	28.6	22.9	23.1	22.7	22.9
Total	100*	100	100	100	100	100
Mean	10	5.61	7.37	6.84	7.68	7.34
SD	8.05	6.81	7.54	7.52	7.71	7.54

The differences between the proportions of residential setting in <20 teeth and no teeth categories are found in the same proportion, 68.2% in rural and 69.2% in urban for <20 teeth and 22.7% in rural and 23.1% in urban for edentulousness. There are no statistical differences between teeth remaining among rural and urban area. Therefore, the mean of remaining teeth in rural and urban area are 6.84 (S.D.=7.52) and 7.68 (S.D.=7.71) respectively.

7.3.2 Denture use

As illustrated in table 7-6 the denture wearers are few (5.7% 1 male and 1 female). The acrylic removable partial dentures are placed as part of their oral improvement; both of them are classified in having more than 20 teeth category. Thus, it means that the majority of nonagenarians who has less than 20 teeth or edentulousness are living without denture, particularly, in rural area (100%).

Table 7-6 Denture use of nonagenarians

Denture use	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Yes	7.1	4.8	5.7	15.4	-	5.7
No	92.9	95.2	94.3	84.6	100	94.3
Total	100	100	100	100	100	100

As shown in table 7-4 and 7-5, poor oral health among nonagenarians have particularly been seen in a high level of less teeth and low level denture-wearing experiences. Extensive less of teeth reduces chewing performance and affects food choice; for example, edentulous nonagenarians tend to avoid meat and dietary fiber, and prefer dishes made mainly from flour or sweet dishes. Moreover, edentulousness is also shown to be another factor for weight-loss which is related to the problem of chewing and some nonagenarians may have social limitations related to communication.

> *"I can not eat anything like I did in the past. Not even noodles, sliced pork and fish balls which I really loved, because I don't have teeth. When I really needed it, I asked my daughter, and then she bought. I only ate the soup, even the vegetable I could not chew. Sometime I cut the fish balls into small pieces and swallowed without chewing, because I needed to eat it (laughing) but I could not do so often, it made me vomit and stomachache. Nowadays only steamed or boiled rice and some soup or chili paste I can eat, such a boring meal for me."*
>
> *(Male nonagenarian, 91 years old)*

> *"Vegetable is acceptable, but we have to boil it mushy until it ready to eat like soup drink then he can eat"*
>
> *(The caregiver)*

“She can not eat any meat for several years; pork chops is possible, but just sucks for the taste inside and move it out. She can not chew and swallow; if she swallows the problem with digestion follows.”

(The caregiver)

“Sometimes we were so pity him, because he could not eat food like us, when we had his favorite dishes, we hid them and waited him to finish his meal, then we ate afterward in the kitchen, we knew that he felt hurt when he saw us eating the food that he could not join with. So, sometime we bought a special snack or drink to him such as sweet cake, chocolate cake, custard cake, or syrup in stead of his favorite dish and he loved it too because it spongy and easy to eat.”

(The caregiver)

“Of course she lost weight, because she could not eat anything. When she could not enjoy the food, it made us so worried; it was like the sign of sickness or something like that. So, we tried to give her some supplementary foods that she could eat and enjoy with. Cake, sweet UHT drink, fruit juice etc. what we had to do? I really did not know, because we gave her a denture set but she did not want to use. This was a big problem to deal with elderly people, when they could not eat, so they lost weight and then the sickness would be come, and when the sickness happened, its more worst.”

(The caregiver)

Her personality was changed a lot. Before, when she had teeth she could eat everything regularly. She was friendly and love to talk with her friends and neighbors in every morning and went to the temple so often. But now she seems to be quiet and does not talk much, not even to her closed friend or other neighbors. She keeps herself inside the house always. She talks not clear I don’t know maybe because of the teeth. Especially when she wears the denture, it always came off, so she skips to wear and stay at home. I think she feel ashamed when it came off.”

(The caregiver)

In cases of refusal to wear a denture, the individual reasons can be divided into 3 main groups including feeling uncomfortable, embarrassment, and quality of denture itself. The quotations from the nonagenarians are coded here.

> *"I had one set; it was free from the hospital, because I got it for free, so it was in low quality. It made me pain and bleeding sometime. I think it was so small and not fit on my gum. I never asked for it, anymore, never."*
>
> *(Female nonagenarian, 93 years old)*

> *"In the former time I had 1 pair of denture, but I really did not like it. My son paid an expensive one to me, around 10000 Baht (200 Euros-the researcher). But I don't know now where it is. I never found it for long time. It was uncomfortable and unnatural even on speaking or chewing; I prefer myself to live without denture."*
>
> *(Female nonagenarian, 92 years old)*

> *"He felt ashamed when talking or chewing and the denture came off. Because he didn't have any permanent teeth to hook the denture, and his gum was so shallow. It likes the denture only laid down on the gum, nothing fixed. So, when talking or chewing it came off easily. I could remember that in the temple he was talking and laughing with his friends and it came off accidentally. He felt ashamed very much, then he through the denture onto the floor immediately, he was very angry. Until now, nearly 10 years I think, he never used it again."*
>
> *(The caregiver)*

> *"No, not at all for the denture, it so boring and hard to maintain as well as easy to break, I'm another one who say no for this. Totally complicated and hard for using, I know it because I used to wear before and now I never wear it for long times.*
>
> *(Male nonagenarian, 94 years old)*

> *"It so complicated for me when I'm chewing, it came out every time; I though it is created just for beauty not for usefulness. Because I do not get any benefit from it. I don't want the beauty at all and I always stay at home. So, no denture I'm not dead."*
>
> *(Male nonagenarian, 92 years old)*

7.3.3 Oral cleaning behavior

When the question of cleaning and taking care of teeth and oral health of nonagenarians was asked, the way of cleaning teeth can be divided into 4 patterns including, (1) no cleaning (2) cleaning with tooth paste (3) cleaning with salt and (4) cleaning with plain water. Mostly are found in the last.

As illustrated in table 7-7, never clean teeth are few, only 5.7% of male nonagenarians in rural areas. Cleaning with tooth paste and salt are found in the same proportion 25.7% and 28.6%, respectively. Generally, tooth paste is press down on the index finger and massage on the teeth and gum zone, rinsed and gargled in the mouth for a while. In case of salt, the glass of salt is prepared in the toilet for the nonagenarians, dipping some salt on the index finger; do in the same way as the tooth paste for the oral cleaning.

Cleaning with plain water is the simple way of caring oral condition (40%). The observational fieldwork found that rinse with water is found in every step of daily life, since wake up until bedtime, especially during and after meals. According to the oral condition of the old aged; dry mouth, low of saliva, and problems to swallow are commonly found in this research. Thus, oral cleaning during and after meal are necessary to protect them against choke.

Table 7-7 Cleaning teeth of the nonagenarians

Cleaning teeth	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
No teeth brush	14.3	-	5.7	-	9.1	5.7
Cleaning with tooth paste	28.6	23.8	25.7	38.5	18.2	25.7
Cleaning with salt	28.6	28.6	28.6	30.8	27.3	28.6
Cleaning with plain water	28.6	47.6	40.0	30.8	45.5	40.0
Total	100	100	100	100	100	100

7.4 Self-rated oral health

In this part, the nonagenarians were asked; “How you rate the overall condition of your oral health?” which the three possible scale of answer relies on good, fair, and poor. The table 7-8 shows that more than half of the nonagenarians rate their oral health as poor (62.9%). Females outnumber males by nearly two times, 76.2% and 42.9% respectively, while the proportions between urban and rural area are found not differences (61.5% and 63.6% respectively). 22.9% rate their oral health as good, where males are more than two times higher than females (35.7% and 14.3%, respectively), while the proportions between urban and rural area found no differences (23.1% and 22.7% respectively).

Table 7-8 Self-rated oral health of nonagenarians

Oral-rated Health	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Good	35.7	14.3	22.9	23.1	22.7	22.9
Fair	21.4	9.5	14.3	15.4	13.6	14.3
Poor	42.9	76.2	62.9	61.5	63.6	62.9
Total	100	100	100	100	100	100

7.5 Food consumption and nutritional status

7.5.1 Food pattern

All nonagenarians usually eat their meals at home; the daughters, daughter-in-laws, or nieces are mainly responsible for meal preparations. In case of nonagenarians who are living alone, cooking for themselves or waiting for food from relatives or neighbors is unquestionably practiced. This research strongly confirms that serving food to nonagenarians who are alone by their neighbors plays an important way of survive. On the other hand, food also acts as a social glue to establish social relation, interaction, and integration between the nonagenarians and communities.

The nonagenarians usually have three major meals in a day (77.1%), but two meals also found but in few (22.9%). Time for breakfast is around 8.00-9.00 am. Basically, the new food is bought or prepared. The lunch time is varying, due to the question of when they have the breakfast. If the breakfast starts late, then the lunch time is extended. Normally, lunch occurred between 11.00 am. to 14.00 pm. In some families the lunch is the same food as prepared in the morning, but noodles or fried rice can be bought in some families to make lunch easier. In rural areas lunch probably skipping as the combination between breakfast and lunch, deal to the lost of appetite or all family members work outside their homes and nobody is at home to make their food. Dinner is the main meal for them either; the time of new preparation is emerged again, dinner normally starts between 17.30 pm to 18.30 pm. Anyways, some cases especially the nonagenarians who are living alone or without any support, the one meal preparation for three meals in a day can be possible. However, between meals a snack like cake, sweet, fruits, etc, are also possible.

> *“Someday I eat but some days not. Sometime I really do not want to have lunch, just breakfast and dinner was fine for me, I’m to much old, nearly to die, when I eat I die, when I do not eat, I also die, it is the same. For me eating is not necessary, eating as duty (laughing).”*
>
> *(Male nonagenarian, 94 years old)*

"Before they went to work, they made the food for me, after the breakfast, lunch (the same food) were stored in the food cupboard; I was alone at home in the afternoon, when I was hungry just served by myself, no problem."

(Male nonagenarian, 91 years old)

"Someday she gave to me but someday she was busy in the field, I did not have lunch, but I was ok because sometime I did not want to have it also"

(Female nonagenarian, 94 years old)

"She was alone, so I gave some food to her sometimes; she was so pity….. It depended what I have. Sometime I gave her ready food, sometime I gave her raw meat or fish. She did not have refrigerator also, then she had to cook all meat for one time and keep in 3-4 meals until it was finished. Sometime the food was rotten, she didn't know, she also ate it, so think, how much she pity. I had to change her food, throw in the bin and gave her a new one."

(The neighbor)

7.5.2 Food frequency

The detailed explanation of the food frequency by specific food groups is given in table 7-9. The food-frequency questionnaire was applied to use in this part. The foods listed in the questionnaire are modified in accordance with local food supply and cultural food preferences. The details are as following;

1) Meats: Most nonagenarians (51%) daily eat pork (in chopping form), but the consumption is limited to beef, buffalo, and entrails. According to an increasing old aged and number of remaining teeth, avoiding from buffalo and beef consumption are found, which sharing the proportion of 82.8% and 68.6%, respectively. Kidney, liver, or other animal organs are reported not as popular (62.9%). For Karen ethnic group, pig is not only feeding for food reason but also slaughtered for traditional or animistic ceremony such as wedding, Karen traditional New Year (around beginning of April), ancestral worship, or family meetings. On the other hand, buying meet is only one way to access the animal protein for nonagenarians in urban areas.

2) Poultry and products: In the past 40% of nonagenarians used chicken and ducks as food, but now they had been quitting since bird flu (Avian Influenza) epidemic was emerged in Thailand during the years 2004-2007, these outbreaks also found in Mae Hong Sorn province and Mae Sariang district. The avian influenza in

human surveillance summary by Bureau of Epidemiology, Ministry of Public Health, Thailand, reported that by the year 2004, during the time of situational crisis, the 607 possible cases were reported; only 12 cases were proved by bird flu transmission, and 8 cases died (Ministry of Public Health, 2004). Moreover, the outbreaks led to the death or culling of millions of chicken from 10 Asian nations (National Research Council of Thailand, 2004). Caused from these outbreaks the family members or caregivers were informed to reject the poultry and products to serve for nonagenarians. It might be said that egg consumption is rather good. 80% of the families prepare food from eggs at least once a week to everyday. Most serve steamed, fried or boiled eggs. Generally, fried eggs are mixed with sliced garlic or shallot, while boiled eggs are eaten with hot steamed rice and sprinkle with soy sauce or fish sauce or chili powder to increase the taste and aroma.

3) Fish: Sheat fish (Kryptopterus kryptopterus, called Pla Nue Oan), and cat fish (Pangasius sutchi, called Pla Sa Wai), are normally consumed for nonagenarians which are having a few bonds and comfortable for them to eat it. In urban area, fish can be bought easily at the local market, which were caught from the Yuam River. The families serve them in steamed form, flavored with salt, pepper, lemongrass, and shallot. The proportion of fish consumption is also good as 80% of the nonagenarians eat fish at least once a week to everyday. As small fish that can be caught from the small river, especially in rural areas (26%), they are consumed every day. According to the texture of small fish, they are soft and bonds are not so strong, they can make this dish with steamed with eggs, salt, spring onion, and other herbs to increase more texture, and nonagenarians in rural area prefer this dish more than in any other form.

4) Sea food: Consumption of sea food is sparse due to the limited access to the sea. Thus, available sea foods in these areas are neither so good nor so fresh enough for consume. The villagers believe that some chemical preservation to keep its fresh may be added during the way of transportation. Frozen seafood can be found in the local market or weekly market in some nearby village, but not popular for the inhabitants. Not only as the quality is not so good, but also it is expensive too for most families. Normally, sea food is used to make the food at the restaurants to serve for the travelers. Anyways, steamed or dried sea foods such as steamed mackerel (Rasrrelliger chrysozomous, called Pla Too), dried shrimps (Kung Hang), shrimp or fish paste (Kapi) dried squid (Pla Mug Hang), and salted fish (Pla Khem) are available and acceptable for the villagers. Only deep fried mackerels are suitable for nonagenarians, while the other types of dried sea food are not possible as the texture is too hard for chewing. 57% of the nonagenarians quit to consume the sea food, and approximately 17% are used the sea food as food at least once a week to everyday. Moreover, canned mackerel in chili or tomato sauces are also popular for nonagenarian, most found in rural area.

5) Rice: The staple food of nonagenarians is steamed rice which is consumed every day and at every meal. Generally, brown rice (half-polished rice) is consumed by ethnical nonagenarians (37.1%) and white rice (62.9%) is formed an integral part

of urban nonagenarians. Rice is eaten with 2-3 side dishes in each meal, but single side dish also reported especially in rural area. For Thai-Chinese nonagenarians, boiled rice or rice soup (Kaw Tom) which combination between rice, pork chop, fried garlic, egg, coriander leaves, spring onion, and pepper may be served as breakfast, mostly found in urban area. Some cases who are living in low socio-economic status, boiled rice only with salt and Monosodium glutamates can be found, but in few. Moreover, during the summer time (April-May), Kaw Som (steamed rice mixed with tomato, curcuma, and fried garlic) may be served instead of normal steamed rice. Anyways, sticky rice is reported not consumed as the main dish, but commonly used in the meaning of dessert.

6) Legume: Soy beans (42.8%) and green beans (17%) are daily consumed by the nonagenarians. Most families especially in rural areas cultivate soy beans as main or supplementary income as some parts of their products are kept for household consumption. Soy beans can be the main protein source of the villagers instead of animal protein. Soy beans can be used in fresh or dried form. Fresh soybeans can be put in the soup or make soy milk, while dried fermented soy beans (Tua Naw) are regularly used as the main condiment and ingredient for the soup or curry which are consumed daily as staple food with rice. For green bean, the bean sprouts can be added in every kind of soup and easy for nonagenarians to eat it. Moreover, boiled dried green beans with sugar and a pinch of salt are served as the dessert. Dried pea or kidney beans are consumed for other generations but not for nonagenarians.

7) Fats and oils: In general, pork lard is the most common and used for cooking, particularly in rural area and less than half of the families in urban area using soybean and vegetable oil. The reusing cooking oil more than one time can be found easily in these areas. The old oil is stored in a small opened pot in the cupboard and ready to use whenever it is needed. However, the opportunities of using oil for nonagenarians are infrequent, mostly they eat soup, steamed or boiled food, whereas deep fried food not so often. 8.5% are used pork lard everyday, followed by vegetable and soybean oil which sharing in the same proportion (2.9%). Interestingly, 60% quit the soybean oil as this oil type is more expensive than the others.

8) Dairy products: As far as dairy product, particularly fresh milk or other products (cheese, butter, yogurt, cream, etc.), are neither popular nor unconcerned in these areas and Thai cuisine. From this finding, milk is strongly confirmed only to use for infants or small children, and not consumed from the older ones. It should be noted here that milk consumption in their generation is very rare. In the past, cows are used for cultivation and food, but not for milk. Even now the pasteurized or UHT milk is available through out the city, due to they not used to drink normally. Then, the digestion problem is emerged immediately as shows in the table that 74.3% of nonagenarians not fit with milk. Only 2.9% are reported drink milk daily. However, the condensed milk is acceptable which is normally used to add in hot chocolate drink, and 37.2% are used once a week to daily.

Table 7-8 Food variety and frequency of nonagenarians

Type of food	Everyday	2-3 times a week	Once a week	2-3 times a month	Once a month	Quit	Total
Meats							
Pork	51.4	28.6	8.6	2.9	2.9	5.7	100
Beef	-	2.9	2.9	2.9	8.6	82.8	100
Buffalo	-	2.9	5.7	5.7	17.1	68.6	100
Entrails	-	-	11.4	8.6	17.1	62.9	100
Poultry and products							
Chicken	-	17.1	8.6	17.1	8.6	48.6	100
Egg	8.6	34.3	37.1	8.6	11.4	-	100
Duck	-	-	-	-	2.9	97.1	100
Fishes							
Fish	17.1	45.7	17.1	5.7	22.9	54.3	100
Small fish	28.6	22.9	31.4	-	11.4	5.7	100
Sea foods							
Sea food	2.9	2.9	11.4	5.7	22.9	54.3	100

Table 7-8 (Continued) Food variety and frequency of consumption of nonagenarians

Type of food	Everyday	2-3 times a week	Once a week	2-3 times a month	Once a month	Quit	Total
Rice							
White rice	62.9	-	-	-	-	31.7	100
Brown rice	31.7	-	-	-	-	62.9	100
Legumes							
Green bean	17.1	25.8	37.1	5.7	14.3	-	100
Soy bean	42.9	28.5	20	8.5	-	-	100
Fat and oils							
Pork lard	8.5	14.2	20	20	28.5	8.5	100
Vegetable oil	2.9	20	22.9	25.8	28.5	-	100
Soybean oil	2.9	14.2	11.4	2.9	8.5	60	100
Dairy products							
Milk	2.9	2.9	11.4	-	8.6	74.3	100
Condensed milk	22.9	8.6	5.7	2.9	11.4	48.6	100
Foods primary sugar							
Sugar	28.6	8.6	14.3	22.9	17.1	8.6	100
Palm sugar	8.6	14.3	25.8	31.4	8.6	11.4	100
Dessert	22.9	22.9	14.3	5.7	28.6	5.7	100

Table 7-8 (Continued) Food variety and frequency of consumption of nonagenarians

Type of food	Everyday	2-3 times a	Once a week	2-3 times a	Once a month	Quit	Total
Food primary salt							
Fish sauce	40	25.8	20	8.5	5.7	-	100
Soy sauce	37.1	14.3	17.1	11.4	8.5	11.4	100
Soy paste	8.5	14.3	20	31.4	20	5.7	100
Shrimp paste	14.3	20	25.8	28.6	8.5	2.9	100
Salt	77.1	14.3	8.5	-	-	-	100
Vegetables, Fruits, and juices							
Vegetable	100	-	-	-	-	-	100
Fruit	17.1	17.1	40	5.7	20	-	100
Juice	-	2.9	17.1	37.1	17.1	25.7	100
Beverages and drinks							
Carbonated drink	28.5	28.5	8.6	8.6	-	25.7	100
Coco	20	8.6	8.6	11.4	5.7	45.7	100
Tea	2.9	-	5.7	-	2.9	88.6	100
Coffee	-	-	-	-	-	100	100
Liqueur	5.7	2.9	5.7	-	2.9	82.8	100
Beer	2.9	2.9	-	-	2.9	91.4	100
Ya Dong	2.9	2.9	-	-	5.7	88.5	100
Syrup	2.9	-	28.6	22.9	17.1	28.6	100

Table 7-8 (Continued) Food variety and frequency of consumption of nonagenarians

Type of food	Everyday	2-3 times a week	Once a week	2-3 times a month	Once a month	Quit	Total
Chemical additives							
Monosodium Glutamate	94.3	-	-	-	-	5.7	100
Knorr	97.1	-	-	-	-	2.9	100
Miscellaneous							
Smoking	45.7	-	-	-	-	54.3	100
Chewing beetle nut	51.4	2.9	-	-	-	45.7	100
Miang	65.7	-	-	-	-	34.3	100

9) Foods primary sugar: Granulated white sugar is the main source as sweetening ingredient of their cuisines. White sugar is high freely used in urban area than rural counterparts. White sugar can be put in every kind of foods even in fried, soup, or curry but just few to make the taste more harmonic. Using the white sugar into the main dish in rural area is uncommon.

It might be said that sugar consumption of the nonagenarians is not obtained from their main dishes, but mostly received from the dessert. Sugar cane or palm sugar is normally used instead of the granulated white sugar, where the tastes are more aromatic. From this research, 22.9% of nonagenarians consume the dessert daily. The traditional desserts in Mae Sariang which regularly consumed in urban area are Peng Mong and A- La-Va.

Peng mong is made from rice flour, coconut, and palm sugar. The way to make is so easy, just pour the water into the rice flour, coconut milk is followed and palm sugar is added, stir them creamy. Then, pour in the suitable tray and bake until golden brown. Whiles A-La-Va is having the same ingredients, but the fermented rice flour and mix with baking powder for one night is applied instead of the normal dried rice flour. These traditional desserts can be bought easily in the local markets. For them it is not only the sweet and aroma of the taste, also the textures of these desserts are so soft and easy to consume.

Traditional dessert of the Karen in rural areas is also found. Kaw Puk is the popular sweet dish in these areas. The main ingredient is steamed sticky rice, combined with roasted sesame and salt. Then pound the three ingredients together until it is fine mixed, dip with white sugar before eat. Kaw Puk is unsuitable for the nonagenarian edentulousness.

10) Foods primary salt: The using of salt in these areas for cooking is very popular (77%), but without Iodine. Fish sauce is also popular, 40% using it daily, but only few using the pure fish sauce. Most of them, especially in rural area are using the combined fish sauce (mixed water, salt, fish sauce, color effecting additive, and scent additive). Soy bean products are rather good, where 37.1% use for daily cooking instead of the fish sauce. While shrimp past and soy past are also used to make the food salty, but in few, only 14.3% and 8.5% respectively.

11) Vegetables, fruits, and juices: Vegetables are consumed everyday (100%). Vegetable foods for nonagenarians can be made in several forms such as fried, boiled, steamed, etc. In urban areas, the nonagenarians can eat in every form as indicated earlier, but rural areas prefer boiled or steamed vegetable as side dish with chili paste. Normally, vegetables for nonagenarians are green cabbage (Brassoca oleracea), Chinese cabbage (Brassica chinensis), lady's finger (Hibiscus esculentus), young jack fruit (Artocarpus heterophyllus), bamboo (Bambusa spp.), mustard greens (Brassica juncea), bottle gourd (Lagenaria leucantha), and sponge gourd (Luffa acutangula), for example. Most of nonagenarian's families in urban area have to buy these vegetables from the

local market, except Green cabbage and Chinese cabbage that the Karen in rural area can cultivated by themselves; while bamboo can be found easily in the nature. To increase the taste and aroma of the food, some herbal spices such as coriander root (Coriandrum sativum), chili pepper (Capsicum frutescens), celery (Apium graveolens), garlic (Allium Sativum), lemon grass (Cymbopogon citratus), pepper (Piper nigrum), mint leaves (Mentha sp.), basil leaves (Ocimum basilicum), and shallot (allium ascalonicum) play an important condiments of their dishes. These condiments grow in their house and they do not need to pay for it.

Fruits, when in season, are available in local or weekend market, but some fruits grow in the backyard. Examples of fruit for nonagenarians are orange (Citrus sinensis), mango (Mangifera indica), papaya (Carica papaya), durian (Durio spp.), chico (Achras zapota), and banana (Musa spp.). Most of these fruits should be in very ripe condition as it is suitable for them to chew or absorb the taste. To serve the fruits, the skins are peeled off and all seeds are taken out as well as sliced into small pieces. Fruits with many seeds such as mangosteen, watermelon, langsat, or custard apple even the textures are very soft and available in these areas but rejected, which report by awareness of choke from the seeds. 17% of nonagenarians consume fruits daily, and 40% are reported to eat once a week. Anyways, in some cases, especially nonagenarians who have no teeth, chewing the fruit may be difficult for them. Then, the orange juice is the most popular to intake the vitamin and mineral from the fruit. Interestingly, 25% of this study quit to consume fruit juice, which reported having the problem with digestion after drinking it.

12) Drink: Carbonated soft drinks such as Coca-Cola, Pepsi, or Fanta are also popular. The frequently 28.5% are daily consumed, while 25.7% had stopped, deal to the gas and digestion problem. Hot chocolate or cocoa with condensed milk or sugar, 20% are regularly consuming everyday. To protect the heart problem and insomnia symptom, coffee and tea are not allowed for them to consume (100% and 88.6% respectively). 5.7% of the nonagenarian still drink liquors. While beer, and alcohol tincture (ya-dong) are daily consumed in the same proportion (2.9%). Syrup (2.9%) is also the daily source of soft drink of nonagenarian in this research, especially in summer time. The concentrated artificial Cream Soda and Sala flavored syrup are normally served to nonagenarians.

13) Chemical additives: According to the food characteristic of nonagenarians are few ingredients. Although the several condiments such as salt, garlic, shallots, fermented soy bean, aromatic herbs, or spices are added, but there is not much meat in the dishes. Thus, in caregiver's perspective, some chemical additive ingredient is necessary to increase more taste and appetite of nonagenarians. In this research, Monosodium Glutamate (MSG) (94.3%) and soup cube or powder (97.1%) are freely used into their dishes every meal and every day. In some cases, only steamed rice sprinkled with salt, chili power and MSG, or soup cube or powder are eaten with boiled vegetables from the poor rural nonagenarians.

It is interesting to note that, on the local interpretation of healthy aging is good eating and enjoying the meal. Thus, only one way to increase the taste of the dish or raised consumption is chemical additive. During the midst of social and economic limitation, the MSG or soup cube or powder is not much expensive, but make a good result.

14) Miscellaneous: Smoking at the old aged is also found in this research, 45.7% are still smoking daily, while 54.3% have quit. More than half of them are beetle nut chewer where 51.4% consume it everyday and most of them are found in rural area, while the urban nonagenarians, chewing the fermented tea leaf (Miang) (65.7%). To ferment the tea leaf, the selection of fresh young tea leaf must be concerned, then steaming until it cooked, put into the jar and closed lid tightly, waiting the process of fermentation approximately one month until ready to consume. Then, wrapping a small piece of salt in the Miang leaf; chewing until the taste it is gone, some can swallow down if the Miang leaf is very young. The advantage of chewing Miang is the same as other generations drink tea, which mostly are for increasing an energetic living and cleaning mouth after meal.

7.5.3 Food type and taste satisfaction

The table 7-9 indicates that the boiled dish (soup) is daily consumed by nonagenarian (94.3%). The chili paste (Num Prik) mixed with shallot, garlic, fish sauce, lemon, fermented soy beans, chili, and others (depending on their own recipes) are eaten (51.5%) with boiled or steamed vegetable. Fried food, mostly served are stir-fried vegetables, but are few, only 25.7% are consumed in everyday. The hard and sticky food such as smoked meat, deep fried, baked, and grilled do not fit for nonagenarians to consume, due to the limitation of oral health and number of remaining teeth (Table 7-9).

Table 7-9 Food types of nonagenarians

Food type (N=35)	Everyday	2-3 times a week	Once a week	2-3 times a week	Once a month	Total
Deep fried	-	5.7	11.4	40	42.8	100
Baked	-	8.6	37.1	22.9	31.4	100
Fried	25.7	34.4	11.4	5.7	22.8	100
Grilled	-	14.3	25.7	28.6	31.4	100
Boiled	94.3	5.7	-	-	-	100
Smoked	-	-	17.1	31.4	51.5	100
Chili paste	51.5	28.6	11.4	8.6	-	100

Moreover, to determine the satisfaction with taste of the daily food, the 5 scales (very satisfied - very dissatisfied) of the 7 tastes including sweet, salty, sour, spicy, lard, bitter, and tasteless were asked. From the table 7-10, it might be said that nearly half of the nonagenarians (40%) are satisfied with sweet and salt taste, followed by tasteless, lard, and spicy (37.1%, 34.3%, and 25.7%

respectively). Moreover, only 11.4% of the nonagenarians are satisfied with sour and bitter. On the other hand, the nonagenarians in rural area (Karen ethnicity) are not enjoying with the tasteless food (28.6%).

Table 7-10 Taste satisfaction of nonagenarians

Taste satisfaction	Very satisfied	Satisfied	Neither satisfied nor dissatisfied	Dissatisfied	Very dissatisfied	Total
Sweet	40	14.3	22.9	8.6	14.3	100
Salty	40	22.9	14.3	14.3	8.6	100
Sour	11.4	14.3	28.6	42.9	2.9	100
Spicy	25.7	11.4	22.9	20	20	100
Lard	34.3	20	31.4	11.4	2.9	100
Bitter	11.4	17.1	17.1	37.1	17.1	100
Tasteless	37.1	20	5.7	8.6	28.6	100

7.5.4 Nutritional status

To measure the nutritional status, the Mini Nutritional Assessment (MNA) was applied to identify the 3 differences of nutritional status of nonagenarians including well nourished, at risk for malnutrition, and malnourished.

The development of the MNA began at the meeting of the International Association of Geriatrics and Gerontology (IAG) 1989. The MNA test was developed and validated in France and United States and is used mostly for the nutritional assessment of elderly and patients. (Vellas et al, 1999; Vellas et al, 2006; Vellas et al, 2000; Guigoz et al, 2002, Guigoz et al, 1994: see Suominen, 2007) Moreover, Amella (2007) suggests that MNA can be used to identify older adults (>65 years) who are at risk of malnutrition. Green and Watson (2006) affirmed that the most extensively evaluated tool of nutritional status is the Mini Nutritional Assessment (MNA), which is simple, reliable, well-validated, and sensitive when compared to a variety of nutritional parameters, such as biochemical, anthropometry, or dietary intakes. (Bleda et al, 2002; Guigoz et al, 2002; Guigoz, 2006: see Suominen, 2007).

The MNA includes 18 different variables in four main areas: anthropometric measurements (BMI, weight loss, arm and calf circumferences), general assessment (lifestyle, medication, mobility and presence of signs of depression or dementia), short dietary assessment (number of meals, food and fluid intake, and autonomy of feeling), and subjective assessment (self perception of health and nutrition) which gives a maximum of 30 points and it is able to classify an elderly individual as well nourished (>23.5 points), at risk for malnutrition (17-23.5 points) and malnourished (<17 points) (Vellas et al, 1999; Guigoz et al, 2002; Guigoz, 2006; Vellas et al, 2006: see Suominen, 2007).

Table 7-11 Nutritional status of nonagenarians

Nutritional status*	Male (13)	Female (19)	Total (32)	Urban (13)	Rural (19)	Total (32)
Well nourished	-	-	-	-	-	-
At risk for malnutrition	61.5	31.6	43.8	69.2	26.3	43.8
Malnourished	38.5	68.4	56.3	30.8	73.7	56.3
Total	100	100	100	100	100	100

*3 cases are excluded which deal to the physical limitation with in paralysis and unable to measure BMI

The table 7-9 shows the majorities of nonagenarians (56.3%) are malnourished, where females are 2 times higher than males. For residential differences, the malnourished in urban area are 2 times lower than in rural area. The well nourished are not found from this research, there is statistically differential significant of nutritional status between urban and rural ($p < 0.05$). The clear pictures are shown in figure 7-1 and 7-2.

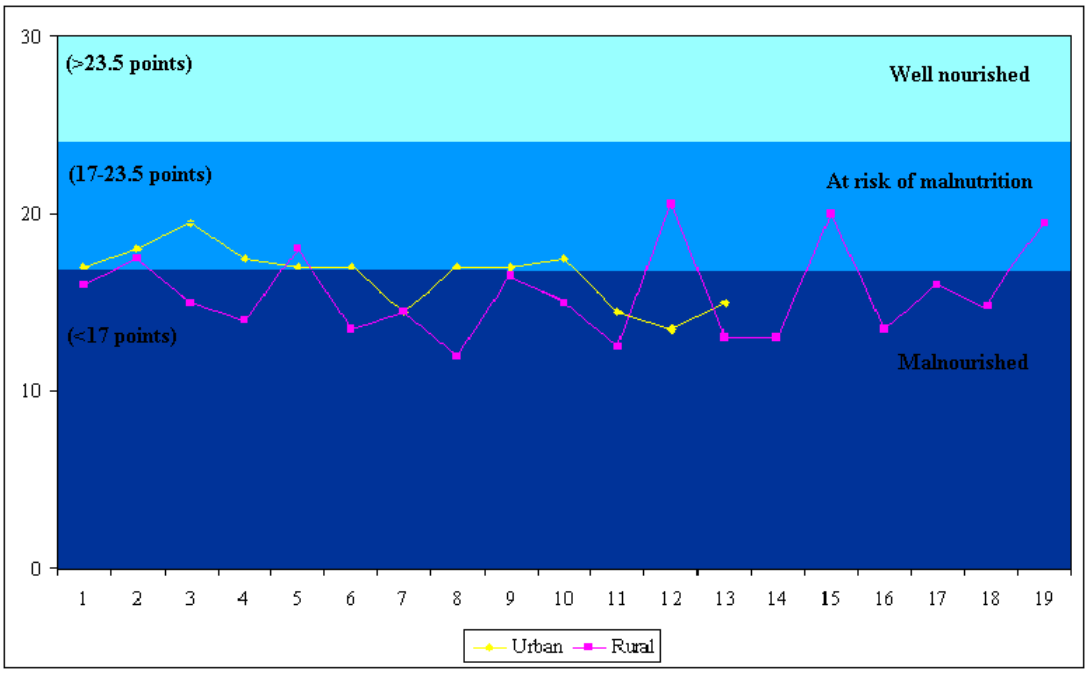


Figure 7-1 The difference of nutritional status divided by residence

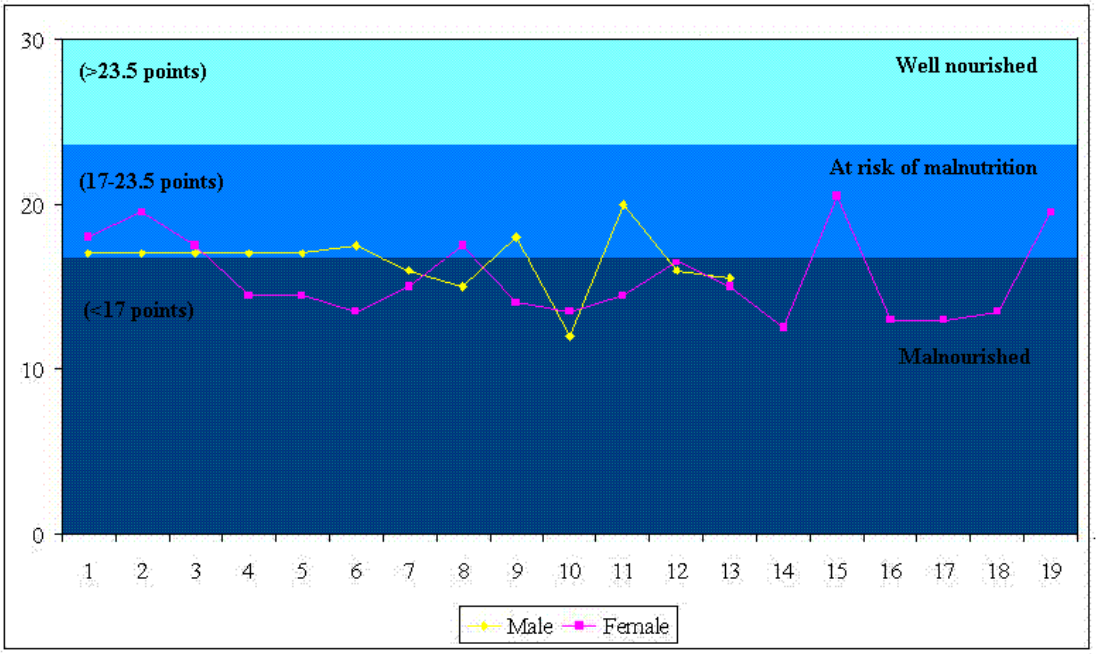


Figure 7-2 The difference of nutritional status divided by gender

7.5.5 Nutritional intake: two extreme case studies

The aim of comparison study of the two extreme cases is to show the differences of the menu and nutritional intake. Mrs. A is representative case of nonagenarians in urban area, while Mrs. B is an example case of Karen ethnicity in rural counterpart. Their backgrounds are given in the next page. It should be noted here, that these two subjects are selected as the main reason that daily food meal is prepared at home; buying the ready-to-eat food is very rare. According to this reason, the researcher can identify the material raw food or weigh the total of cooked food and food consumes by the subject more easily. In addition, because both of them eating alone, they have their own dishes and special meal, knowing from their total amount of food consumption will give a clear picture since eating with others has been associated with greater food intake.

The three days of 24-h weighted-food record was used to obtain information on food and nutrient intake. The raw ingredients before cooking, total cooked food and consume were weighed by using a digital portable scale. The nutritive values for the food consumption of the subjects were calculated by using the “Nutrient composition table of Thai foods” which published by Ministry of Public Health. The average nutritive values in a day in terms of calories, protein, fats, minerals, and vitamins were also calculated. The food and nutrient intakes were then compared with USA Recommended Dietary Allowances (USA RDAs) which having the special category for female aged 75 years old or over and with Thai Recommended Dietary Allowances (Thai RDAs) for normal aged population 51 years old or over.

Mrs. A: age 93, widow, 3 sons, living with caregiver in urban area
"Mrs. A; originally was born in Mae Sariang district. She is now a widow as her husband passed away for almost 15 years. She has 3 sons, 3 daughter-in-laws, 3 nieces, 5 nephews, and 2 great grandchildren. According to the 4 years of educational attainment, she is perfectly fluent in reading and writing. Before retired, she was a teacher in school district. So, she is well known in this district. All her sons are well educated, 2 sons graduated in master and another graduated in bachelor degree from the university in Bangkok and working there until now. She has to live alone without any relatives in her 2 floor house. Fortunately, she still has one female caregiver who is Karen migrant which moved from the high land to the lower land 10 years ago. The caregiver is illiterate. Her duties are house chore, cooking, and care for the entire things she needs"
Mrs. B: age 92, widow, 1 son, living alone in rural area
"Mrs. B; the Karen nonagenarian where nobody in the village knows where she is originally from. Her life was explained by the village headman that she migrated from the hill in another district. Her background is unknown. Another explanation, from a neighbor, was that she used to be the nun and has only 1 son who now is in jail. She also has 1 niece and 2 nephews but never visited her for long times. She is illiterate, living alone in the poor housing condition. Few supports from the neighbors are found, but only sometimes. Normally, she never walks out from her small hut to make a social contact, except go to the toilet which located outside nearby. To access the food sources, gathering some vegetables in the forest, waiting the raw or ready-to-eat foods from the neighbor, or fasting when the food is not available is her normal life situation"

The food menu of the three days investigation found that Mrs. A in urban area consumes food in a bigger variety than Mrs.B in rural area. Her staple food is rice but in the soup form. She can access animal protein and egg daily which are mixed in the rice soup. Minerals and vitamins from fruits are also consumed everyday. Moreover, the UHT soymilk as the dietary supplementary is drank at least 250 ml a day. Dessert is found, but not so much and only few in form of vegetables.

Food menu of Mrs B is a bit different from Mrs A. where the food variety is very limited. Anyways, the rice is also consumed as staple food, but the type is steamed brown rice and having only two meals a day. She obtains the animal protein from mackerel fish or canned mackerel fish with tomato sauce. Chili paste and boiled vegetables are generally practiced to consume. Due to the limitation of living arrangement and family support that cause her that she can neither access the dessert nor fruit.

Table 7-12 Food menus of nonagenarians

Mrs. A (urban area)	Mrs. B. (rural area)
Day 1	
Breakfast - Boiled rice with egg and pork - UHT soy milk	Breakfast -
Lunch - Boiled rice (form the breakfast) - Orange	Lunch - Mackerel fish (deep fried) - Steamed brown rice eat with salt, soup cube or powder, and chili powder
Dinner - Boiled rice with egg and pork - Steamed fish with curry	Dinner - Mackerel fish (from the lunch) - Boiled cabbage - Steamed brown rice eat with salt and chili powder
Day 2	
Breakfast - Boiled rice with egg and pork - UHT Soy milk	Breakfast -
Lunch - Boiled rice (from the breakfast) - Orange - A-La-Va	Lunch Chili paste and boiled green cabbage Mackerel fish (from the 1st day) Steamed brown rice
Dinner - Boiled rice with egg and pork - Steamed egg with garlic and shallot - Orange	Dinner Canned mackerel fish Steamed brown rice
Day 3	
Breakfast - Boiled rice with egg and pork	Breakfast -
Lunch - Boiled rice (from the breakfast) - Orange - UHT Soy milk	Lunch - Canned mackerel fish (from the 2nd day) - Steamed brown rice
Dinner - Boiled rice with egg and pork - Steamed egg with garlic and shallot	Dinner - Boiled egg - Chili paste with boiled green cabbage - Steamed brown rice

The energy intake of the elderly (Table 7-13) in this study is found to have a low energy intake below the Thai RDA and USA RDA. In the year 1995, Pongpaew indicated that female elderly in Thailand consumed 1189 calories, is seems that the representative case in this study have higher energy intake than the past. However the report from Pongpaew (2000) found that the general energy intake of Thai female elderly in the year 1999 was increased to 1397 calories, deal to this evidence, Mrs.A is has more energy intake, while at Mrs.B. it is still lower.

To compare the energy intake to the other studies, the result of this study is going on the same direction with the other parts of the world, that most of elderly people are not achieving the recommended energy intake even in Australia, India, South Africa, or China (Blazos et al, 1996; Charlton et al, 2001; Chen, 2001; Reddy et al, 2004).

The macronutrient, protein and carbohydrate are acceptable, but the total fat should be attention not to be lower than RDA but lard oil is very popular in these areas. Moreover, the representative cases have low calcium; low calcium intake might be due to the low intake of food item with calcium such as milk and milk product.

Table 7-13 Differences in food intakes of the 2 case studies

	USA RDA / (Thai RDA)	Mrs. A (Urban area) Mean ± SD	Mrs. B (Rural area) Mean ± SD
Energy			
Kcal	1873 / (1850)	1470 ± 130.4	1252±310.8
kJ	7842 / (7746)	6158 ± 545.9	5244±1301.5
Protein (g)	46	37.4 ± 1.6	2.7± 25.8
Fat (g)	20-30% (Kcal)	84.4 ± 3.9 (5.7%)	38.7±40.5(3.1%)
Carbohydrate (g)	130	127.2 ± 34.7	200.3 ± 20.9
Dietary fiber (g)	21	3.2 ± 0.7	18.9 ± 1.4
Calcium (mg)	1200 (800)	348.9 ± 50.6	389.2 ± 186.1
Phosphorus (mg)	700 (800)	653.5 ± 74.0	1464.7 ± 621.2
Iron (mg)	8 (10)	9.8 ± 0.6	493.4 ± 752.1
Total Vitamin A (RE)	700	391.0± 50.4	528.0 ± 45.0
Vitamin E (mg)	15	1.6 ± 1.3	223.7 ± 274.6
Thiamin (mg)	1.1	1.9 ± 0.1	2.6 ± 3.1
Riboflavin (mg)	1.1	1.2 ± 0.1	0.4 ± 0.08
Niacin (mg)	14	17.0 ± 1.7	17.6 ± 6.8
Vitamin C (mg)	75	118.0 ± 42.4	60.6 ± 8.9

The mean intake of the representative cases is also acceptable for micronutrient. The phosphorus, Iron, Vitamin A, E, Thiamin, Riboflavin, Niacin, and Vitamin C which are received from vegetables and fruits seem to be adequate. Mrs.B has much more micronutrient than Mrs.A because of green cabbage, and chili paste that she consumes regularly. Even Mrs.A can not access the micro nutrient from the real vegetable, but the variety of food and other dietary supplement are play an important factor to access the micronutrient intake.

7.6 Conclusion

Table 7-14 shows the code and characterization of five main variables of behavioral determinants (ADL, IADL, remaining teeth, self-rated oral health, and nutritional status) which are divided into three sub categories including good, fair, and poor.

The figure 7-3 indicates that, more than 50% of respondents having poor ADL performances which are 4-6 ADL disabilities of daily living. Moreover, higher than 80% are reported having poor IADL, which included 5-8 IADL disability in everyday life (Figure 7-4). Around 70% of this study have less than 9 teeth (Figure 7-5) which the same proportion that more than 60 % report poor oral health condition (Figure 7-6), and more than half of the respondent identified in malnourished category (Figure 7-7).

Table 7-14 Code and characterization of behavioral determinant variables

Name of variables	Code	Characterization of the variable
ADL	3 = good 2 = Fair 1 = Poor	None ADL disability Having 1-3 ADL disabilities Having 4-6 ADL disabilities
IADL	3 = good 2 = Fair 1 = Poor	None IADL disability Having 1-4 ADL disabilities Having 5-8 ADL disabilities
Remaining teeth	3 = good 2 = Fair 1 = Poor	> 20 teeth 10-19 teeth 0-9 teeth
Self-rated oral health	3 = good 2 = Fair 1 = Poor	Rated good oral health Rated fair oral health Rated poor oral health
Nutritional status	3 = good 2 = Fair 1 = Poor	MNA > 23.5 points (well nourished) MNA 17-23.5 points (at risk of malnutrition) MNA < 17 points (malnourished)

Finally, in the top view of behavioral determinant, the variable items are summarized with the possible scores can be ranged form 0-15 scores. (1-5=poor, 6-10 = fair, and 11-15 = good). The figure 7-8 illustrates that the vast majority of the respondents are living in the midst of poor and fair condition (51.4% and 45.7% respectively). Only 2.9% are enjoying their life in good behavioral condition.

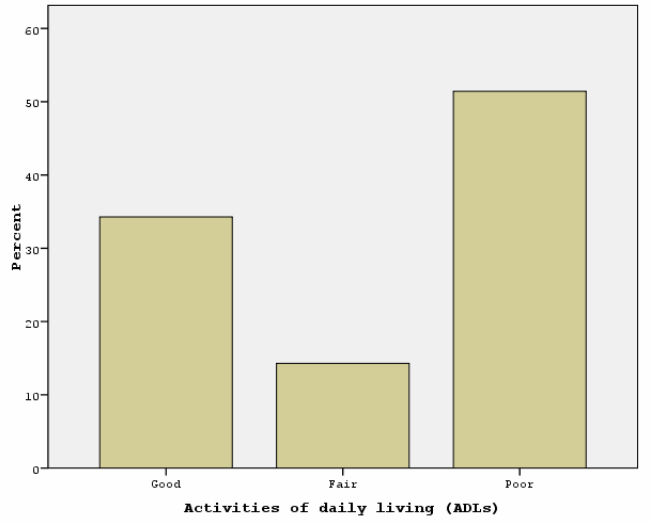


Figure 7-3 Conclusion of activities of daily living (ADLs)

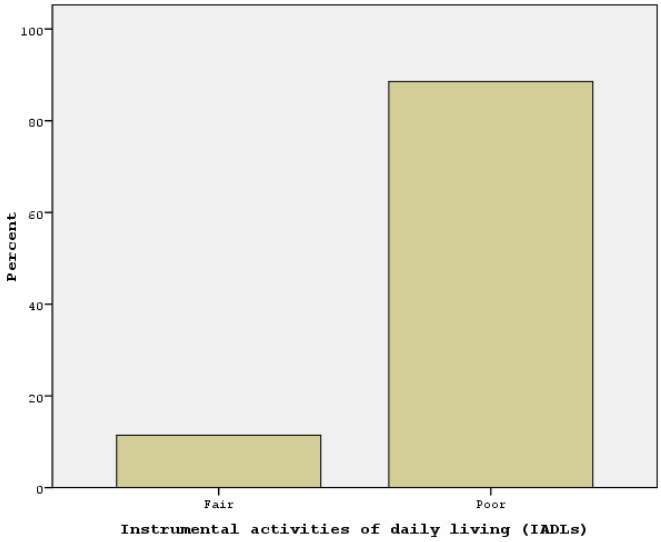


Figure 7-4 Conclusion of instrumental activities of daily living (IADLs)

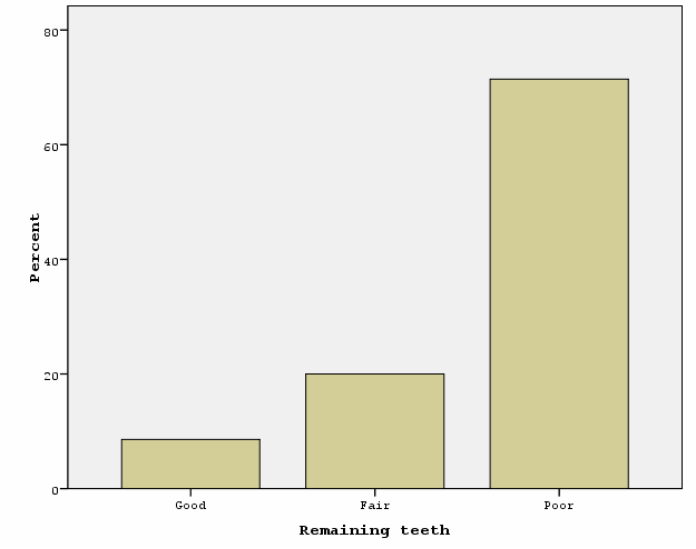


Figure 7-5 Conclusion of remaining teeth

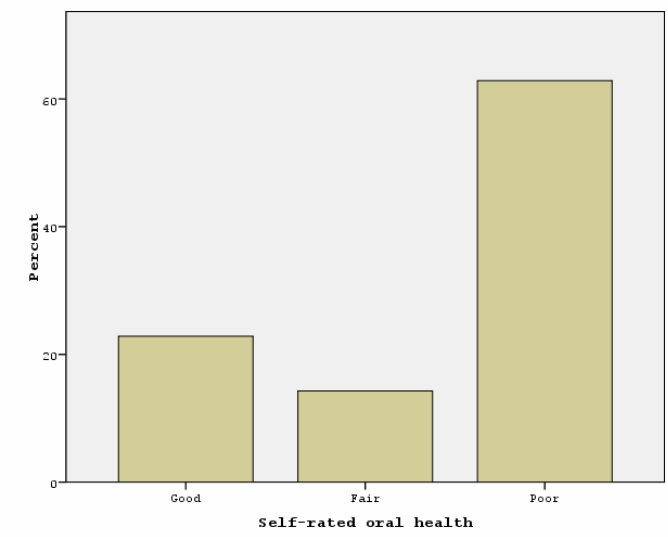


Figure 7-6 Conclusion of self-rated oral health

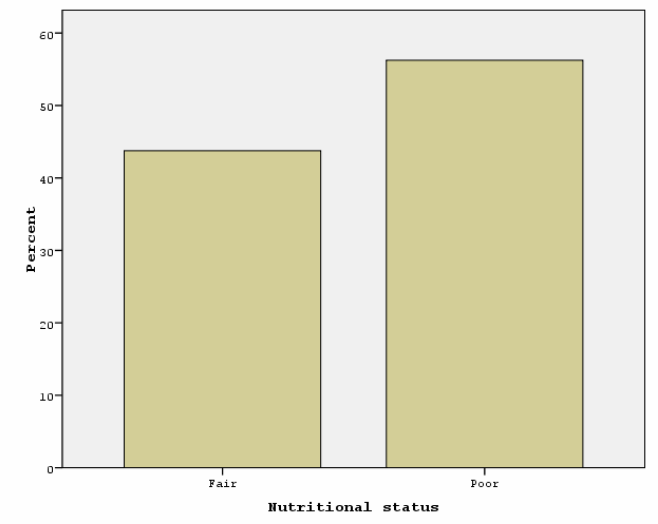


Figure 7-7 Conclusion of nutritional status

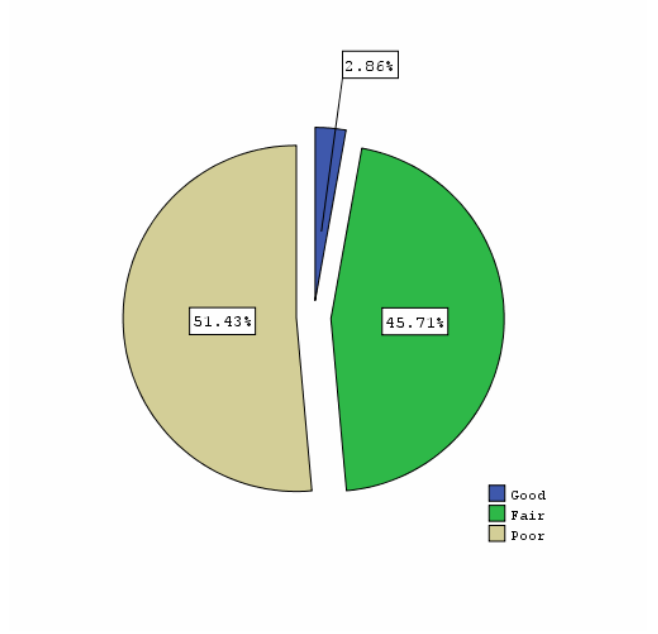


Figure 7-8 Main finding in behavioral determination

CHAPTER 8

PSYCHOLOGICAL HEALTH

Psychological determinants or mental health issues have also been recognized as the most important impact on the quality of life for the elderly population. In this research, the psychological health status of nonagenarians can be interpreted by using the four main subcategories, including cognitive function, happiness, stress and depression. The Mini-Mental State Examination-Thai Version (MMSE-Thai 2002), the depressive measurement from the Center for Epidemiological Studies-Depression Scale (CESD), the Thai Happiness Indicators (THI-15), and the Suanprung Stress Test-20 (SPST-20), which are widely used to measure the mental health of Thai people, either in epidemiological and community public health researches, are applied as the main screening tests for this study.

8.1 Cognitive function

The cognitive breakdown may result from a variety of mental conditions including dementia, depression, brain injury and mental retardation (Tombaugh et al, 1992). In this study, the cognitive function of nonagenarians was screened by the Mini-Mental State Examination-Thai Version (MMSE-Thai 2002). The MMSE-Thai 2002 was culturally translated into the Thai language based on the established international standard of the MMSE questionnaire, which tests in eleven aspects of cognitive functioning: time orientation, place orientation, registration, attention or calculation, recall, naming, repetition, verbal command, written command, writing and visual construction (Prasat Neurological Institute, 2003).

In this research, some questions of MMSE-Thai 2002 were changed in order to adapt to the the cultural situation of the Karen and the local population in the Mae Sariang district, so that all questions would be easily understandable and answerable. For example, in aspect of registration, the MMSE-Thai 2002 asks the respondents to concentrate on three words from the researcher (flower, river, train) and then repeat afterward. On the process of screening, most of them, especially the Karen, did not have any idea what the train is and could not repeat. Then on the next day of investigation, the word “train” was replaced by the word “cabbage”. Moreover, in writing aspect, the MMSE-Thai 2002 asks the respondents to write one of meaning sentences, but due to limited literacy, writing the first and family name of the nonagenarians is represented instead of writing the sentence.

Basically, MMSE scores a range from 0 to 30, with lower scores indicating poor cognitive ability (Zhang, 2006). The persons who reach a score of less than 18 are defined as severely impaired, those who recach a score of 18 to 23 as mildly impaired, and those who reach a score of 24 and above as unimpaired (Kelman

et al, 1994). Some researchers suggested that the MMSE scores and the cognitive function of the subjects are correlated with the literal ability and the level of education (The JBHE Foundation, 1998; Barnes et al, 2004; Zhang, 2006). As already mentioned before, the nonagenarians in Mae Sariang are illiterate and some aspects of MMSE are dealing with writing ability. It is appropriate to use a very low cut-off point to measure their cognitive impairment (Zhang, 2006). It should be noted here that the low cut-off point in this study might be lower than in the previous research (Kelman et al, 1994; Rangberg et al, 2001; Silver et al, 2001; Zhang, 2006). The nonagenarians who have the total scores lower than 16 are identified as having cognitive impairment, which is following the low cut-off point for the illiteracy population group from the Prasat Neurological institute (2003). The mean score in each aspect is shown in table 8-1.

The research found that the aspect of naming, where the researcher showed 2 things and asked the nonagenarians to name (pen and watch), shows the highest cognitive ability in which most of them are able to give an answer (Means = 1.93 from the 2 points, or 97% are able to answer). While the visual construction aspect, where the nonagenarians have to draw the overlap of the two pentagons, shows the lowest cognitive ability in which most of them are unable to draw (means = 0.12 from 1 point or 87.9% are unable to do). All this is affected by visual, writing and drawing disabilities as well as the Parkinson symptom.

Table 8-1 Mean scores for MMSE of nonagenarians divided in each item

MMSE (33 cases)		Mean	SD	max.	min.	Unable to do(%)
Orientation for time	(5 points)	2.09	1.62	5	0	15.2
Orientation for place	(5 points)	2.69	1.82	5	0	15.2
Registration	(3 points)	1.69	1.26	3	0	30.3
Attention/Calculation	(5 points)	2.39	1.80	5	0	18.2
Recall	(3 points)	1.03	1.28	3	0	54.5
Naming	(2 points)	1.93	0.34	2	0	3
Repetition	(1 point)	0.45	0.66	1	0	60.6
Verbal command	(3 points)	1.90	1.20	3	0	21.2
Written command	(1 point)	0.21	0.41	1	0	78.8
Writing	(1 point)	0.15	0.36	1	0	84.8
Visual construction	(1 point)	0.12	0.33	1	0	87.9

Table 8-2 Mean scores for MMSE of nonagenarians

Mean MMSE scores		Means	SD	Max.	Min.
Gender	Male (14)	15.07	7.92	28	2
	Female (21)	13.45	6.62	25	3
Residence	Urban (13)	12.53	7.24	28	2
	Rural (20)	15.10	6.98	26	3
Total (33)		14.09	7.09	28	2

As illustrated in table 8-2, the mean MMSE score (± SD) of the respondent is 14.09± 7.09. For males is 15.07 ± 7.92 and 13.45 ± 6.62 for females. For residential setting, the respondents in rural area performed better than the respondents in urban area, which means and standard of deviation of 15.10 ± 6.98 and 12.53 ± 7.24, respectively.

From a 30-point scale it is possible to classify the cognitive impairment of nonagenarian individuals, graded as severe (0-16 points), mild (17-24 points) and not present (25-30 points). The table 8-3 shows that the majority of the nonagenarians (66.7%) are demented, females are higher demented than males. This finding is related to previous studies, where the gender differentials in cognitive function impairment are higher for females than for males (Kelman et al, 1994; Juva et al, 2001; Hagberg et al, 2001; Ranburg et al, 2001; Handson et al, 2004; Zhang, 2006). For residential differences, the cognitive impairment in urban area is higher than in rural area.

Table 8-3 Cognitive function of nonagenarians divided by gender and residence

Cognitive function	Male (13)	Female (20)	Total (33)	Urban (13)	Rural (20)	Total (33)
Good	15.4	15	15.2	7.7	20	15.2
Mild (probably dementia)	30.8	10	18.2	15.4	20	18.2
Severe (dementia)	53.8	75	66.7	76.9	60	66.7
Total	100	100	100	100	100	100

8.2 Happiness

Normally, happiness is the mental condition of individuals which refers to the better mental health and also to the individual life's quality. Many researchers, especially psychologists, try to measure the happiness of individuals by the scale-measurement and many of them prefer to measure in terms of "degree of satisfaction" "hope" "subjective well-being" and "attitude" (Mahaarcha et al, 2007; Chen et al, 2006; Chen & Davey, 2008). For this part, the research about the happiness score was followed by the Thai Happiness Indicators (THI-15), which was developed by the Department of Mental Health in the Ministry of Public Health. The Thai Happiness Indicators are based on 15 questions. For each question, the possible score ranges from 1 to 3 scores and the total maximum is 45 scores. It is possible to classify the nonagenarians as good (33 - 45 scores), fair (27 - 32 scores) or poor (0 - 26 scores) (Mongkol et al, 2002). According to the 15 questions of the Thai Happiness Indicators (THI-15), the details are explained in table 8-4. The research found that the feeling of collective security is the main perspective for their happiness, which means and standard deviation of 2.21±0.48, followed by having time to relax or avoid stress and believe that they can survive even if bad things happen, which are shared in the same mean (2.09), while the least mean scores is the feeling to start or create a new job, which means and standard deviation of 0.27±0.26.

Table 8-4 Mean scores for happiness of nonagenarians divided in each item

Happiness	Mean	SD	max.	min.
You feel happy with your life	1.14	0.94	3	0
You feel proud about your life	1.11	0.93	3	0
You have to go regularly to the hospital for treatment to work and survive	1.94	0.48	3	1
You feel satisfied with your body and feature	0.51	0.78	3	0
You have a good relationship with your neighbors	1.71	1.01	3	0
You feel your life is successful and progressive	1.11	0.93	3	0
You will be in the bad mood when unexpected things happen	1.91	0.44	3	1
You believe that you can survive even if bad things will happen	2.08	0.78	3	0
You can do daily routine work by yourself	1.88	0.90	3	0
You feel happy when you help someone in trouble	1.37	1.05	3	0
You feel happy to start or create a new job and attempt that it will be successful	0.25	0.61	3	0
You feel your life is worthless and unuseful	1.48	1.01	3	0
You have friends or other relatives to support you when you need help	1.91	1.12	3	0
You believe that the community where you are living is safe and secure for you	2.20	0.47	3	1
You have time to relax and avoid stress	2.08	0.65	3	1

Table 8-5 Mean scores for happiness of nonagenarians

Mean scores of happiness	Means	SD	Max.	Min.
Gender				
Male (14)	22.85	6.64	37	15
Female (21)	22.90	5.89	34	14
Residence				
Urban (13)	25.61	5.93	37	17
Rural (22)	21.27	5.74	33	14
Total (35)	22.88	6.11	37	14

Table 8-6 illustrates that the vast majority of nonagenarians in this area (71.4%) are less happy, as demonstrated by the score of less than 26. Rural nonagenarians enjoy less happiness than the nonagenarians in urban areas (77.3% and 61.5% respectively), while there is no difference between male and female score of low happiness. For the level of fair happiness 17.1% reported their happiness as acceptable, while only 11.4% are able to face much more happiness and to enjoy their life. The happiness for males is reported higher than for females 14.3% and 9.5% respectively. The urban nonagenarians are happier than rural nonagenarians (15.4% and 9.1% respectively).

This result is related to the study of elderly people in community dwelling in the central (Nakhon Pathom) and northeastern part (Nhong Khai) of Thailand. These studies demonstrate that the majority of the elders in community are unhappy, the happiness scores are lower than 26. (Kanchanaprutthiphong & Thawongklang, 2002; Netcharat & Hongdumnern, 2007). Moreover, when the happiness score of these nonagenarians is compared with the score of other population groups, the happiness of the nonagenarians is lower than the happiness of HIV patients and physical handicapped people (Suchatchit, 2007; Sirithongthaworn et al, 2004).

Table 8-6 Happiness of nonagenarians divided by gender and residence

Happiness	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Good quality (33 - 45 scores)	14.3	9.5	11.4	15.4	9.1	11.4
Fair quality (27 - 32 scores)	14.3	19	17.1	23.1	13.6	17.1
Poor quality (< 26 scores)	71.4	71.4	71.4	61.5	77.3	71.4
Total	100	100	100	100	100	100

8.3 Stress

To measure the stress of nonagenarians, the stress screening (Suanprung Stress Test-20), which is widely used to measure the mental health of Thai people, either in epidemiological and community public health researches, is applied as the main tool for this part.

The Suanprung Stress Test-20 (SPST-20) consists of 20 questions, which rates stress mood on a 0 to 4 severity scale. The possible scores are ranging from 0 - 80. The interpretation of stress can be divided into 4 categories: 0 - 23 (mild stress), 24 - 41 (moderate stress), 42 - 61 scores (high stress) and 62 scores or over (severe stress) (Department of Mental Health, 2007). The mean score in each question is shown in Table 8-7.

Table 8-7 Mean scores for stress of nonagenarians divided in each item

Stress (35 cases)	Mean	SD	Min.	Max.
Afraid of failing in your work	0.28	0.51	0	2
Unsuccessfulness to meet the expected goal	0.74	0.91	0	3
Family has economic problem/house chore conflicts	2.28	1.40	0	4
Worrying about environmental pollution	1.14	0.87	0	3
Feel to have to compete and to be compared	0.48	0.65	0	2
Money is not enough	2.31	1.36	0	4
Muscle pain	2.11	0.86	1	4
Headache from stress	1.80	1.02	0	4
Back pain	2.28	0.85	0	4
Loss of appetite	1.74	0.81	0	4
One-sided headache (Migraine)	1.34	0.87	0	3
Feel anxiety	1.68	0.93	0	4
Feel doubtful or suspicious	1.80	1.05	0	4
Feel angry or bad mood	2.02	0.74	0	4
Feel sad	2.37	0.94	0	4
Loss of recall	2.91	0.70	1	4
Feel confused	2.02	0.82	0	4
Loss of concentration	1.77	0.94	0	4
Feel easy to get tried	2.05	0.83	0	4
Get a cold easily	2.25	0.74	0	3

As explained in table 8-8, the mean stress score (±SD) of the respondents is 35.37±10.04. This research found that males feel more stressed than females (37.71±9.83 and 33.80±10.10, respectively). For residential setting, the respondents in rural area have more stress than in urban area with means and standard of deviation of 38.90±8.18 and 29.38±10.33.

Table 8-8 Mean scores for stress of nonagenarians

Mean score	Means	SD	Max.	Min.
Gender				
Male (14)	37.71	9.83	57	14
Female (21)	33.80	10.10	52	15
Residence				
Urban (13)	29.38	10.33	46	14
Rural (22)	38.90	8.18	57	15
Total (35)	35.37	10.04	57	14

Table 8-9 Stress of nonagenarians divided by gender and residence

Stress	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Mild stress (0 - 23 scores)	7.1	19	14.3	30.8	4.5	14.3
Moderate stress (24 - 41 scores)	57.1	52.4	54.3	53.8	54.5	54.3
High stress (42 - 61 scores)	35.7	28.6	31.4	15.4	40.9	31.4
Severe stress (> 62 scores)	-	-	-	-	-	-
Total	100	100	100	100	100	100

Table 8-9 illustrates that the vast majority of nonagenarians in this area (54.3%) suffer from moderate stress (scores 24 - 41). There are no differences between gender and residence. Approximately 31.4% suffer from high stress (scores 42 - 61), where males are more stressed than females and nonagenarians in rural areas are more affected than in urban areas. Mild stress is found in low numbers (14.3%), where females are affected less than males (18% and 7%), and urban nonagenarians are affected less than rural nonagenarians (30.8% and 4.5%). Fortunately, severe stress was not found in this screening.

8.4 Depression

Depression symptoms are the most prevalent mental health problems among the elder people, and the prevalence is increasing with age of 65 and 85 (Hooijer et al, 1995; Townsend et al, 2001). To measure the scale of depression of the nonagenarians, a 20-item list from the Center for Epidemiological Studies-Depression (CES-D) was applied for this research, which rated depressed mood on a 0 to 3 severity scale. The CES-D contains 16 negatively oriented items and 4 positively oriented items (reverse scored) and has been proved as a valid and reliable instrument when used with the Spanish-speaking population and the Mexican American elders (Angel & Guarnaccia, 1989; Geiselmann, 1995; Chiriboga et al, 2002). Basically, the total score will range somewhere between 0 and 60, a score of 16 or higher is used as a cutoff for heightened probability for clinical depression. This research also followed by this cutting point, but more specified in mild depression (17 - 38 scores) and severe depression (39 - 60 scores). The mean scores in each list of CES-D are shown in table 8-10.

Table 8-10 Mean scores for depression of nonagenarians divided in each item

Depress	Mean	SD	max.	min.
I was bothered by things that usually don't bother me	1.62	0.73	3	1
I did not enjoy eating; my appetite was poor	1.85	0.80	3	0
I felt that I could not shake off the blues, even with the help from family or friends	1.54	0.74	3	1
I felt that I was just as good as other people	1.60	0.94	3	0
I had trouble keeping my mind on what I was doing	1.42	0.55	3	1
I felt depressed	1.62	1.03	3	0
I felt that everything I did was an effort	1.68	0.75	3	1
I felt hopeful about the future	1.82	0.98	3	0
I thought my life was a failure	1.54	0.81	3	0
I felt fearful	1.48	1.01	3	0
My sleep was restless	1.51	0.61	2	0
I was happy	1.31	1.02	3	0
I talked less than usual	1.45	0.61	2	0
I felt lonely	1.60	1.09	3	0
People were unfriendly	1.42	0.60	3	0
I enjoyed life	1.97	1.15	3	0
I had crying spells	1.08	0.70	2	0
I felt sad	1.54	0.91	3	0
I felt that people dislike me	0.68	0.83	2	0
I could not get "going"	1.51	1.03	3	0

Table 8-11 Mean scores for depression of nonagenarians

Mean depressive score	Means	SD	Max.	Min.
Gender				
Male (14)	29.50	12.50	53	5
Female (21)	30.90	11.86	52	7
Residence				
Urban (13)	21.61	8.12	30	5
Rural (22)	35.50	10.90	53	11
Total (35)	30.34	11.96	53	5

As illustrated in table 8-11, the mean scores of depression (±SD) of the nonagenarians are 30.34±11.96. The mean scores of males and females are 29.50±12.50 and 30.90±11.86, respectively. For residential differences, the nonagenarians in rural areas are more depressed than the nonagenarians in urban areas with means and standard of deviation of 35.50±10.90 and 21.61±8.12, respectively.

From a 60-point scale the level of depression can be classified into three categories: no depression (0 - 16 scores), mild depression (17 - 38 scores) and severe depression (39 - 60 scores). Table 8-12 shows that 94.3% of the nonagenarians are depressed. This percentage is higher than of the oldest old in the Berlin Aging Study (65%) (Geiselmann, 1995). Moreover, more than 80% of the respondents suffer from mild depressions; females suffer from this more than males (85.2% and 78.6%, respectively). There are just small differences between urban and rural areas. Finally, 11.4% have severe depression and need treatment. This result also shows in the same way like previous researches that in general females are reported to have more depression symptoms than males (Eaton & Kessler, 1981; Nolen-Hoeksema, 1990).

Table 8-12 Depression of nonagenarians divided by gender and residence

Depression	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
No depression (< 16 scores)	7.1	4.8	5.7	15.4	-	5.7
Mild depression (17 - 38 scores)	78.6	85.7	82.9	84.6	81.8	82.9
Severe depression (39 - 60 scores)	14.3	9.5	11.4	-	18.2	11.4
Total	100	100	100	100	100	100

8.5 Conclusion

Table 8-13 shows the code and characterization of four main variables of psychological health (cognitive function, happiness, stress and depression), which are divided into three categories: good, fair and poor.

The figure 8-1 illustrates that more than 60% of the respondents are poor in cognitive function. Moreover, more than 70% have a low level of happiness (poor, see at figure 8-2). Around 50% and 80% of the respondents suffer from fair stress and depression (Figure 8-3 and Figure 8-4).

Finally, in the top view of psychological health of the nonagenarians, the variable items are summarized with the possible scores ranging from 0 - 12 (1 - 4 = poor, 5 - 8 = fair, 9-12 = good). The figure 8-5 illustrates that the vast majority of the respondents (71.43%) is facing (or enjoying) an acceptable psychological health (fair), while the numbers according to good and poor psychological health condition are not very much different, approximately 17.14% and 11.43%, respectively.

Table 8-13 Code and characterization of psychological health

Name of variables	Code	Characterization of the variable
Cognitive function	3 = good 2 = fair 1 = poor	MMSE between 25 - 30 scores MMSE between 17 - 27 scores MMSE between 0 - 16 scores
Happiness	3 = good 2 = fair 1 = poor	THI-15 between 33 - 45 scores THI-15 between 27 - 32 scores THI-15 between 0 - 26 scores
Stress	3 = good 2 = fair 1 = poor	SPST-20 between 0 - 23 scores SPST-20 between 24 - 41 scores SPST-20 between 42 - 62 scores
Depression	3 = good 2 = fair 1 = poor	CES-D between 0 - 16 scores CES-D between 17 - 38 scores CES-D between 39 - 60 scores

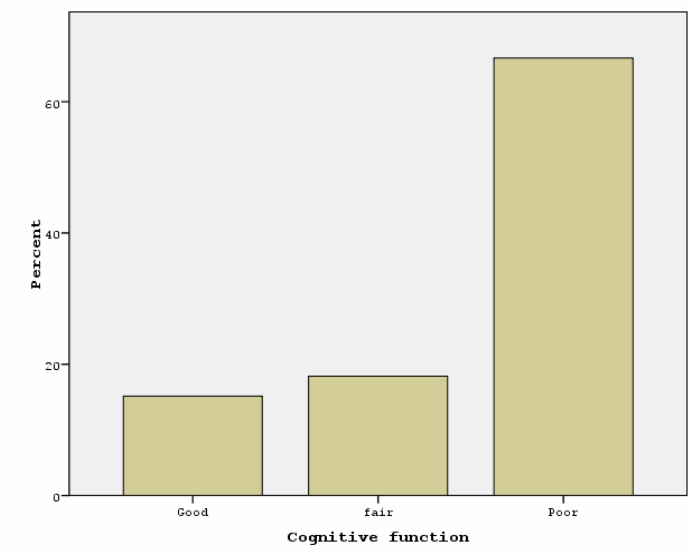


Figure 8-1 Conclusion of cognitive function.

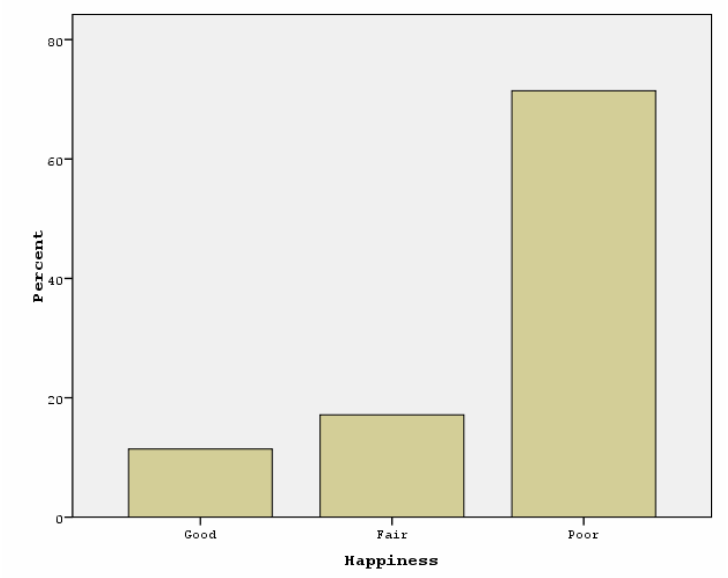


Figure 8-2 Conclusion of happiness.

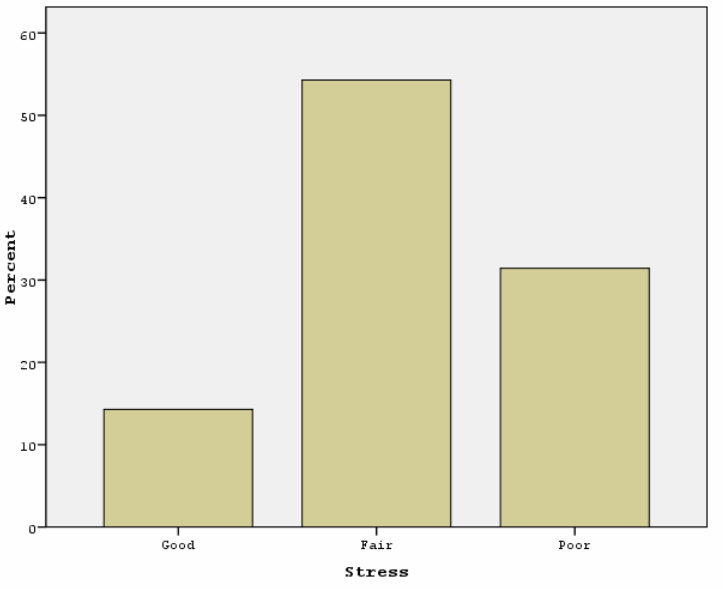


Figure 8-3 Conclusion of stress.

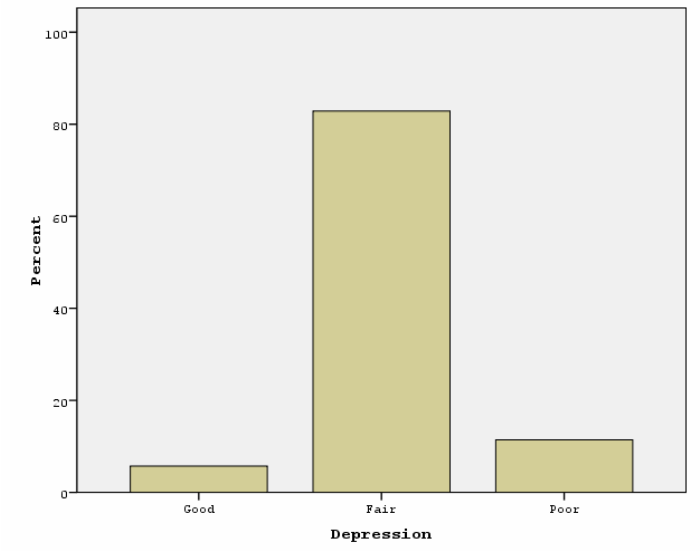


Figure 8-4 Conclusion of depression.

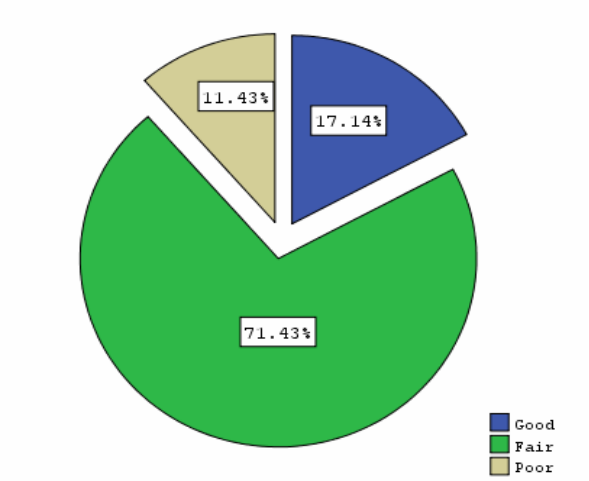


Figure 8-5 Main finding in psychological health

CHAPTER 9

PHYSICAL ENVIRONMENTS

Physical and environmental condition also plays an important factor affecting to quality of life of nonagenarians. In this chapter, the three main themes of physical environments including, environmental participation, housing condition, and environmental hazard at home are investigated. The details are as following;

9.1 Environmental participation

From this finding, it might be said that the vast majority of nonagenarians generally do not stay far from their home community. Apart from occasional religious ceremony in the temple or visiting the doctor in the hospital, the personal activities such as doing economic activities, cultivating, traveling, visiting friends or other relatives are very rare, which deal to a lack of physical limitations. Moreover, because they survived, their friends who were born at the same generation, already passed away, which means that the nonagenarians are the heterogonous population, who have to stay at the end of life without any normative reference group, low outdoor activities and spend all their time at home.

In this research, the retrospective study during the past six months was applied as the main tool to obtain the information of the environmental participation of nonagenarians. The environmental spaces where they normally take part can be separated into five zones including home (surveillance), vicinity, community, sub-region, and region followed by the hierarchy of environmental spaces framework which was developed by Rowles (1983).

As shown in the figure 9-1, the nonagenarians (57.1%) are only living and staying in their houses. Most activities such as eating, bathing, toileting, napping, sitting, take a short walk and sleeping are done in a radius of 100-200 meters. Some of them can walk outside the house to the garden or backyard, but only for short times. The favorite place at home are the porch and the window, in addition to importance of practical and some social interaction between them and their neighbors, watching the view, the children playing, the cars passing by and being watched by the caregiver.

In the vicinity, eleven cases (31.4%) can join in communal activities, such as shopping at a grocery store, exercising, walking, gardening, visiting or talking with their neighbors and relatives.

For the last three zones, community, sub-region, and region, the participation is not in their mind. Mostly it’s the cause of sickness to see the doctor or other medical specialist in town or other places. For example, health care center is far

away from their home approximately one to five kilometers, 10-20 kilometers for community hospital and around 200 kilometers to the provincial hospital which located in another province. For this study, during the past six months, only one person left the province for reasons belonging to its health.

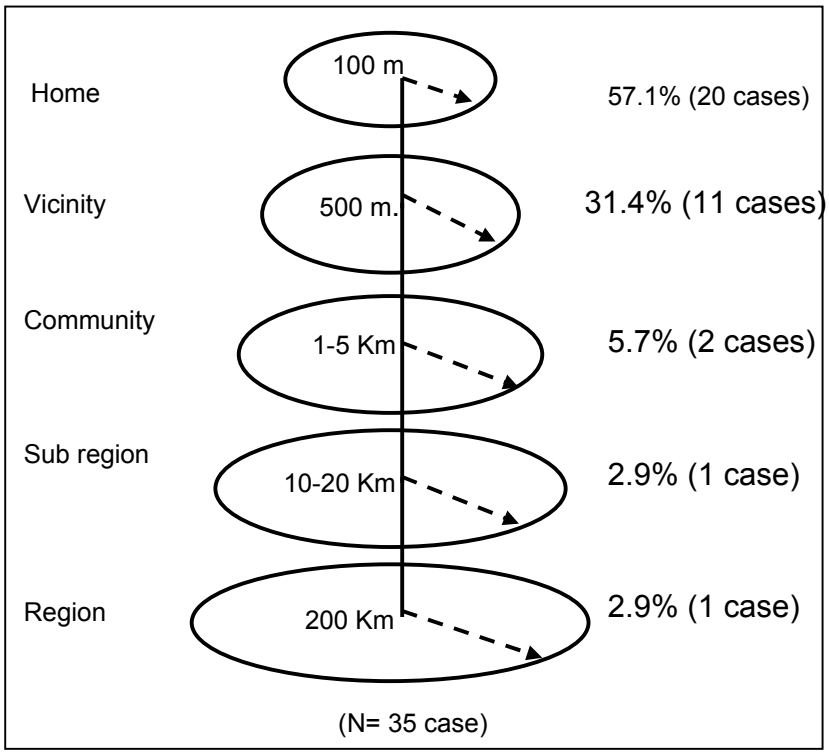


Figure 9-1 Environmental participation of the nonagenarians

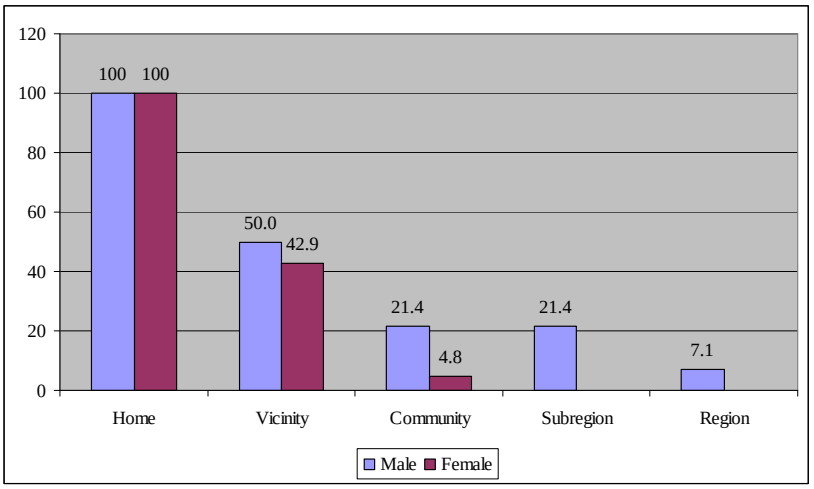


Figure 9-2 Environmental participation of nonagenarians divided by gender

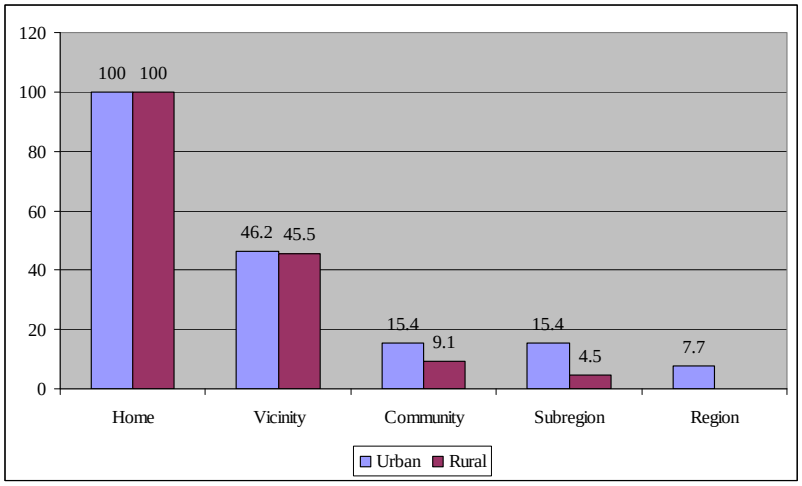


Figure 9-3 Environmental participation of nonagenarians divided by residence

The figure 9-2 and 9-3 show the differences between gender and residence of the environmental participation. The gender differences indicate that males have more opportunities to take part in every level zone than females, whereas females are only in home, vicinity, and community. Even in the last two zones where only males taking part is the health maintenance. It is clearly indicated that males can access to medical facilities and health services, but female counterparts did not go there during this time of the research. On the other hand, in residential differences, urban nonagenarians have more opportunity to participate other levels than in rural areas.

9.2 Housing condition

As mentioned earlier, the nonagenarians stay at home. Thus, the investigation of living condition is also necessary to clarify the quality of their home environment that they usually live in. The presentation of housing condition can be divided into two main parts, first is the floor plans, while the other is the housing quality. A room-by-room assessment on housing condition was observed by the researcher.

9.2.1 Floor plans

1) Rural housing for Karen nonagenarians: Traditionally, the Karen, they live in the bamboo houses uplift on real wooden stilts, in the lower place is keep space for their domestic animals, agricultural equipments, or doing leisure activities. The roofs are made from grasses, Bai Thong Tung (Dipterocarpus tuberculatus) or Yha Ka (Imperata cylindrica). In some families who have good economic status, the zinc roof is visible. The walls are generally created by crisscross bamboo weave. As a result, the using age of these materials is short. After one or two years a reconstruction or replacement is required. The respondents complain that the house become very hazardous when they are walking or moving. In some cases, the bamboo stairs which are used to get inside or outside crushed. Moreover, some steps are gone and mostly without handrails,

which makes it difficult for the nonagenarians to use the stairs. The housing in which Karen nonagenarians reside can be separated into two main characteristics, which are related to the family type and living arrangement.

1.1 Single room for nuclear family

This house type is found at the nonagenarians who live with their couple or living alone. The house is quite small. As the representative case shown in figure 9-4, which is approximately 22.25 square meters. The hosing utilization can be divided into two parts, first is the porch area which linked from the front stairs. The left corner, tab water that comes directly from the mountain is installed for daily use and consumption. Next to the porch is the gate to get inside the house. Inside the house, the wood stove is in the centre of the room. The wood stove plays an important role in the culture of Karen ethnicity in term of heating, cooking, smoking (food preservation) and so on. This single room can be applied in multicultural ways such as eating, drinking, chatting, receiving visitors, sleeping, and storing etc. It might be said, that also the Karen nonagenarians in this study are very good collectors, some of them keep everything, for example bamboo baskets, plastic bottles, paper boxes, plastic bags, and old clothes, which are disorderly laid down on the floor, and cause very obstructing walkways and breed dust and insanitation. Moreover, the window is uninstalled to keep warmth from the wood stove, as the geographical setting of Mae Sariang is in a colder area. The smoke from the wood stove is pervading all the time inside the house and the addition of the aromatic hydrocarbon from the smoke maintains the quality of bamboos and grasses for a longer usage, but for the health risk such as cataract and respiratory system it should be concerned. As the statistical health report shows, the respiratory tract and cataract are the highest cause of illnesses among the aging population in this area (Mae Sariang Hospital, 2006).The thin padded mattress and the timeworn mosquitoes net which are the few comfortable things in this house lay in the deepest right side. The toilet is located outside.

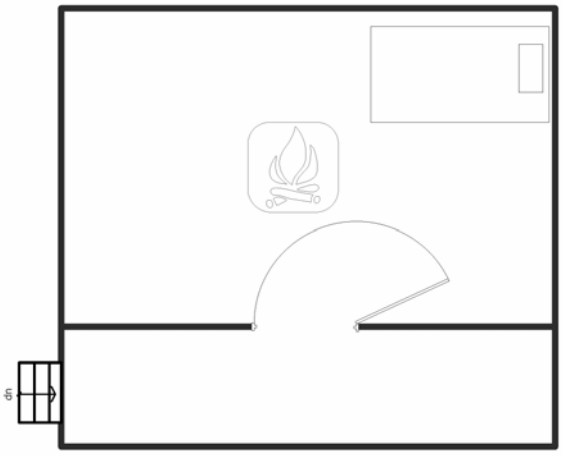


Figure 9-4 Housing and location plan of nuclear Karen's family

1.2 Several rooms for extended family

This house offers plenty of space for an extended family. At the beginning, only a couple and their children live in a small house, like the one before. After the marriage of the daughter, and the start of her own family, more rooms will be attached, where she lives with her husband and children. The first built room, which has a wooden stove, belongs to the head of the family, elderly people, or nonagenarians (the details of the room are the same as above). The differences among the single and several room house types are the hygienic conditions and the air flows, which is more likely better in the new one than in the first built one. The six pairs of windows are fixed, except in the room with the wood stove. The formal kitchen and the washing areas are in a good condition. Taps with running water form the mountain are available for more comfortable and enough to use for the whole family. In the rainy season, the rain water is storaged by using earthen jars. Buying the drink water filters during the summer time is found, but very rare. Most prefer to drink the water from the mountain. The living room is suitable for family activities and participation. Mostly women use this space for weaving, spinning, knitting, or other traditional handicrafts. Only one thing is the same, as the toilet is located outside the house. An example case, approximately 64 squares meters for six family members is shown in figure 9-5. In some cases, the new house of the family of the daughter will be built separately, but in the same area.

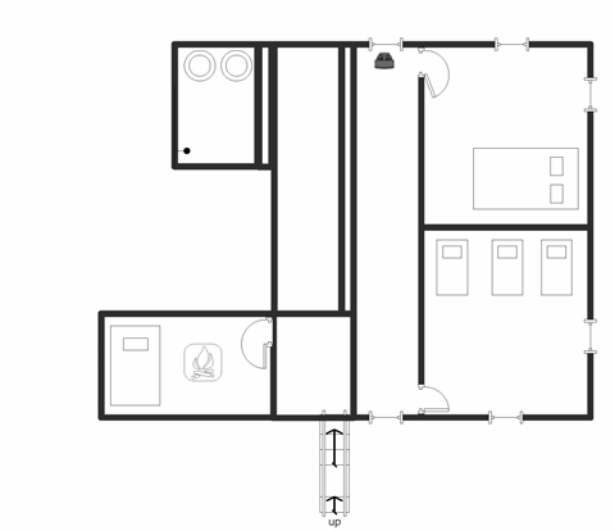


Figure 9-5 Housing and location plan of extended Karen's family

2) Urban housing for local nonagenarians

2.1 Housing in business area

A traditional Mae Sariang style house for the people in urban area who are the merchandisers, the two floors wooden row houses are constructed one by one along the main roads of business areas. Far from the business center, the two floors traditional houses with green area are constructed parallel with the roads.

As these houses are located in the urban area, the complex of public services such as electricity, telephone, running water, garbage system are available, which are under the responsibility of Mae Sariang municipal office.

In general, the housing utilities can be divided into four functions, first as the zone of business activities which found in the front of the house, near the street or footpath. The second step is the living zone which is used for several family activities such as eating, chatting, receiving guests, or watching the television, etc. The third part is the zone for sleeping. Lastly is the zone of preparing and cooking food (Figure 9-6).

In this part, an example shows a case (52 square meters), which is the home of a female nonagenarian, whose daughter is selling clothes. The clothes are sold on the footpath in front of this house (gray color), the step inside is the living room which is used for family activities, the wood sofas are also available for the visitors. In this part the bed of nonagenarian exists, what makes it easier for her daughter to give care, when she sells the clothes or take care of the customers. The next part is the bedroom of her daughter. The toilet is installed inside the house. The nonagenarian uses this toilet only for bathing. For urinary and feces, the cuspidor is applied as the mobile toilet for her comfortable instead of walking to the toilet.

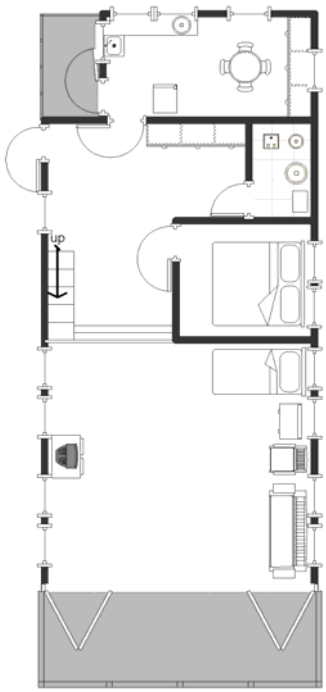


Figure 9-6 Housing and location plan of local nonagenarians in business areas

2.2 Housing in non business area

This type of the house is the representative for nonagenarian in urban areas. There are two persons, the nonagenarian and the caregiver living together in a 54 square meters (only the ground floor). This two-storeyed-house is made from wood and cement, which mostly the first floor are made with cement and the second floor made from wood. At this house the roof is covered by zinc. Running water, electricity, telephone, and television cable are available. The new style of houses made from cement or bricks are also found, but only at younger and people with more income, and also not so often. The functions of housing utilization are divisible. Dinning, living, sleeping, cooking, and washing activities are intended in the separate parts. The toilet is commensurate with modern standards of hygiene. Moreover, a special toilet seat for aging people offers more comfort to the nonagenarian as well as there is a special chair to sit during they have a shower. To make more air flows, the 16 pairs of windows are installed in a huge numbers compared to the house of the Karen. The kitchen is clean and the garbage system is done in a good quality of sanitation. According to the physical limitation at the old age, the nonagenarians normally stay only in the ground floor.

Figure 9-7 Housing and location plan of local nonagenarians in non business area

9.2.2 Housing quality

First of all, as the Thai national standard of housing quality is not available, as there are in many parts of this world. The literature reviews found an interesting one is “Tolerable standard” which was developed in Scotland, but those indicators are appropriate for European community. Moreover, the standard or substandard housing from The United Nation and World Health Organization are provided, but those terms are used to identify the house in slum community, which are totally different from the natural and cultural characteristics of the villages in Mae Sariang district. Thus, to make the outcome of this research more related to the Thai culture and Mae Sariang citizens, the indicators of housing quality used here for this research, were adapted from the basic needs

of human security and safe housing from the previous researches which including (1) wall material (2) floor material (3) roof material (4) available of window (5) kitchen fuel (6) lighting fuel (7) main source of drinking water (8) running water (9) toilet (10) sewage system (11) safe for dangerous animal (Fiadzo et al, 2001; Arkinson et al, 2002; Athen, 2004; Meng & Hall, 2006).

From table 9-1, the substantial number of house in this research are constructed using good quality of wall and floor, 84.6% in urban areas, and 50% in rural areas the wall are built by real wood (teak). 77% in urban areas and 60% in rural areas, the floors are built by cement and real wood. The bamboo house is also found in this study, especially Karen villages in rural areas. 25.7% of the houses the wall are made by bamboo, while 17.1% for the floor. However, the materials used in roofing house are acceptable, as approximately 45% use zinc, 31% use cement tile, while 28% use grasses. For others housing composition such as windows, approximately 31% the windows are uninstalled which found in rural only.

In case of natural power resources, gas (54.3%) are the main sources for cooking in this study. Using gas in urban areas are higher two times than rural counterpart (84.6% and 36.4%, respectively) and 27.3% are using firewood which easily to find in the forest. Unfortunately, 31.8% of the respondents in rural areas do not have kitchen at home. For lighting fuel, 100% of nonagenarians in urban areas and 73% in rural areas can be accessed electricity for daily living. 14.3% using kerosene while 2.9% do not have electricity inside their houses.

More than half of nonagenarians (51.4%) drink and use filter water delivered by vender. Normally, a bucket of water (ten liters) can be used for one week, either drink or cleaning mouth, etc. Follow by ground and rain water which sharing the proportion of 28.6% and 20% respectively. Most nonagenarians can access indoor plumbing facilities, adequate sewage systems, and hygienic toilet. For example, from all households only 8.6% live without running water system, which is found in rural area only. For this case they have to use public outdoor tap. For toilet and bathroom, 80% the toilet and bath room are not separated and the hygiene is acceptable (48.6% have toilet inside the house, while in 31.4% are outside). Anyways, 20% of nonagenarians do not have toilet.To protect themselves against dangerous animals at night such as mosquitoes and other insects, the mosquito nets are applied to use in every household even window, door, or bed mosquito net.

Table 9-1 Housing quality indicators of nonagenarians divided by gender and residence

Categories	Scores	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Wall material							
made from cement	3	21.4	4.8	11.4	15.4	9.1	11.4
made from real wood	2	57.1	66.7	62.9	84.6	50.0	62.9
made from bamboo	1	21.4	28.6	25.7	-	40.9	25.7

Table 9-1 (Continued) Housing quality indicators of nonagenarians divided by gender and residence

Categories	Scores	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Floor material							
made from cement	3	28.6	42.9	37.1	76.9	13.6	37.1
made from real wood	2	57.1	38.1	45.7	23.1	59.1	45.7
made from bamboo	1	14.3	19.0	17.1	-	27.3	17.1
Roof material							
cement tile roof	3	28.6	33.3	31.4	53.8	18.2	31.4
zinc roof	2	42.9	38.1	40.0	46.2	36.4	40.0
grass roof	1	28.6	28.6	28.6	-	45.5	28.6
Available of window							
installed	1	71.4	66.7	68.6	100	50.0	68.6
uninstalled	0	28.6	33.3	31.4	-	50.0	31.4
Kitchen fuel							
gas	3	50.0	57.1	54.3	84.6	36.4	54.3
charcoal	2	21.4	-	8.6	15.4	4.5	8.6
firewood	1	14.3	19.0	17.1	-	27.3	17.1
no kitchen	0	14.3	23.8	20.0	-	31.8	20.0
Lighting fuel							
electricity	2	85.7	81.0	82.9	100	72.9	82.9
kerosene	1	14.3	14.3	14.3	-	22.7	14.3
no lightening resources	0	-	4.8	2.9	-	4.5	2.9
Main source of drinking water							
filter water (vendor)	3	42.9	57.1	51.4	76.9	36.4	51.4
rain water	2	28.6	14.3	20.0	15.4	22.7	20.0
ground water		28.6	28.6	28.6	7.7	40.9	28.6
Running water for use							
available	1	92.9	90.5	91.4	100	38.6	91.4
unavailable	0	7.1	9.5	8.6	-	13.6	8.6
Toilet and bathroom							
inside the house	2	42.9	52.4	48.6	76.9	31.8	48.6
outside the house	1	35.7	28.6	31.4	23.1	36.4	31.4
no toilet	0	21.4	19.0	20.0	-	31.8	20.0
Sewage system							
flush toilet	2	7.1	4.8	5.7	7.7	4.5	5.7
latrine	1	71.4	71.4	71.4	92.3	59.1	71.4
no system	0	24.1	23.8	22.9	-	36.4	22.9

Table 9-1 (Continued) Housing quality indicators of nonagenarians divided by gender and residence

Categories	Scores	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Safe for dangerous animals							
window, door mosquito net	2	7.1	4.8	5.7	7.7	4.5	5.7
bed-mosquito net	1	92.9	95.2	94.3	92.3	95.5	94.3

To classify the quality of house of nonagenarians, the total scores of each indicator from table 9-1 were summarized which give a maximum of 25 scores and it is able to classify the housing quality as good (17-25 scores), fair (9-16 scores), and poor quality (0-8 scores).

The table 9-2 shows that the majority of nonagenarians (60%) are living in good housing quality, where at males it is more than four times higher than at females. For residential differences, the good housing qualities in urban area are nearly three times higher than in rural area. Unfortunately, approximately 14% are having poor housing quality which is at females much higher than at males (57.1% and 14.3%) and 22.7% are found in rural only.

Table 9-2 Housing quality of nonagenarians divided by gender and residence

Housing Quality	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Good quality (17-25 scores)	64.3	14.3	60.0	100	36.4	60.0
Fair quality (9-16 scores)	21.4	28.6	25.7	-	40.9	25.7
Poor quality (0-8 scores)	14.3	57.1	14.3	-	22.7	14.3
Total	100	100	100	100	100	100

9.3 Environmental hazards at home

As far as health conditions are linked to inadequate housing environments. Especially, the oldest old, many studies found the relations between the housing condition of dwellers and their ill-health such as infectious diseases, chronic illnesses, fall, and injuries has been explained (Pong, 1957; Krieger & Higgins, 2002; Lawrence, 2004; Athen, 2004). Thus, on the way to study housing quality in this research, the environmental hazards at home of nonagenarians in these areas are investigated.

To investigate environmental hazards at home, the open-ended question of environmental hazards and accidental risks, the nonagenarians or caregivers were asked to explain, what are the potential hazards which lead the nonagenarians to fall, accident, injury, or obstacle for daily living? The groups of hazardous items are shown in table 9-3.

Table 9-3 Environmental hazardous assessment of nonagenarians

Environmental hazard	Details	Frequency (%)
General housing	Stair is too steep and too long	2.9
	Stair in need to repair	4.3
	Stairs without handrails	1.4
	Toilet and bathroom located outside	7.1
	Toilet floor is slippery when wet	1.4
	Bamboo floor in need to repair	1.4
	Door is difficult to open	1.4
	Zinc roof is hot in summer time	1.4
	Grass roof and floor are wet in raining season	1.4
Furniture	Reed mats are torn/ poor condition	5.7
	Plastic mats are slippery	20
	Rocking chairs are incomplete	2.9
	Chair without armrests or back of a seat	5.7
	Furniture, toys, clutter obstructing walkways	14.36
Lighting	Poor lighting	68.6
	Light switches hard to reach	25.7
	No light at night	45.7
Animal interference	Ants come when bed is unsanitary	17.1
	Snakes come when it is raining	5.7
	Centipede are hidden inside the house	11.4
	Dogs jump or snuggle up when walking	2.9

From table 9-3, slippery toilet floor is the main hazard to fall which sharing a percentage of the total in 91.4%, follow by an inadequate of light (82.8%) and light switches are hard to reach (68.5%), which cause of a difficult life for their daily living. Moreover, furniture, toys of grandchild, and others clutters inside the house which obstructing walkways are also hazardous for the nonagenarians.

According to the geographical environment of this area, mountains and forests, the dangerous animals such as snake and centipede are always found, especially in rainy season in rural areas, constitute 17.1% and 5.7%. Moreover, the nonagenarians, either from blindness or disability, which most times lay down on the bed, insanitation and leaving food when eating on the bed are the important factor for the coming of the ants, which interfere their quality of life and cause of skin problem. Only one case found falling down, caused by dog which they are feeding at home. In addition to those details, the research indicated that the miscellaneous hazards outside their home are not found, which deals to the nonagenarians who normally have low outdoor activities

The numbers of environmental hazards at home are shown in the figure 9-8; the majority of respondents have four hazards (22.9%). The minimum are two hazards and maximum are ten hazards with means and standard deviation of 5.6 ± 2.15.

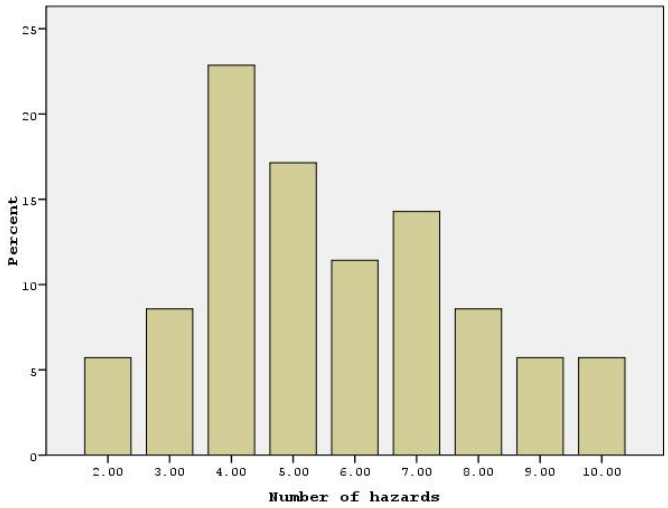


Figure 9-8 Number of environmental hazards at home of nonagenarians

Table 9-4 Environmental hazards at home of nonagenarians divided by gender and residence

Environmental hazard at home	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Good (0 hazard)	-	-	-	-	-	-
Fair (1-5 hazards)	71.4	42.9	54.3	92.3	31.8	54.3
Poor (6-10 hazards)	28.6	57.1	45.4	7.7	68.2	45.7
Total	100	100	100	100	100	100

The table 9-4 shows that the majorities of nonagenarians (54.3%) are living with one to five hazards at home, where males are living in more safe place (lower hazardous) than their female counterparts. For residential differences, the nonagenarians in rural areas are dealing with a higher risk than in urban areas, especially in the group of six to ten hazards, which nonagenarians in rural areas are higher nearly nine times than urban areas. (68.2% for rural areas and 7.7% for urban areas)

As mentioned earlier that all hazards inside their home make the life of the elderly more difficult and a higher risk of falls and injuries. When the question, do you have any experience of falling was asked, the research found that all of them (100%) have the experience to fall nearly and to fall at least once inside their homes, which is caused by those environmental hazards. The toilet is the highest risk to fall (82.8%) followed by stairs, bed room, living room, and porch (45.7%, 40%, 25.7%, and 20% respectively), while falling from the chairs which those are in poor condition, without armrests and back of a seat, difficult when get in and get out from sit, or problem of an ankle-length skirt (traditional Thai dress) are also causes of accidents and falls (14.2%). The details are in table 9-5

Table 9-5 Falling location of nonagenarians

Falling location	Frequency*
Toilet and bathroom	82.8%
Stairs	45.7%
Bed room	40%
Living room	25.7%
Porch / hallway	20%
Chairs	14.2%

* Some cases, falls experienced are more than one time

The nonagenarians and caregivers know that fall is the main cause of injuries of the elderly and need long times to rehab. By the way, falling preventions are also found, but in terms of “don’t do”, “don’t go” and “stay here”. These terms seem to limit their potentiality to do such activities of daily living. For example, the mobile toilet is applied instead of walking to the toilet, cleaning with towel instead of take a bath, not allows walking upstairs or room to room, give hands when they need something instead of their movement (These examples are for the nonagenarians who have family support). In fact that housing reconstruction, reduce the risk of hazards, or material aid installation are much more advantageous and increasing their activities, but deal with the economic situation or unexpected benefit of health facility to support the elderly, so the house and facilities design for aging is not much established. Only few are found help aids inside the toilet and try to put something in order and make more apace for their movement.

For nonagenarian who stay alone or with low family support, have to deal with difficulties of life by themselves. Especially, in cases of nonagenarians with paralysis, they have to lie down on the bed under the zinc roof or grass roof all the time, even in summer or rainy season, they could not find the way to search a good place to evade those hazards. Some of them have to wait until the neighbors or other relatives come to help. Moreover, harms from dangerous animals are easily to find.

An important finding here is, that social support from the neighbors, friends or village headman play a significant role to reduce risk and harmful to health, illness, fall, and injury. Helps from hand to hand is more or less to increasing life security of nonagenarians, whatever in tasks of caregiver, observer, repairman, etc.

> *“Grass roof is too old and also leaked, it’s me to help her, because I pity her very much, just the black cloud foretell that the rain will come, I have to move her into the safe area, if not she will become wet. Because her children work in the field, they could no go back in time when she needs help”*
>
> *(The neighbor)*

"Hot… hot… it is very hot here in summer. I knew she hot, because the roof is made from zinc. But, I don't know what I can do; change to the cement tile roof is also expensive. Just try to go back home from the rice field so often to move her from one side to another side, cleaning her with towel, etc. then back to the rice field again. Some time I have to ask the neighbors to do in place of me. This is the main problem in this house.

(The caregiver)

"My house always needs something to fix and repair, he knew (her son) these stairs are too old, he said he will come to repair, since summer last year it was not done yet. I have to ask him (the neighbor) to fix it"

(Female nonagenarian, 93 years old)

"Nobody came here to give her a hand, hot is hot alone, cold is cold alone, hungry is also hungry alone. Her room is very dirty right? Because the house is never clean and stinking with urine and feces, sometime spreading on the bed, then ants and insects came and bit her. Sometime I went to her and found... What happened!! Her face was so red. Ah ha!! The fact was, that ants bite all body and all face. Once I helped her to clean her house I was nearly shocked!!! As so many centipedes were there near her bed, under the boxes, I could not believe, how she can be safe in that situation."

(The neighbor)

"It hard to say, if his living condition is so bad like this, paralysis, blind, pee and shit on the bed, eating also on the bed. You cannot find him healthy for sure. So stinky, even the pure air to breath is also rare. I don't understand how to live when the house is never clean. His son and grandchildren did not pay any attention. We help him too much, sometime is not so good, they will swear us "Is this your business?"

(The neighbor)

"Once in the past, a big huge python laid down under this house and nobody here; he was lucky at that day the villagers walk passed the house and saw it. It was so good that they are a good watcher. If not, my grandfather probably died already (laughing). Because we live like these (mountain and forest), it's normal to find such animals like these."

(The caregiver)

"We help of course!!! Because we living in the same village, In case of the bamboo or grasses if it is too old or need to change we always do it for her. The village head man, he is the leader to give help and never kept his eyes away from the villagers. He is such a good person, really."

(The neighbor)

9.4 Conclusion

Table 9-6 shows the code and characterization of three main variables of physical and environmental condition (Environmental participation, housing quality, and environmental hazard at home), which are divided into three categories including good, fair, and poor.

Table 9-6 Code and characterization of physical and environmental condition

Name of variables	Code	Characterization of the variable
Environmental participation	3 = good 2 = Fair 1 = poor	Participate 4-5 zones Participate 2-3 zones Participate only 1 zone
Housing condition	3 = good 2 = Fair 1 = poor	Housing quality (17-25 scores) Housing quality (9-16 scores) Housing quality (0-8 scores)
Environmental hazard at home	3 = good 2 = Fair 1 = poor	0 hazard 1-5 hazards 6-10 hazards

The Figure 9-9 indicates that, more than 50% of respondents having poor environmental participation which are limited only inside their home, it is also found that more nearly 60% are living in good housing quality and material, while approximately 10% of the total are living in poor quality (Figure 9-10).

The environmental hazard at home found that the safe houses for the respondent which do not have any hazards are not found. Mostly (more than 50%) having 1-5 hazards (Figure 9-11)

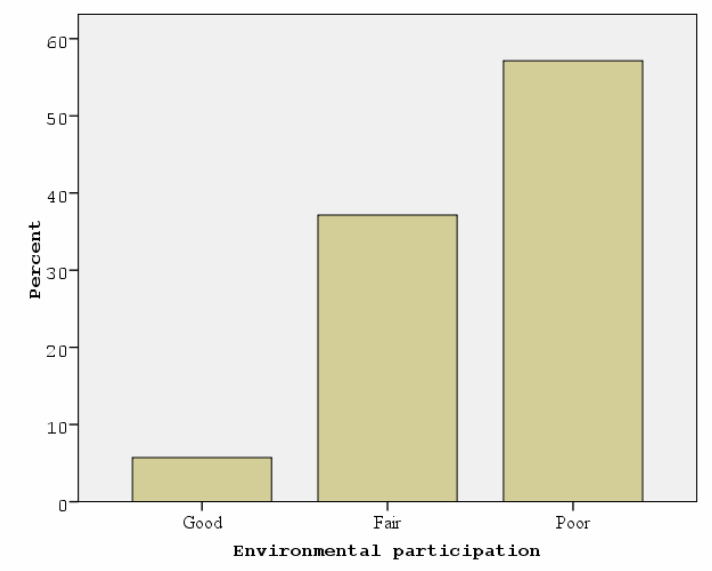


Figure 9-9 Conclusion of environmental participation

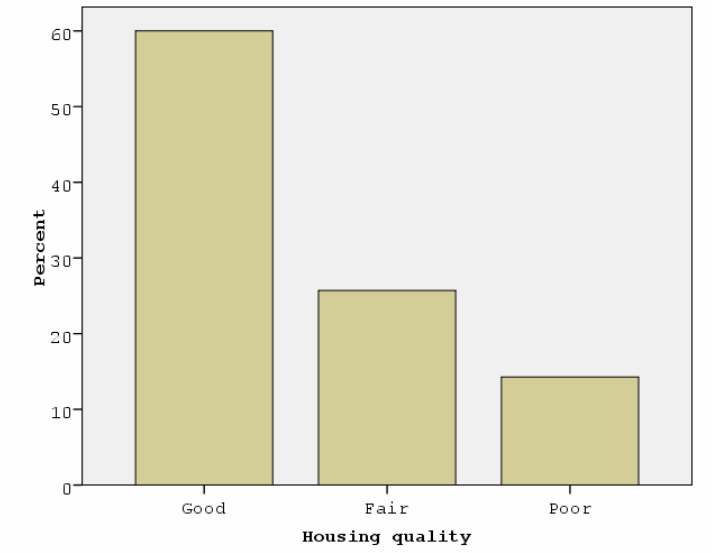


Figure 9-10 Conclusion of housing quality

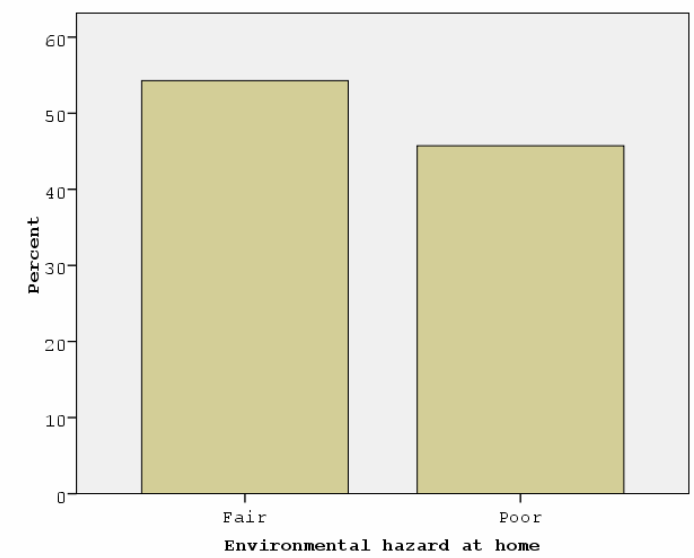


Figure 9-11 Conclusion of environmental hazard at home

Finally, on the top view of physical and environmental condition, the variable items are summarized with the possible scores can be ranged from 0-9 scores, (0-3 = poor, 4-6=fair, and 7-9 = good). The figure 9-12 illustrates that the vast majority of the respondents are living in the midst of fair and good condition (71.4% and 22.8% respectively). Only 5.7% are facing their life in poor physical and environmental condition (Figure 9-12)

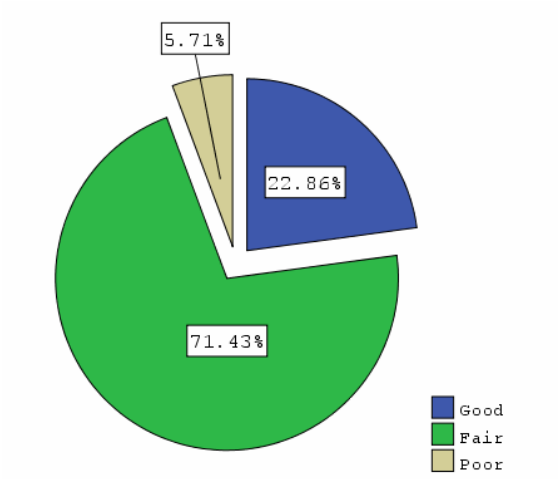


Figure 9-12 Main finding in physical and environmental condition

CHAPTER 10

SOCIAL CONDITIONS

In this chapter, the social conditions of nonagenarians are described under the four main categories including family structure and living arrangements, social network, social support, and domestic violence. The conclusion of each part is given in the summary table, short case presentations, and citations out of life stories.

10.1 Family structure and living arrangement

10.1.1 Family size

The first issue to consider is the family size, which includes the numbers of children born, the numbers of children alive, grandchildren, great grandchildren, great great grandchildren, and great great great grandchildren. The family sizes are counted in total numbers in each clan. The details are available in table 10-1 and 10-2.

Table 10-1 Family size of the nonagenarians

Family size (N=35)	Mean ± Std	Mode	Max
No. of children born	5.34 ± 2.35	4, 5, 8	10
No. of children alive	4.34 ± 2.41	3	8
Grandchildren	11.91± 6.63	5, 15	32
Great-grandchildren	8.54 ± 8.10	2	34
Great-great- grandchildren	1.65 ± 2.70	0	12
Great-great-great-grandchildren	0.14 ± 0.49	0	2

From table 10-1 the maximum of children born are 10 with mean and standard deviation of 5.34 ± 2.35. The research also found that the several communicable diseases such as malaria, cholera, dengue fever, yellow fever, and typhoid are the main important factors to decrease the number of children and family size. Many infancy and childhood died from such communicative diseases.

When the numbers of available children were investigated, the number of children is decreased from ten to eight children with mean and standard deviation of 4.34 ± 2.41. In case of descendant, the maximum of grandchildren, great grandchildren, great great grandchildren, and great great great grandchildren are found in 32, 34, 12, and 2 respectively.

> *"4 of my kids survived, but in the former time I had 10, they died by cholera and some kind of fever, I didn't know exactly how to call… I don't know, but they died. For sure, one of them died by malaria and one another died by cholera (Rok Ha).*
>
> *(Female nonagenarian, 92 years old)*

"Khai Pha (Malaria) was the main course of the death of my kids, they became so bad, we don't have anything to prevent because we were poor. We did not have the mosquito repellent like in this moment. In the past, not only the kids were killed by such disease but also we lost a lot of adolescences and adults at that time as well.

(Female nonagenarian, 94 years old)

Table10-2 Living descendants of nonagenarians

Living descendents	Rural	Urban	Total
Children			
None	-	2.9	2.9
1-5	22.9	31.4	54.3
6-10	14.3	28.6	42.9
Total (percentage)	37.1	62.9	100
Grandchildren			
None	-	2.9	2.9
1-5	11.4	8.6	20.0
6-10	11.4	5.7	17.1
11-15	5.7	28.6	34.3
16-20	5.7	14.3	20.0
21-25	-	2.9	2.9
26-30	-	-	-
31-35	2.9	-	2.9
Total (percentage)	37.1	62.9	100
Great grandchildren			
None	2.9	5.7	8.6
1-5	17.1	17.1	34.3
6-10	8.6	17.1	25.7
11-15	5.7	11.4	17.1
16-20	2.9	-	2.9
21-25	-	2.9	2.9
26-30	-	5.7	5.7
31-35	-	2.9	2.9
Total (percentage)	37.1	62.9	100
Great great grandchildren			
None	17.1	34.3	51.4
1-5	20.0	22.9	42.9
6-10	-	2.9	2.9
11-15	-	2.9	2.9
Total (percentage)	37.1	62.9	100
Great great great grandchildren			
None	37.1	54.3	91.4
1-5	-	8.6	8.6
Total (percentage)	37.1	62.9	100

The table 10-2 indicated that the majority of the respondents (97.2%) have children, 54.3% have 1-5 children, 42.9% have 6-10 children and 2.9% are widows and also childless. For the descendants, the majority (34.3%) has 11-15 grandchildren which are rarely higher in urban than rural (28.6% and 5.7% respectively). In case of great grandchildren, the number is decreasing to 34.3% for 1-5 great grandchildren. On the other direction, the respondents without great great grandchildren and great great great grandchildren are high which found in 51.4% and 91.4% respectively.

10.1.2 Living arrangement

The large numbers of family members as mentioned above do not illustrate the real situation of their family's life. Although they have a big clan and a crowd of offspring, some of those families are separated and do not live together. Practically, they stay in another house, village, district and province. Thus, the best tool to explore family situation is an interpretation of living arrangement. The question about household member and identification of family's generation were used to explore the living arrangement, the details are available in table 10-3 and table 10-4.

The cardinal message of living arrangement here is that the modernization and new trend of family pattern have been arrived to these villages. First, the extended family, in which more than three generations live together, is obviously changed to nuclear family. From 100% of extended family in the past, it decreased now to at least 69.2 % in urban area, and 50% in rural area. Second, the considerable proportion of nonagenarians who are living alone, much more surprisingly is that most of them are females and living in rural area (28.6% and 36.4%, respectively), while the proportions of nonagenarians who are living only with members of the same generation, there are found 7.7% and 9.1% in urban areas and rural areas respectively. The national surveys in 1994 and 1995 found 13 to 16 % of rural elderly in this situation (Knodel et al 1997; Knodel & Chayovan 1997).

This finding is related to the previous researches, that a large majority of elderly lives with a child (Cowgill, 1972; Foster, 1975; Pramualratana, 1990; Caffrey 1992a, b; Knodel & Sangtienchai, 1999). The overall figures of 77% in urban areas are living with at least one child (either single or married). This is on the same range compared to recent national surveys and census for rural Thailand as a whole, which range from 70 to slightly under 80 percent (Knodel & Debavalya 1992; Knodel & Chayovan 1997; Knodel et al, 1997). While in the rural, 45.3% of elderly which live with children in this study are found lower than in the previous research.

Moreover, the finding of this study partially supported the propositions suggested by Kobrin (1976), Soldo & Lauriat (1976), and Yoo & Sung (1997) are gender differences in living arrangements: more female than male elderly tend to live alone (17.1% female and 5.7% male). This may be a reflection of the larger number of female elderly, partly due to their longer life expectancy.

Table 10-3 Living arrangement of the nonagenarian divided by residence

Number of Generation	Relative	Urban (13)	Rural (22)	Total (35)
One	Live alone	-	36.4	22.9
	Live with couple	7.7	9.1	8.6
Two	Couple			
	+ single child	7.7	-	2.9
	Widow / widower			
	+ grandchild + married grandchild	7.7	4.5	5.7
	Widow / widower			
	+ care giver	7.7	-	2.9
Three	Couple			
	+ child + grandchild	15.4	-	5.7
	Widow / widower			
	+ child, married child + grandchild	38.5	31.8	34.3
	Widow / widower			
	+ grandchild + great grandchild	-	4.5	2.9
	Widow / widower			
	+ child, married child + car giver	7.7	4.5	5.7
Four	Couple			
	+ child, married child + grandchild great grandchild	-	4.5	2.9
Five	Widow/widower			
	+ child + grandchild + great grandchild great great great grandchild	7.7	4.5	5.7
Total		100	100	100

For the question “why they have to be alone”, the answers can be divided into 5 factors, the details are as following:

1) The death of family members: For this factor, the nonagenarians claimed that they lose a lot of relatives according to the communicable and infectious diseases such as typhoid, cholera, yellow fewer, dengue fever, for example. This research also indicated that only 2.8 % of this generation survived (only 1 case of the respondent that her younger sister still survived). Not only the death of relatives which already passed away, but also their kids and young generations are high increasing in behavioral diseases such as high blood pressure, diabetes, heart diseases, stroke, paralysis, and also HIV infection. These sick persons are not able to take care of the nonagenarians. On the other hand, some of the nonagenarians take care of some of this young people which suffer from those illnesses. Moreover, due to the social development and urbanization, a good transportation system and new roads were built in the

cities. Many of the young generation died according to traffic accidents. As mentioned before, when the number of children alive was investigated the means of children alive has changed from 5.3 to 4.3 (Table 10.1).

Table 10-4 Living arrangement of the nonagenarians divided by gender

Number of Generation	Relative	Male (14)	Female (21)	Total (35)
One	Live alone	14.3	28.6	22.9
	Live with couple	21.4	-	8.6
Two	Couple			
	+ single child	7.1	-	2.9
	Widow / widower			
	+ grandchild + married grandchild	7.1	4.8	5.7
	Widow / widower			
	+ care giver	-	4.8	2.9
Three	Couple			
	+ child + grandchild	14.3	-	5.7
	Widow / widower			
	+ child, married child + grandchild	28.6	38.1	34.3
	Widow / widower			
	+ grandchild + great grandchild	-	4.8	2.9
	Widow / widower			
	+ child, married child + car giver	-	9.5	5.7
Four	Couple			
	+ child, married child + grandchild Great grandchild	7.1	-	2.9
Five	Widow/widower			
	+ child + grandchild + great grandchild great great great grandchild	-	9.5	5.7
Total		100	100	100

2) Taboo and family system: This factor plays an important role for loneliness at the old age. The research shows us that in the past endogamy, matrilineal inheritance and matrilocal residence were strongly in common, especially in rural area. Husband moves in the wife's family after marriage and then the husband took the spirit clan of his wife. The elderly women usually enjoyed considerable old-age security, because they resided with their married daughters and sons-in-law. Unfortunately, female nonagenarians who had no daughters should be alone in their house until they died, they can not follow to stay with her son and her daughter-in-law because of the spiritual conflict between her and the daughter-in-law clans and this might be cause of bad luck for both families. In this research five female nonagenarians or around 23% of

female respondents in rural areas are affecting from this cultural behave. But now endogamy and exogamy are mixed in this area. Exogamy is increasing; moving out after marriage to build their own family in the new city with patrilineal or patrilocal resident is easily found, which makes the family size become smaller. Moreover, the new pattern of family location trends to be like a visiting marriage, living separately near together and come to see each other sometimes. Giving them some food, small talk in the weekend, visiting when they have a free time is also found in this research.

3) Educational development: For this factor, "brain drain" plays an important factor to be alone at the old age either. Their sons and daughters have to leave to study for higher education in the province as well as in Bangkok. Often they never come back again, because they don't have a possibility to find a job which is related to their education.

> *"I have three sons, all of them graduated in bachelor degree (smile and proud). My oldest son he graduated from Chulalongkorn Universit. and is working now in Bangkok, the middle one graduated from Kasetsart University, he used to work in Bangkok, but now he is retired and stays in another district. For the last one, he graduated from Maejo University and working in Chiangmai. Everyone is good and clever, they have a good job. I'm so proud on them even they have to stay far from me"*
>
> *(Female nonagenarian, 92 years old)*

> *"In the former time, nothing here in Mae Hong Son, no good job only soldier, policeman, and teacher were here. If need to get a higher position, or to be highly successful in career should go to Bangkok, not here in Mae Hong Son"*
>
> *(Male nonagenarian, 92 years old)*

4) Economic development: Social and economic development in Thailand is necessary. But the effects from those developments make a lot of problems in Thailand as well. For example, in this area, the development of tourist destinations is increasing the number of the bars and night clubs as well as the restaurants. Some of the siblings and relatives move out from the village to work and stay in the city. They have no time and opportunity to take care of the elderly at home. Some of the respondents are neglect. Moreover, the serious problem caused by the night life and tourist development is drugs and crime. Due to the narcotics control during the time of Prime Minister Thaskin Shinavatara (2001-2006), this policy was extremely effective to reduce drug

consumption and drug market, particularly in methamphetamine. Over the next seven weeks of policy announcement, press reports indicated, that more than 2,700 drug dealers and consumers were executed. This phenomenon is found in this area as well: Four sons of the nonagenarians or 10% were killed by extrajudicial execution and three cases or 7.5% are now living in the jail according to the drug dealers. Relatives died or living in jail, means the nonagenarians lose their care-giver and have to be alone.

5) Individual factor: Finally, the last factor goes to the nonagenarians themselves. Even, some of their adult children try to invite them to spend their life together in the new city or the new place. But four of the respondents don't want to change their lifestyle and feel uncomfortable to make a new start which totally differs from the life they knew before. So they decided to spend the end of the life time and want to die in their village, even they have to be alone. Only one of those, the female nonagenarian cannot stay with the others because of psychological complication. So, in this finding we can say that the migration of nonagenarians from rural areas to join adult children in the capital cites or other province that migrated earlier is nil. This also related to the previous researches that Thai elderly people revealed a strong attachment the part of elders to their own home and probably a strong preference to age in place they lived before rather than leave to join the children who migrated to cities. (Domingo & Asis, 1995 ; Knodel & Ofstedal, 2005).

> *"No, I don't want to stay outside my place and I could not stay with them, I'm too much old to live with the other … even they are my children. I'm old and I don't want to make problem or conflict for them."*
>
> *(Male nonagenarian, 92 years old)*

> *"Her son tried so many times to invite her to stay in Bangkok with his family, and she used to stay there 2 - 3 times. What I knew was, she was so sad when she lived in Bangkok. She felt uncomfortable because the weather here is fresher than in Bangkok. She always cried in the morning and could not sleep at night. Especially in the afternoon when all they go for work, she cried and shouted because they locked the door and left her alone. She was afraid, scared, and so much strained. Then, her son sent her back here again. Now, she decided not move to other places anymore. She always said to me "to die in this house is her last desire."*
>
> *(The caregiver)*

"It's not possible for her to stay with other relatives. She used to say with the others but it was very complicate. It's like she has her own individual personality that could not adapt herself to the others. Especially, the grandchildren, she always complains and swears on them when they making a loud noise. Really, she is very good in curse others. Frankly speaking, sometime she seems to be like a schizophrenic person. She can smile, sing a son, and swear at the same time, so that why she has to be alone, and nobody wants to be with her."

(The caregiver)

10.2 Social network

For the oldest old, social network is the major source of personal well-being and principal resource for personal care in later life (Litwin, 2000). The main objective for this part is to derive the network types of nonagenarians. The respondents or caregivers were asked to name all the people who are significant to them in sense of assistance and support. In addition to the names, the type of support of each person in the list was recorded.

For this finding, the three main network types are found. First is the family and relative network which is a small group and relies on close family members. Gender differences of social networks are also found as the daughter, niece and niece-in-law play the significant role on the family network (88.5%, 57.1%, and 48.5% respectively), while son, nephew, and nephew-in-law are found only 37.5%, 34.2% and 22.8% respectively. Next to note is the cousin network (42.8%) and 25.7% are from the spouse.

The second network group is the social connection, between them to the neighbors and to the community. This finding strongly confirmed that neighbors play an important network to them, in that 82.8% of the study respondents are involved in this particular network constellation. Whiles the other network group, the community health volunteer and village headman are also found, but in few, 17.2% and 14.2% respectively.

Finally, the smallest in both report and percentage is the social group and activity, where this network is located outside their home community. This network is the relationship between the nonagenarians and the monks in the temple, where only two nonagenarians (5.7%) still regularly participate and one male nonagenarian (2.8%) has a good network and relationship with the younger generation and acts in the temple committee for religious activities and temple development.

After the name of all the people who are significant to the nonagenarians were listed. The groups of social network can be summarized into three main groups as shown in table 10.5. Then, the next step is to identify, in how many types of the networks the nonagenarians take part. The respondents can be identified in to three groups: the maximum is three network types (family, neighbor and social network), followed by two types (family and neighbor network) and one type (family network) (Table 10-6).

As demonstrated in table 10-6, most of the nonagenarians (91.4%) have two types of social networks (family and community), around 5.7% have three types of social network and for 2.9% the social network is limited to the neighbors only.

Table 10-5 Social network of the nonagenarians

Social networks	Frequency (35)	Percentage (100)
Family network		
Spouse	9	25.7
Cousin	15	42.8
Daughter	31	88.5
Son	13	37.1
Niece	20	57.1
Nephew	12	34.2
Niece-in-law	17	48.5
Nephew-in-law	8	22.8
Neighbors and community		
Neighbor	29	82.8
Village headman	5	14.2
Community health volunteer	6	17.1
Social group		
Monk	2	5.7
Friend	1	2.8

Table 10-6 Number of social network of the nonagenarians divided by gender and residence

Number of social network	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
3 types of social network	7.1	4.8	5.7	15.4	-	5.7
2 types of social network	92.9	90.5	91.4	84.6	95.5	91.4
1 type of social network	-	4.8	2.9	-	4.5	2.9
Total	100	100	100	100	100	100

10.3 Social contact

Approximately 68.6% stated that they received daily visits from children, nieces, nephews and other relatives, because they are living together, even in some cases the house is absolutely separated, but it is located in the same village or the same area. 22.9% are visited by neighbors, village headman, community health volunteer, friends, and visiting the monks two or three times a week. 8.6% of the nonagenarians (three cases) received visits from neighbors and other family members less than once a week. All these three cases are living alone.

Table 10-7 Social contact of the nonagenarians divided by gender and residence

Social contact	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Daily	64.3	71.4	68.6	92.3	54.5	68.6
2 - 3 times a week	35.7	14.3	22.9	7.7	31.8	22.9
Less than once a week	-	14.3	8.6	-	13.6	8.6
Total	100	100	100	100	100	100

This research also found, that the contacting time with family, neighbor or social group of nonagenarians is related to the living arrangement. The case studies of 24 hours of contacting the social network between lonely nonagenarian and the nonagenarian who is living with three generations member is extremely different as shown in figure 10-1.

Case A: For the lonely female nonagenarian, the opportunities to meet other people and other social groups are very rare. The contacting time is just around 8.30 a.m. and 1.00 p.m. where the neighbor who lives near to her come and gives her some food, approximately, ten minutes totally. The neighbor did some short one-way-communication, while the nonagenarian only smile and did not say anything in return, which deals to lack of communication and hearing problem. Anyway, in her mind it is obviously indicated that she knows what the neighbor means. She smiles to the neighbor and raises her hand up to the head and gives back the salute. After the ten minutes, she has to stay alone and doing her personal activities and mostly sleeps on the padded mattress or sitting on the floor to watch the other villagers passing by.

Case B: The female nonagenarian, who lives together with family members, has a huge opportunity to meet and contact with her network, starting around 5 to 6 a.m., while her daughter wakes up, cleaning her with towel and cleaning the mobile toilet. During the daytime the numbers of social contacts are increasing up to four persons as the neighbors and siblings come to her for a chat and around 3 p.m. she takes a small nap. Time to meet her family member is emerging again around 5 to 6 p.m. when she has dinner before she goes to bed at around 7 p.m.

Their opportunity to participate at social networks is significantly related to the quality of life. The differences in the quality of life from these two cases studies are found in personal and housing hygiene, food consumption, and social interaction. A lonely nonagenarian has only very limited opportunities to speak with others, while the nonagenarian who is living together with family members has more chances to practice and to continue brain condition by talking. It might be said that loneliness and living without social contacts might correlate to health, illness, physical potential, and housing sanitation.

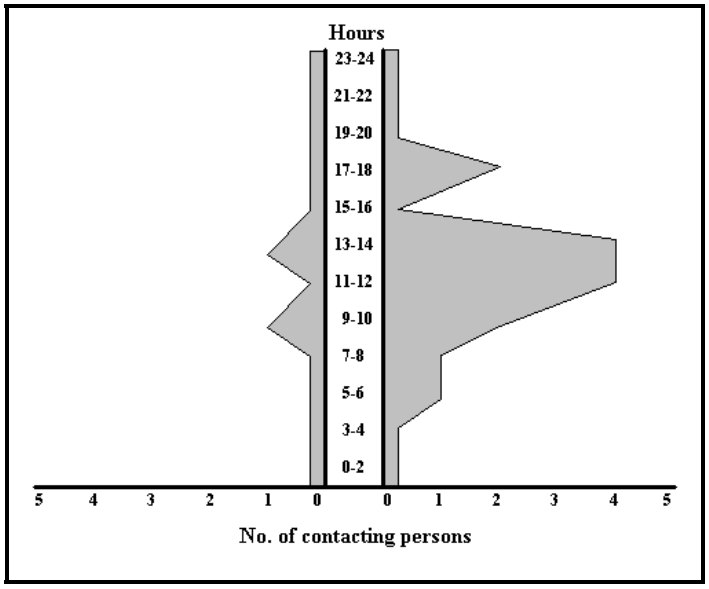


Figure 10-1 The 24 hours of social contacts of nonagenarians.

10.4 Social support

In this part, the social support is defined as the range of interpersonal aids that the nonagenarians require for daily functioning which are followed by the list of persons who are named as their social networks.

For the daily life of nonagenarians, the research found that such supports can be classified into two main categories of assistance: Formal social support, which is provided by family members, neighbors, village headmen, community health volunteers, friends as well as monks and formal social support, which is provided by the government and community services such as health insurance, pension, relief fund, home visit, and mobile clinic.

10.4.1 Informal support

Informal support, provided by their networks, assistance and support can be summarized into three main types including psychological, economic and material support. The details are as following.

1) Psychological support: The need for emotional health for the oldest old maybe is affected by loneliness, lost of spouse, lost of family members, or low social activities. From this research, some findings extremely confirmed that the visiting from family members, relatives, friends, and neighbors, are significantly supporting the quality and happiness of their life. Short or long times for visits, both are increasing their value, as the oldest old still have someone who is thinking of them. In general, visits from neighbors and younger elderly are found in the afternoon in sense of small talk and social interaction when their children are working on the rice field.

> *"If he (the neighbor) doesn't have anything to do, he always comes to my house, to talk with me and visit him (nonagenarian). When he came, I offered him everything I have, such as tea, fruit, or whatever. Just please him to stay here with my father. Even they didn't talk much, just sitting together I think for my father, his life was more vivid, I think he should meet someone, not to see me all the time and I realized that if someone come to visit him, he enjoy life more, he sits, he enjoy more foods, I think it was so good that he didn't lay down on the bed all the time, you know, if he has more daytime activities, means very good for him for sleep at night also, and I know that he love to meet the neighbor, too."*
>
> *(The caregiver)*

> *"No, she is not alone, look!!! How she can be alone, when people passing our house, everyone greeting her, how are you? Even no talk but they wave hand on each other or make a nod. You can observe, if you don't trust me, try to see when she sitting on the rocking chair. She smiles to everyone and everyone is greeting her. We have a good relationship in this village. Everything fine, no problem, even she cannot move out but she also has some contact with the villagers.*
>
> *(The caregiver)*

Another type of psychological support is the visiting from family members and other relatives who live in another city or another province. Generally, long-weekend and the special cultural events are the reasons to go back to visit their home city. At this moment it is very important for the nonagenarians to get in touch with their children and grandchildren. Pattern of support are found in family participation such as eating, go to the temple or sleeping together. Even all these supports are not long-term activities they help a lot to prevent the

ageing people of an empty life. Some cases mentioned that visiting from children have massive effects, not only by supporting the psychological well-being, but also improving the health of nonagenarians. On the other hand, nonagenarians who do not have visits from the family are facing negative impacts like stress and depression.

> *"Don't ask me, how excited she was, she always asked me when they will come; I told her they will arrive soon and just wait!! For Songkran festival, Last year, she could not sleep, walked and walked and looking forward for them to come, she worried because the road is zigzag, she worried about an accident. She walked, walked, walked until I was angry and we were fighting. Oh!! But when they arrived, she changed her emotion totally, she smiles and happy, really. She loves him (the son) very much."*
>
> *(The caregiver)*

> *"She is very happy when the other children of her come to visit. I think this is only the one thing which can make her happy. She can eat much. Some food which I used to force her to eat but she didn't like, but if other children came and gave her, she could eat as much as they offered. Just like chicken soup (instant form) when I bought she said it is very stinky but if other children bought, even in the same brand, color, and taste, she could drink and said it was good….it's good that finally she is happy and get a good food, it's alright."*
>
> *(The caregiver)*

> *"It was very happy; you should understand, for the elderly, nothing more important for them than the children come to visit. Really, I'm already old, I know it very well. Just come, only return, other things like money, and valuable goods is not necessary, just you come. Visiting has strong power, really. For me sometime sick, but it was disappearing immediately when they come. Body pain, sometime its gone, really. It's happy, you understand me? When the happiness is full, even you sick, but you are survived, trust me and return to your parent, they waiting."*
>
> *(Male nonagenarian; 93 years old)*

"Once, the lovest niece didn't come to her for the New Year Celebration. Normally she came here every year. She cried, she said she is like the homeless; because the grandchild didn't pay attention on her. She said to me, every family is happy and surrounded with children and grandchildren, but not her. At that time she was depressed and cried all the time because she compared her life with other families. Moreover, when grandchildren of our neighbors came to greeting her, she felt more stressed. It was very sad for me too, until I have to call her niece from Chiangmai came to her now (Laughing). Finally, she came, and she was very happy."

(The caregiver)

"They didn't come to visit me for 3-4 years, never!! I'm bad luck, not lucky like other family that they have children come to visit. When see them happy I'm more pain, as I don't have children come to give a care."

(Male nonagenarian; 91 years old)

Lastly, psychological support of nonagenarians in this research is found in religious activities in the meaning of collecting the good things for the next new life, make a merit and donation. The affection of religious activities as mentioned above means to increase the spiritual well-being on the one hand, and on the other hand to reduce the stress as follow of the thought of Buddha. The patterns of psychological support are found in prayer, donating the food to the monks every morning, going to the temple and talking with the monks.

"When she is sad, she is always praying. It's surprising me very much. Normally, she forgot something easily, but why she can remember every sentence of the prayer?"

(The caregiver)

"I pray every day, in the morning at 5 a.m. and at night around 8 p.m. before I go to bed. It makes me feel free, relaxed and peaceful. Its helps me very much, it's good for my brain and my soul and it makes me happy. I never have stress for long time."

(Male nonagenarian; 93 years old)

"Giving food to the monk here in front of my house, sometimes like when she had a nightmare or feels uncomfortable, she will ask me to prepare. If It's on time, she gives the food to the monk at home, if we are not on time, she makes a pray to the food and I bring the food to the temple later. I appreciate to do this, for her, just asked me I do it immediately. I know she love to make a merit, but we don't have much money, probably, she want to save our money, then she asked me only sometimes. Someday when she was unable to walk I invited the monks to get the food near her bed … No problem, the monks also came to support her need, even she was really very sick on the bed."

(The caregiver)

"I also go to the temple regularly, I don't have anything to do at home, life is sometimes boring, then I go to the temple, it gives my life more vitality. Talking with monk, exchange some ideas, help the monks to do something, these activities become my hobby already. If I don't have this temple, monks and activities there, I don't know what my life is look like. Maybe really very boring."

(Male nonagenarian; 93 years old)

2) Economical support: The adult children are the most common source of money support to the nonagenarians (The details are explained in chapter eleven - the economic well-being). In short information to mention here is that the nonagenarians receive the economic support from their children and from the government. The amount they receive from the children is not fixed, it depends on how much they can provide without any regulations, and the range of payment is mostly found in especially cultural events. On the other hand, in term of the governmental responsibility, relief fund and pension are provided, approximately 300 to 500 Baht a month are given for the poor elderly, who do not have any income, while pension are found in only two cases. And approximately 8.6% have no income and do not have any economical support.

3) Material support: The majority of material supports are found in household chores, such as laundry, meal preparation and giving the personal care. For the nonagenarians who are living with their family, mostly are free to work in the house chore activities, because they are much to old to do these kind of duties and mostly are related to the cultural norm as gratefulness and gratitude (Katanyu Katawethi): when the children are old enough they have to provide care and support to the parents when they are getting old. This concept is still practiced in this area which is indicated the fundament of the relationship between the adult children and their parents. Moreover, the gender differences

of adult children who act as the caregivers or providing the assistance are also found. Female caregivers (daughter, niece, and daughter-in-law) provide more of most types of support than male caregivers.

The summary of informal social supports are shown in table 10-8 where the support from family and relatives are found in 94.3% followed by material support in term of meal preparation (91.4%) and economic support (88.6%). The finding also shows that psychological support in term of making merit or going to the temple are the lowest one which sharing the percentage of 45.7%, which deal to lack of physical limitation that they can not take part as often as they wish, as well as the Karen nonagenarians who are living in remote areas have problems to reach the temple. Some of them are not Buddhists. Even they are Christians, but most of them are unable to read the bible and there is no church for them to follow the way of Christian practices.

Moreover, 88.6% of the respondents receive the economic support. For material support, meal preparation (91.4%) is the most common support from their caregivers, followed by laundry and personal care which are sharing in the same proportion (85.7%), while house chore activities are 82.9%.

Table 10-8 Informal social support by the family, neighbors and social groups divided by gender and residence

Informal social support	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Psychological support						
Family care/ relative visit	92.9 (13)	95.2 (20)	94.3 (33)	100 (13)	90.9 (20)	94.3 (33)
Friend/neighbor visit	71.4 (10)	66.7 (14)	68.6 (24)	76.9 (10)	63.6 (14)	68.6 (24)
Visiting temple, making merit	50 (7)	42.9 (9)	45.7 (16)	61.5 (8)	36.4 (8)	45.7 (16)
Economical support						
Financial aid	85.7 (12)	90.5 (19)	88.6 (31)	84.6 (11)	90.9 (20)	88.6 (31)
Material support						
Household chores	78.6 (11)	85.7 (18)	82.9 (29)	92.3 (12)	77.3 (17)	82.9 (29)
Laundry	85.7 (12)	85.7 (18)	85.7 (30)	100 (13)	77.3 (17)	85.7 (30)
Meal preparation	100 (13)	86.4 (19)	91.4 (32)	100 (13)	86.4 (19)	91.4 (32)
Personal care	85.7 (12)	85.7 (18)	85.7 (30)	100 (13)	77.3 (17)	85.7 (30)

10.4.2 Formal support

Basically, Medicaid and Medicare are provided for the elderly Thai by the government, but also pension, home for the aged, day care center, emergency house, home visit, mobile clinic, elderly clinic, elderly club, center for health promotion, center for chronic illnesses, relief fund and health insurance coverage. According to the Act of elderly 2003, the new twelve rights for the elderly have been announced consisting of (1) health insurance coverage (2) education, religion, and useful information for daily living (3) appropriate occupational development (4) self development and promoting social participation, network and community (5) increasing facilities and securities for aging in place, transportation and public services (6) supporting fees for public transportation (7) entrance-fees exception for governmental exhibition and museums (8) helping the elder who are victim or neglect (9) advising and consulting in court case and solving the family problem (10) supporting housing, food and clothing (11) supporting the relief fund (12) supporting fund for funeral ceremony.

In this study, it can be said that the nonagenarians have low benefit from their rights and inadequate social support from the government. Especially, services and supports in hospital or medical care, which is deal to lack of their physical limitation to move out from their home for medical participation as well as the lack of medical distribution as Mae Sariang is located in remote area. Several medical facilities are situated only in the Chiang Mai province. Moreover, the twelve new rights from the Act of elderly are not much implemented in these areas.

The research found that the important government supports in these areas are health insurance coverage, relief fund and community funeral welfare. As illustrated in table 10-8, all respondents have health insurance coverage as the Thai government offers them for free in medical services (only in government hospital). 74.3% of the respondents secure from monthly relief fund (300 Baht or 6 Euro per month) and 45.7% of the nonagenarians take part in the community funeral welfare. Approximately 5.7% have a private insurance. Basically, private insurance is not the support from the government, but it is the formal support from the company where they bought it for long time ago.

The funeral welfare is the collective money from the community members given to the family in which the case of death occurred. Normally, in the traditional Thai way of thinking and in the Buddhist religion, the death and the funeral ceremony are very important as the significant pathway to send the corpse to the next life. To follow the belief of rebirth and life cycle, another possibility to increase the chance for a better next life is to complete the procedures of funeral ceremony. Basically, three or seven nights of prayer by the monks should be done and other merits and benevolences should follow. An important thing is the cremation in the temple. Obviously, in every process the money is needed. Even the guests come and donate some money to help the family in which the case of

death occurred, but in some cases, especially with the poor families, the money is not enough, which generates a partial reduction of the funeral ceremony.

To support the death-with-dignity of Thai population, the community funeral welfare policy has been developed 1972 as some kind of death insurance, voluntary insurance, charity and non-profit organization. The original intention is to share the sadness of the villagers. The committees are also structured by the villagers. This financial aid is not only to support the expenditure for the funeral ceremony; it is also used to pay back the depths of the dead person to ensure that this death does not generate more family problems. This welfare was formed in many localities throughout the country. In the year 1997, the statistical records from the Social Welfare Department claimed that in Thailand there were 170 funeral organizations in Bangkok and 3,044 organizations in the provincial parts. 7,093,806 persons were the member of the funeral welfare.

This research found that the people in these areas, especially the elderly as well as the nonagenarians are the members of the community funeral welfare. The basic roles and arguments in each organization are different. Basically, the member needs to pay a member fee of 100 Baht (approximately 2 Euro) per person; this can be flexible depending on the financial status and argument of each organization. When the death occurred in the community, the member has to pay varies from 50 to 100 Baht (1 to 2 Euro) and the total money directly will be sent to the family in which the case of death occurred within a day. Even the funeral welfare is suitable and appropriate to the villager, who does not receive the benefit from the other governmental social welfares. But for nonagenarians, some problems have been elucidated.

> *"We don't have much money, some months 2 to 3 villagers died. I have to pay 200 to 300 Baht a month, it's a bit much for me, I don't know when I die, I don't know when I can get this money (Laughing) but now every month I have to pay..pay..and pay. Sometime I did not use my money in other perspectives or for my own reason, I just pay for the death (Laughing)."*
>
> *(The caregiver)*

> *"In fact, the funeral welfare is very good to help the villager and their family, but I have a lot of complaints from the members that the deaths of young generation are increasing every day. Some died by accident, sickness, AIDS, cancer, but the elderly are much in our sub district and trend to live longer, hard to die (laughing). Some complains that it's not fair if the elderly have to pay for the death of young generation.*
>
> *(The funeral welfare committee)*

For the medical support by the health personal such as home visit and mobile clinic are found in 49.5% and 14.3%, respectively. The research found that the medical service in mobile clinic is not suitable for the nonagenarians. The caregivers explain that when the mobile clinic comes, the clinic itself generally setup in the community hall or temple pavilion as the community centre of the village. But for some cases it is very difficult for nonagenarians to take part because they are living in remote areas and far from the community centre. Moreover, the services at mobile clinic are mostly far from the nonagenarian need. The caregivers explain that the services which are found (basic physical checking up for children, which might be the target group of this service) are for another population group, not for the nonagenarians.

> *"Never, it was so far and complicated to go there we don't have car … if they came to our house it would be great because the elderly can not easily move."*
>
> *(The caregiver)*

> *"It was not for the elderly, why we should go, it was for the children to check their mucus eyegum,earwax. Like my mother (nonagenarian) she could not get anything from there. It is more a loss than a gain, if something happened on the way like accidents or falls I think its more worse."*
>
> *(The caregiver)*

An important thing which is found from informal interviews with the governmental personal, who work for the community and the community health development in the Mae Sariang district, is that the paradigm of community empowerment plays an important key role for community development. Both of them explained in the same way that the community or the community health development now have been changed from the governmental based into community based strategy. Everything should be planned and done by the villagers for the villagers, in term of sustainable development, without any force or plan from the government.

During the past ten years, the key word of community empowerment has emerged in Thailand not only for the policy maker but also distributed down to the governmental personals who work in communities and villages. The national conferences, seminars and workshops as well as training for trainers, have been done to establish the body of knowledge into the governmental personals. Nowadays, community empowerment strategy is used as the main tools for community development. The concept of community empowerment is good, especially when its implemented into the practice, it should be concerned, especially in this area as the people are not strong enough to help themselves and help the others like in Mae Sariang district or the Karen population.

In this research might be noted that community empowerment is the process which needs time to success and might be suit for other population groups, but not for the oldest old. For nonagenarians they can not wait the time for this concept. They are the sensitive population group which is counting day by day for the time to live. Skipping home visit by the health personal and transfer all of governmental activities to the villager might be not suit for nonagenarians. Without governmental supports the villagers are pushed to live alone with several life limitations and so they are victims of the governmental policy. In fact, they have the right to get the benefit from governmental supports as they are the member citizenship of the state. According to the community empowerment policy, this paradigm is shape the number of activities and projects provide by the government become decreasing than the past.

> *"Nowadays, establishing the new project is not necessary. They have to help each other, you know the community empowerment? Stay together and help each other. Now they should plan and do what they want. We could not give much to them, if we still do the same thing, I don't know what they say, they say unsustainable development, isn't it? ... Of course, we have a lot of problems, but how can we do, the government forced us to do like these."*
>
> *(The governmental personal A)*

> *"Image of community empowerment is so good, but very difficult in practice … everything has to be done by the villagers … not much plans or projects as before, we make the community meeting and ask what you want, who can do, for whom, like these, then let them manage themselves … yes we have so many problems like this, It's not much success, the villager they don't have much time to run the project or activities, how they can do, even to help themselves they could not, and how we can expect them to help each other."*
>
> *(The governmental personal B)*

> *"We do (home visit and mobile clinic) two times a year, if we have much routine work might be one time. Home visit, can say not necessary, because the villager should help each other, not waiting only for the health personal."*
>
> *(The governmental personal B)*

Thus, some remarks from this research might be said that the community empowerment strategy alone is not enough for social, health and well-being development. Not only for the oldest old as the nonagenarians from this research, but also for other population groups throughout the country. On the combination or the multi-dimensional approaches should be paid more attention. Moreover, the governmental stockholders and governmental personals also should think that you use the community empowerment for the highest benefit to the people, or only use the community empowerment to follow the policy and reducing the community routine work as push everything to the villager then you can enjoy and work only in the office.

Table 10-9 Formal social support by the government divided by gender and residence

Formal social support	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Health insurance coverage	100 (14)	100 (21)	100 (35)	100 (13)	100 (22)	100 (33)
Relief fund	78.6 (11)	71.4 (15)	74.3 (26)	62.9 (9)	77.3 (17)	74.3 (26)
Community funeral welfare	35.7 (5)	52.4 (11)	45.7 (16)	38.5 (5)	50 (11)	45.7 (16)
Home visit	42.9 (6)	42.9 (9)	42.9 (15)	53.8 (7)	36.4 (8)	42.9 (15)
Mobile clinic	14.3 (2)	14.3 (3)	14.3 (5)	7.7 (1)	18.2 (4)	14.3 (5)
Pension	7.1 (1)	4.8 (1)	5.7 (2)	15.4 (2)	- -	5.7 (2)
Private health insurance	7.1 (1)	4.8 (1)	5.7 (2)	- -	9.1 (2)	5.7 (2)

Finally, the last concern of social support in this chapter is the classification on the total number of social supports which the nonagenarians receive in their daily living. The social support includes 15 types of supports (family and relative, friend and neighbor, monk, financial aid, house chore, laundry, meal preparation, personal care, health insurance coverage, relief fund, community funeral welfare, home visit, mobile clinic, pension, and private health insurance) in the 2 main areas, informal and formal, which gives a maximum of 15 points, good (11 - 15 types), fair (6 - 10 types), and poor (0 - 5 types).

Table 10-10 Number of social support for the nonagenarians divided by gender and residence

No. of social support	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Good (11-15 types)	35.7	28.6	31.4	38.5	27.3	31.4
Fair (6-10 types)	50	57.1	54.3	61.5	50	54.3
Poor (0-5 types)	14.3	14.3	14.3	-	22.7	14.3
Total	100	100	100	100	100	100

The table 10-10 shows the majorities of nonagenarians (54.3%) which have 6-10 types of supports where females are higher than males and urban are higher than rural. Approximately 31.4% of nonagenarians have 11-15 type of supports which is classified in good categories while males are more than females and urban higher than rural. Only 14.3% are poor in social support, minimum are two types of supports receiving only relief fund and health care coverage which is found at a female Karen nonagenarian aged 92 years old.

10.5 Domestic violence

Domestic violence has long attracted considerable attention from researchers and remains a topic of international concern. Although early research focused on the abuse of women and children, there is a growing interest in elder abuse (Yan & Tang, 2004). In this research, nonagenarian abuse is the summary from the opened-end question and its prevalence can be divided into seven categories including physical, emotional and verbal, financial, sexual, neglect, self and cultural abuse. The details are shown in table 10-11.

The prevalence of elder abuse, the total of 35 cases of the respondent, approximately 22.9% or eight cases are free from domestic violence, while 27 cases or 77.1% having experienced at least one abusive behavior in their extremely old aged which this prevalence is much more higher in elder abuse in China (35%, N=412), Hong Kong (27.5%, N=276) and The United Kingdom (2.6%, N= 227,000) (Dong et al, 2008; Yan & Tang, 2004; Manthorpe et al, 2007).

The table 10-11 indicated that emotional/verbal abuse is the most abusive pattern of the nonagenarians (60%). Followed by financial and neglect which sharing in the same proportion (31.4%). Six cases or 17.1% are suffering from cultural abuse, but only found at five females Karen nonagenarians and one female in rural area. Physical abuse is also found in this research (14.3%). Surprisingly, in this finding, males are more likely to be victims than females, which is differ from the previous research that females are the high risks for physical abuse (Cornell & Gelles, 1982; Giurani & Hasan, 2000). Finally, one female is now suffering by some kind of sexual abuse and one male was abused by himself (suicide) which sharing in the same proportion (2.9%).

Table 10-11 Types of abuse against nonagenarians divided by gender and residence

Types of abuse	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Physical abuse	11.4 (4)	2.9 (1)	14.3 (5)	8.6 (3)	5.7 (2)	14.3 (5)
Emotional or verbal abuse	28.6 (10)	31.4 (11)	60 (21)	25.7 (9)	34.3 (12)	60 (21)
Financial abuse	11.4 (4)	20 (7)	31.4 (11)	5.7 (2)	25.7 (9)	31.4 (11)
Sexual abuse	- (0)	2.9 (1)	2.9 (1)	2.9 (1)	- (0)	2.9 (1)
Neglect	8.6 (3)	22.9 (8)	31.4 (11)	8.6 (3)	22.9 (8)	31.4 (11)
Self abuse	2.9 (1)	0 (0)	2.9 (1)	0 (0)	2.9 (1)	2.9 (1)
Cultural abuse	- (0)	17.1 (6)	17.1 (6)	0 (0)	17.1 (6)	17.1 (6)

10.5.1 Physical abuse

Physical abuse is defined as assault and deliberate infliction of physical pain and injuries, physical coercion, and physical/chemical restraint (WHO, 2002). The important abusive patterns can be found in (1) slapped them (2) grabbed, pushed, or shoved them (3) kicked, bit, or hit them (4) burned or scalded them (5) threatened them with knife, gun or other weapon (6) do something that the they do not mentioned (7) tied them down (8) locked them in the room (9) gave them drugs or too much medicine in order to control them/make them docile (10) restrained them in any other way (Mowlam et al, 2007). In this research patterns of physical abuse are explained, the details are as following.

One female nonagenarian is locked from outside everyday and the family members let her live alone inside the house when they have to go out for work. To be sure that she will be safe, her son decided to lock her to live inside the house.

Two male nonagenarians suffer in the same way as their sons who are alcoholics always abuse them by verbal and physical harassments.

One male nonagenarian has to eat the sleeping pill nearly everyday which is given to him by his niece-in-law (without any doctor's prescription) to let him sleep and stop shouting. He is handicapped and paralyzed, he always shouting,

crying and disturbing the neighbor. To protect an unexpected problem of the neighbors, his niece-in-law tries to do everything to let him sleep. Not only the sleeping pills are given to him regularly, also liquor and rice whisky are served to immobilize him.

One male nonagenarian faced harmful abuse by his grandson who sometimes has the responsibility to take him for a shower. Due to his young age (19 years) as well as the gap of generation he did not pay much attention on the great-great-great grandfather. Once he took him for a shower with bad emotion because he wanted to go out with his friend. At that day he took the grandfather to the shower room, cleaning him in the hard way and threw him to the bed. According to his violence, the great-great-great grandfathers need to cure for back and hip pain for several months.

10.5.2 Emotional or verbal abuse

Emotional or verbal abuse is defined as the infliction of mental anguish (WHO, 2002). The possible actions can be found in (1) insulted or sworn at them (2) threatened, undermined or belittled what they want (3) prevented them from seeing other that they care about (Mowlam et al, 2007). In this finding, the emotional or verbal abuses mostly are found in insult and swear from adult children and grandchildren. The sentences which are affected to their emotion and felling such as “you are so boring”, “why you are so complicate”, “how shit fucking old you are” (this sentence was from the alcoholic son, when he was really mad) and called E-Kae (you are very old - impolite word) in front of her. Anyway, for verbal abuse it sometimes hard to identify if it is a normal fighting between the elders and their children or if it is exactly abuse. The main criterion to measure is the attention from the abuser and the feeling of the victim. Finally, the seven cases are identified as verbal abuse in which the situations are confirmed by the nonagenarians or caregivers that they suffer from those situations.

10.5.3 Financial abuse

Financial abuse is the illegal or improper exploitation and/or use of funds or other resources of the elder (WHO, 2002). The abusive actions probably found in (1) stolen money or the attention to steal money, possessions or property (2) force them or try to force them to give money, possessions or property (3) use fraud or tried to used fraud to take money, possessions or property (4) taken and kept or tried to take and keep their power of attorney (Mowlam et al, 2007). This research found that in eight cases of the respondent, their relief founds were stolen by their adult children, without beg. But this money was applied to use for the household expenditure. The reason why the adult children could steal their money is, that the nonagenarians lose their memory and begin to lose their consciousness as well as they are unable to use the money. Moreover, the three special cases which are found are: money stolen by the great-grandchild and his friends, and fraud to take her property.

"What shall I do? I cannot see anything … no money, nothing even valuable things left. They (great grandchild and his friends) came to my house. They said "We will help you to clean the house and wash your clothes". I tried to say so often please keep my money with me; don't take it with you, but they took, either for food or for drink."

(Male nonagenarian, 91 years old)

"She used to have money; she was good in economic status too. She gave her house to her son and then not so long he passed away. Then the house is belonging to her daughter-in-law, right? ... Don't expect this daughter-in-low, she sold that house and left here. In fact that, even normal people they will return the house to the husband's family, right? She tricky her. Since that time she did not have anything until now."

(The neighbor)

"In the former time, some part of her pension was withdrawn by her son and gave her as monthly expansion (around 2000 Baht a month or around 40 Euro) that she could enjoy to buy whatever she wants. But her cousins who live in the city always came to borrow or tricky her money. Usually, they come when nobody was here like when I go to the market. Because of the loss of conscious … she is old, the elderly are always like this, and she gave the money to them and forgot ... never to ask for return or sometimes she gave without self-consciousness... It happened so often until her son stopped to keep the money with her. Nowadays, she has only 100 Baht (2 Euro) per week in her purse. You know sometimes 100 Baht, the cousin also needed and asked for."

(The caregiver)

10.5.4 Sexual abuse

Sexual abuse is the non-consensual contact of any kind with an older person (WHO, 2002) and the possible action might be found in (1) talked to them in a sexual way that made them feel uncomfortable (2) touched or tried to touch them in a sexual way against their will (3) made or tried to make them watch pornography against their will (4) had or tried to have sexual intercourse with

them against their will (Mowlam et al, 2007). This conclusion is very hard for the researcher to clarify. There are so many questions came to my mind such as is it possible to blame this finding as sexual abuse? Is it intentional or unintentional behavior? How does the possible victim feel and think about? Anyway, when thinking to the nonagenarian side, it might be possible to categorize this situation as another kind of sexual abuse, when the nonagenarian feel uncomfortable and try to prevent, avoid, finish this situation. An explanation is following.

Female nonagenarian, aged 94 years; she lives with her family. The daughter (aged 67 years old) is the main caregiver who gives her a care and support. Due to the daughter is also the elderly. She could not help her much for the hard work, such as bring her from the second floor to ground floor, bring her from bed to toilet or shower room. To solve these problems, the strong young man was employed as the assistant caregiver. This man had to help the daughter to bring the nonagenarian from place to place as well as to help her to the toilet or to take a shower. At the beginning, the nonagenarian tried to say no and acted against him to help her, especially for the shower. But she had no chance to choose. Everyday, the male assistant brought her to a small bed in front of the toilet, then she had to remove her clothes and prepare for a shower. The male assistant brought her into the shower room, let her sit on the chair, and waited for her daughter to give her a shower. When this was finished, he had to bring the naked nonagenarian to the bed again, help the daughter to make her dry and to put on their clothes. More uncomfortable for her is when the daughter is sick or busy and needs to go outside. This duty belongs to him automatically. He has to hold and touch in every part of her body, even not in the sexual way, but it makes her feeling ashamed and uncomfortable. Sometimes she tried to skip the shower when the daughter was not at home or waited until she was back, but because of her age taking a shower at night might cause a cold to her. (Normal time for her shower is around 4 to 5 p.m.) Then she has to suffer or feel uncomfortable because of this man touches and clean her body.

10.5.5 Neglect

Neglect is the intentional or unintentional refusal or failure to fulfil a care taking obligation (WHO, 2002). The behavioral patterns from Mowlam and colleagues (2007) identified three main categories including (1) neglect to help them for day to day activities (shopping for groceries or clothes, preparing meals, doing routine housework, travel or transport) (2) neglect to support them for the personal care (getting in and out of bed, washing or bathing, dressing or undressing, eating including cutting up food, getting to and using the toilet) (3) neglect to help them with correct dose and timing for medication. As already mentioned in the part of informal support, the vast majority received care and supports from the family. Then, the neglect from day to day activities, personal care and medical neglect are not the main problems. In term of neglect in this research, the significant neglect is related to the visiting from family members. All eleven cases are claimed in the same direction, that they have rarely family visiting, feel isolated and let them stay or live with someone who is not a blood relative.

10.5.6 Self abuse

Age is an important demographic marker of suicide risk. Globally, suicide rates tend to increase with age; the rates among people aged 75 and older are about three times higher than those of people aged 15 to 24. This trend holds for both sexes, but is more marked among men (WHO, 2002). This research found only one male nonagenarian aged 90 years old, who tried suicide for two times, but unsuccessful. The main reason for the suicides is health problems. He is an unhealthy nonagenarian with several illnesses and diseases, including blindness, paralysis, heart problem, diabetes, ear problems, asthma, and liver diseases. Moreover, he is living without social support, only his great-great-grandchild and his wife who live next to his house come to give care and support 2 to 3 times a week. His small hut is very unsanitary.

> *"Two times he tried to made suicide. Rolling down his head to the floor, but survives. He don't want to live, he is sick, blind and paralyzed, meaning life is nothing, you know nowadays he always shout 'I need to die!! Kill me!!! Kill me!!!'"*
>
> *(The caregiver)*

10.5.7 Cultural abuse

In this finding, six cases of respondents are facing or used to face cultural abuse. As mentioned earlier, taboo and family system play an important role for loneliness of the nonagenarians, especially in Karen society. Due to the endogamy, matrilineal, and matrilocal system are strongly practiced in the Karen culture. The female nonagenarians who had no daughters should be alone in her house until she died. The research found that all five cases are affecting from this cultural behave and they stay in the small hut, live alone, eat alone, sleep alone. In another case, the family of a female nonagenarian opened a small grocery store for her in the village. She used to suffer from cultural and community abuse, when her last son was affected by HIV infection ten years ago. Since that time no one came to meet, visit, chat, or buy something from her shop. She suffered and cried, lost weight and got stressed until she had to go to the hospital. In this village, at that time, the knowledge of how to live with HIV and AIDS patients was not well established. HIV and AIDS patients are stigmatized by the villagers. In their mind this infection is a serious epidemic disease that the people should be aware. After her son had passed away the knowledge about HIV/AIDS was promoted more in the positive way of thinking. The communities and villagers became more tolerant, and then she became better and better. Now all family members can go on with their life, no more stigmatization happens to her family and the business is also running on well.

Finally, to study the domestic violence, the research confirmed that elder abuse committed by family members and caregivers who are well-known to them and domestic violence occurred in the community in the nonagenarian's own home.

Most abusers are found in adult children, grand children, and great-great-grandchildren. No victim is abused by spouses. Moreover, stress, tiredness, personal problems, economic problems and alcoholism are common among the abusers. On the other hand, domestic violence and elder abuse are not engendered by the abusers only, but also by the victims. The characteristic of the victim such as physical disabilities, psychological disorder, dementia, blindness, paralysis, as well as ear problems are a risk of abuse.

Table 10-12 Numbers of abuses against the nonagenarians divided by gender and residence

No. of abuses	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Good (no abuse)	21.4	23.8	22.9	15.4	27.3	22.9
Fair (1-4 types)	71.4	71.4	71.4	84.6	63.6	71.4
Poor (5-7 types)	7.1	4.8	5.7	-	9.1	5.7
Total	100	100	100	100	100	100

To measure the social well-being in part of domestic violence, the total scores of each type of abuse from table 10-11 were summarized and it enables to classify the group of abuse as good (no abuse), fair (1- 4 types of abuses) and poor (5 - 7 types of abuses). The table 10-12 indicated that the majorities of nonagenarians are fair (71.4%), followed by good (22.9%) and only 5.7% are poor which are experiencing 5 - 7 types of abuses.

10.6 Conclusion

Table 10-13 shows the code and characterization of five main variables of social condition (living arrangement, social network, social contact, social support and domestic violence), which can be divided into the three main categories good, fair and poor.

The figure 10-2 illustrates that more than half of the respondents have good living arrangement, living with three generations or more in extended family. Moreover, approximately 90% are reported having two types of social networks (Figure 10-3), where the vast majorities of the respondents have an opportunity to meet them daily (Figure 10-4). Around 55% report fair social support which means the respondents receive at least 6 - 10 types of social supports for their daily living. Finally, the domestic violence or elder abuse indicates that the nonagenarians are not extricated from the domestic violence; approximately 70% are victimized (1 - 4 types of abuses) by the family members or caregivers.

Table 10-13 Code and characterization of social condition

Name of variables	Code	Characterization of the variable
Living arrangement	3 = good 2 = fair 1 = poor	Living with 3 generations or over Living with 2 generations Living alone or with couple (1 generation)
Social network	3 = good 2 = fair 1 = poor	3 types of social networks 2 types of social networks 1 type of social network
Social contact	3 = good 2 = fair 1 = poor	Daily 2 - 3 times a week Less than once a week
Social support	3 = good 2 = fair 1 = poor	11 - 15 types of social supports 6 - 10 types of social supports 0 - 5 types of social supports
Domestic violence	3 = good 2 = fair 1 = poor	No abuse 1 - 4 types of abuses 5 - 7 types of abuses

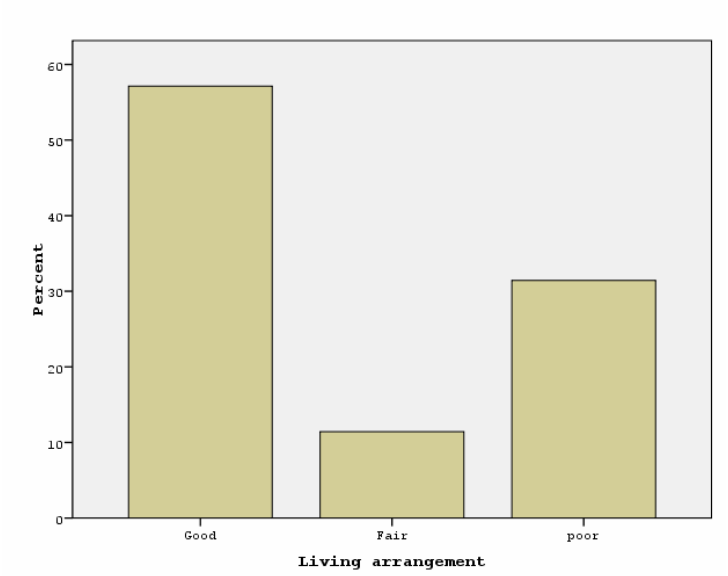


Figure 10-2 Conclusion of living arrangement.

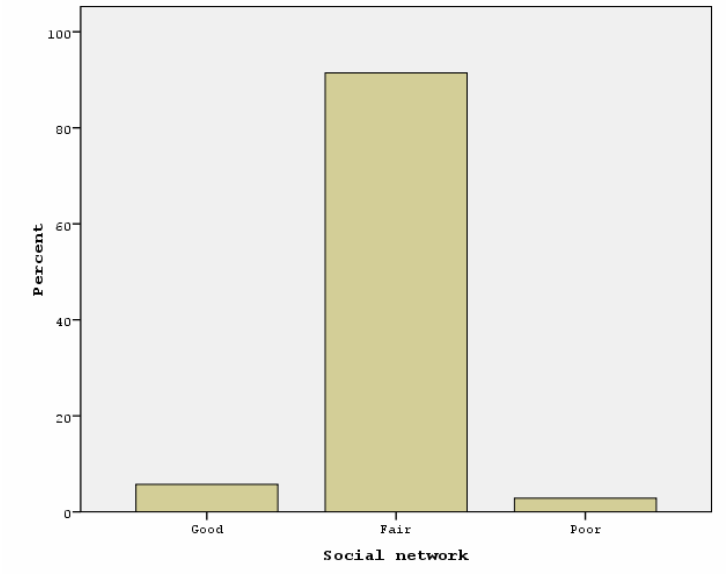


Figure 10-3 Conclusion of social network.

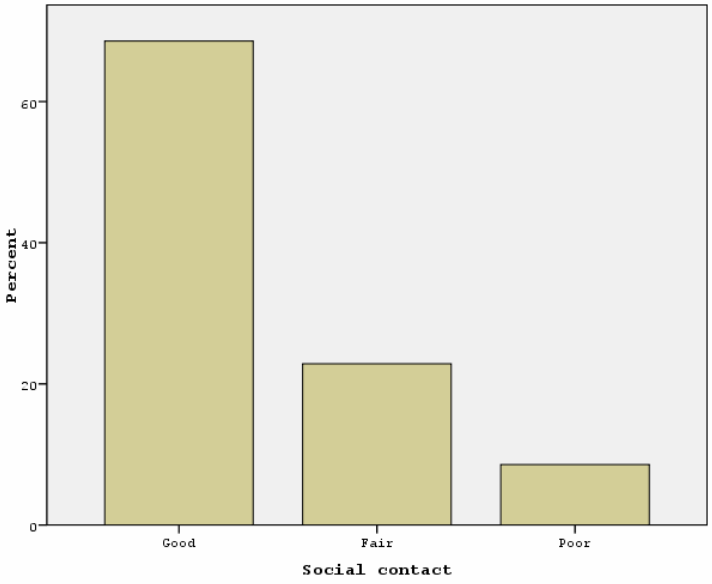


Figure 10-4 Conclusion of social contact.

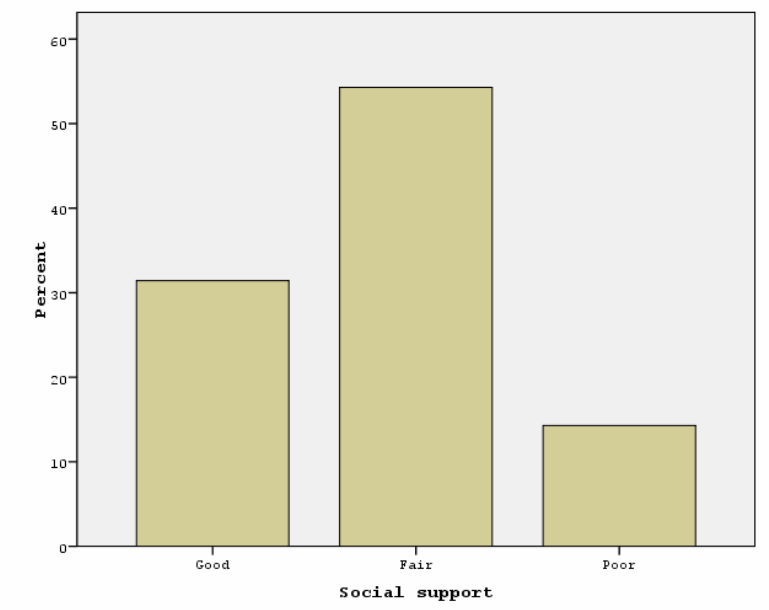


Figure 10-5 Conclusion of social support.

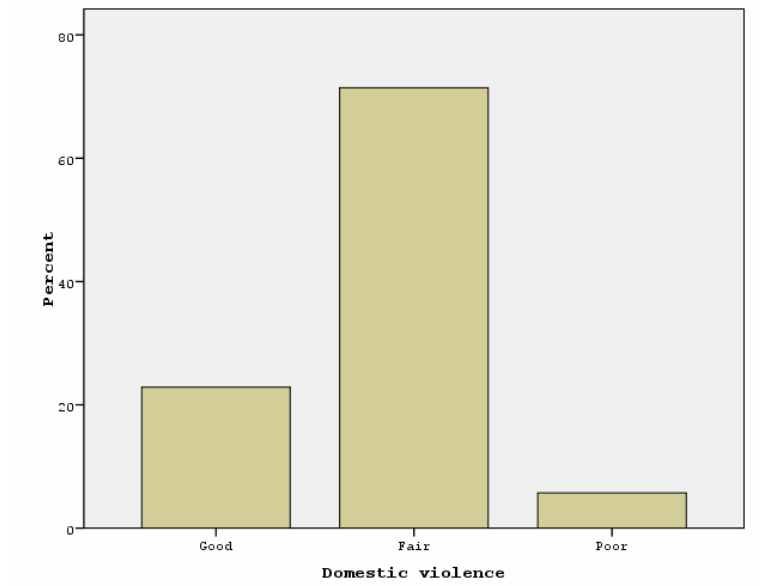


Figure 10-6 Conclusion of domestic violence.

Finally, in the top view of social condition, the variable items are summarized with the possible scores that can be ranged from 0 - 15 scores (1 - 5 = poor, 6 - 10 = fair and 11 - 15 = good). The figure 10-7 illustrates that the vast majority of the respondents are living in the midst of good social condition (68.57%), while 31.43% are living in a poor social condition.

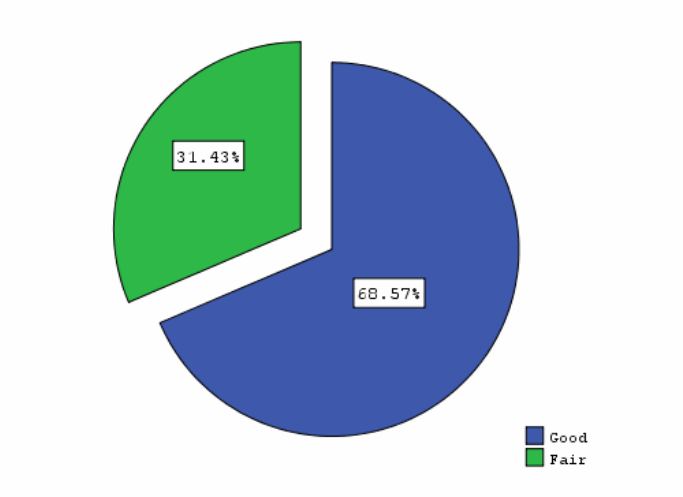


Figure 10-7 Conclusion of social condition

CHAPTER 11

ECONOMIC WELL-BEING

Economic status is a supportive factor to health promoting, heath behavior, health maintenance that related to quality of life and well-being not only the elderly, but all individuals. Economic status for explanation in this study are including income, asset ownership, and sufficiency of income, the details are as following.

11.1 Income and sources of income

Among 35 nonagenarians, it was found that 32 persons (91.5%) have earned salary, with an average of 1,201.5 Baht per month (approximately 24 Euros), the highest monthly income is 8,500 Baht (170 Euros) while the lowest monthly income is 50 Baht (1 Euro). The average income is higher among females than at males, while the nonagenarians in urban areas have the higher income around two times than rural areas. This situation is going on in the same direction of total family income (Table 11-1 and Table 11-2). The average of family income of nonagenarians in Mae Mae Sariang in this study is 9,865.38 Baht (197.3 Euros) per month which lower nearly two times than the average of family income of Thai population (18,660 Baht per month) (The National Statistical Office, 2007). Moreover, the individual and family income of nonagenarians also unachieved the goal of poverty line of Thailand and UNDP (13,000 Baht per or just over US $1 a day).

Monthly income of nonagenarians is shown in table 11-3. The monthly income in this study can be divided into four subcategories. The research found that the vast majority of the nonagenarians, 62.9% earn income in the range of 300-3,000 Baht, followed by <300 Baht (6 Euros) and > 3,000 Baht (>60 Euros) which sharing in the same proportion of 14.3%. While the nonagenarians who do not have any income for living are found approximately 8.6%, which female are higher than males and found in rural areas only.

Table 11-1 Mean of monthly income of the nonagenarians

Characteristic	Mean	SD.	N	Min	Max	Currency
Male	976.92	2,271.98	13	100	8,500	(Baht)
	19.53	45.43	13	2	170	(Euro)
Female	1,355.26	2,254.55	19	50	8,500	(Baht)
	27.10	45.09	19	1	170	(Euro)
Urban	1,830.76	3,134.58	13	100	8,500	(Baht)
	36.61	62.69	13	2	170	(Euro)
Rural	771.05	1,246.47	19	50	5,000	(Baht)
	15.42	24.92	19	1	100	(Euro)
Total	1,201.56	2,232.76	32	50	8,500	(Baht)
	24.03	44.65	32	1	170	(Euro)

* 3 cases of no income are excluded from this analysis

Table 11-2 Mean of family income of the nonagenarians

Characteristic	Mean	SD.	N	Min	Max	Currency
Male	5,718.18	6,270.37	11	1,000	18,000	(Baht)
	114.36	125.40	11	20	360	(Euro)
Female	12,906.67	2,030.10	15	500	38,000	(Baht)
	258.13	240.60	15	10	760	(Euro)
Urban	10,469.23	9,605.24	13	1,000	32,000	(Baht)
	209.38	192.10	13	20	640	(Euro)
Rural	9,261.53	11,657.01	13	500	38,000	(Baht)
	185.23	233.14	13	10	760	(Euro)
Total	9,865.38	10,482.82	26	500	38,000	(Baht)
	197.30	209.65	26	10	760	(Euro)

* 9 cases of alone nonagenarians are excluded from this analysis

Table 11-3 Monthly income of nonagenarians divided by gender and residence

Monthly Income	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
<300 Baht (6 Euros)	21.4	9.5	14.3	23.1	9.1	14.3
300 – 3,000 Baht (6-60 Euros)	64.3	61.9	62.9	53.8	68.2	62.9
> 3,000 Baht (>60 Euros)	7.1	19	14.3	23.1	9.1	14.3
No income	7.1	9.5	8.6	-	13.6	8.6
Total	100	100	100	100	100	100

The data from table 11-3 shows that the monthly income of nonagenarians seems to be a bit small. There are some reasons to explain this phenomenon; the most important is dealing with cognitive and dementia disabilities which are effecting to money management of nonagenarians. To keep bigger amount of money with them might be unsecured. Due to this reason, when counting per month, the amount is around 300-500 Baht. This money is not for purchasing, but mostly for human security that at least they have some money to pay for something when they really want to buy something. Most time its spent for food for their grandchildren.

> *"Her problem is that she did not use her money; I'm appreciated if she uses it, but when she has, she didn't know how much she had? Nobody knew! She love to keep and hide it until she forgot where she hid. Once, nearly 10,000 Baht, I found in the old clothes box that I nearly donated to the Karen. So lucky that I checked it before, if not, we would have lost it completely. And when I asked her this is your money? Do you know what she said? She said no, I don't*

know. It's not mine! Look, it's like this, so that why I did not give her much money; I give her only 100 Baht a week. When it over I give her again."

(The caregiver)

"Not possible, because she is completely forgetful. She couldn't identify the bank note. The old version of card 100 baht she said it's hers, for the new version she said its not, absolutely not, and swear me that I gave her a fake one….. Once it was worst, she went to buy a drink, here around the corner next to my house. 10 baht would have been the drink, she gave the seller card 1,000 and went back, didn't wait for return. How lucky that the seller we know each other very well, the seller ran to her and gave the return, she said no..no..no.. I want to pay don't give me for free! Take it, take it, She thought that the seller want to give her a free drink (Laughing). Finally she couldn't understand, the seller came to me and gives a return that was very nice that the seller and our family we are so close. If not we would have lost 1,000 baht for 1 coca cola (laughing), look!!! Card 1000 baht she thought card 10 baht, I so worry about her very much. So that why I give her only small bank, not a big one anymore"

(The caregiver)

"I don't care who will insult me like I'm cold to my dad. If they come to me they will know that I already gave him the best care. My siblings who stay in Bangkok always blame me that I am tricky with his money, but its not true, his money is still on the bank account, nobody can withdraw it except him. This money (monthly income- the researcher) is an extra from me, they didn't know and didn't understand, and Dad also told them that he don't have any money because I did not give him, he is confused and forgot that I gave him and it was there in his wallet. He is near…near…completely demented. I really don't know what will be happened when he is completely senile; we will fight everyday, for sure!"

(The caregiver)

"She doesn't have to buy anything, because I bought everything for her. The money in her wallet mostly she spent for her grandchildren, like when the ice cream cart came, she shouts!!! Come…come…come she is very proud to buy things like this. As much grandchildren she has, everyone got it (laughing), sometime the children from neighbors got it as well. Stuffed bun cart came she call also, blended ice came she call again. She was penniless on every weekend. But it was ok, I did not say anything, it's for her happiness."

(The caregiver)

Table 11-4 Source of income of nonagenarians divided by gender and residence

Source of income	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Children / relief fund	71.4	61.9	65.7	84.6	54.5	65.7
Relief fund	14.3	23.8	20	-	31.8	20
Pension	7.1	4.8	5.7	15.4	-	5.7
No income	2.9	5.8	8.6	-	13.6	8.6
Total	100	100	100	100	100	100

Table 11-4 indicates that approximately 65.7% of the nonagenarians are receiving income either from children and relief fund for the aged, while 20% received income from the relief fund alone. Only 5.7% are receiving private pension benefits. As mentioned earlier (chapter five) that the vast majority of nonagenarians are agricultures, merchants, and labors, only 5.7% worked in governmental sector. These pensions are available only for them, while other occupations, which can be called "unpaid domestic work" are unable to get the benefit from governmental pension. When they get old, they have to make a socio-economic security by their own families or by themselves. While 8.6% are the nonagenarians who do not have any income, where it is higher at females than on their male counterpart and is found in rural areas only.

The supported income from children and other relatives is not certainly fixed, which mostly can be found in special cultural events such as New Year celebration, Song Kran day (Thai traditional New Year), where all children and other relatives usually come back home for family celebration. Moreover, some evidence shows that money sometime is not the most significant thing for them, but the basic care or family support is the most important things they really need.

"No, it is difficult to give her money every month because we do not have much money, when we are planting cabbage and sold it, we got the money and then gave her some. We are not governmental officers to have a monthly income; if we would be, we can also give her monthly"

(The caregiver)

"To be paid regularly is unusual. Normally when children, grandchildren from Bangkok came to visit her in New Year or Song Kran, they gave her like a gift, 500 Baht or 1,000 Baht, just like this"

(The caregiver)

"I do not need that money; they need that money, not me. So, let them use it, because they work for it. They gave me sometimes but I return. Because I did not need it and I do not want to buy anything, I return and said you keep it, but if you need to buy something to me, then buy. Just buy foods to me and eat with me, I am very happy; this is what I want… Sometimes, New Year they came and bought a lot of things and they gave me the money, I cried."

(Male nonagenarian, 92 years old)

Special attention to mark here is the relief fund for the aged, which this budget is not only directly distributed by the central government, but the municipal office or administrative authority in each district and sub-district also can make more distribution by their own annual budget when the funding from the central government are not sufficient. The total numbers of elderly who can get this money are related to the several questions, such as how many cases of record during the past year? How many funding plans which beg to the central government? How many elders are there in the villages at this moment? How many new cases are emerged in the village? An importance question is how many percents of the total annual budget do they agree to give for this fund? But the clear answer is, the funds are limited. For the new cases, they have to wait for an acceptance of the local authority committee to make sure that he/she is absolutely poor and really need help. Normally, it is possible to take time on the queue until the former one passed away.

The original reason of the relief fund policy is to give the primary support for daily living of the poor elders. It does not mean that all the elderly can get this fund. Aside from 60 years old of aged, the others qualifications should be (1) poverty, neglect, no family support, or not possible to work (2) acceptation and agreement from the committee and cabinet of municipality (3) living in a poor family, where the individual income is less than 20,000 Baht per year

(approximately 4,000 Euros per year) (4) confirmed that the elderly is living in the municipal area (5) confirmed that the elderly have a residential certification in the municipal registration system. The money is directly sent to the elderly or caregiver at home by cash. Additional to some cases that they have their own bank account, transferring the money from the local authority office to the receivers should be possible. But most prefer cash, which deal to the lack of distance, as the bank is located inside the city and some of nonagenarians have no bank account.

In the former time, the money was sent to the receivers at the end of each month. To reduce the working routine of the officers, the new system is activated, which is calculated by the total amount in yearly, then divided to give them two or three times a year. It means that the amount now become much more than for one single month. Sometime this money is used in another purpose, either intention or inattention that far away from the nonagenarian care and support.

> *"I'm really not sure that she knew that she had the monthly income (relief fund-researcher). Probably not, because her son was the receiver, I could not imagine in which way that money has gone, but absolutely for sure was not for her, you know? 300 baht for another area is probably small money; but here is really not. 300 baht sometime you can use for 2-3 weeks. Think!!! The elderly did not eat much in a day, sometime 300 baht she can totally enjoy life for the whole month."*
>
> *(The neighbor)*

> *"I will tell you directly, sometime this money came, when we had problems with the money, just like at the end of the month we had to pay for electricity, water, and so on. But we didn't have any money… just said mom…mom… I borrow this money ok! Just pay for electricity, gas for our family, but I only said into my mind (laughing) I didn't tell her directly, even I would have told her, she wouldn't have understood."*
>
> *(The caregiver)*

> *"Sometimes I borrowed her money to pay for the study fee of my grandchildren, buy the books. I informed her, she was ok, she didn't say anything, and she wasn't in trouble…I told her I borrowed, but didn't return once."*
>
> *(The caregiver)*

Although the way to get this fund is the resolution and verification from the committee, but there are so many reports and evidences in Thailand that the receivers are not absolutely poor, some of them are living in the middle or high socio-economic status. Some have their own private pension from the one hand, but on the other hand they also have an opportunity to get the relief fund. This study also found in the same situation but in different ways. For example, the receivers are the relatives or living in the same family of the committees, the younger old aged (60 -65 years old) who can do such social activities for the village get this fund instead of the oldest old, which really would need help. This finding might be correspond with several evidences in other areas and might be strongly confirmed to the government, that on the process of funding distribution it is required to develop. The interesting quotations are shown as below.

> *"Mom does not get this money, I do not know why!!! I went to the village headman and asked for it for several times, but she did not get it until now, the village headman said he sent her documents to the local administration office for long times ago. Might be next year… Next 2 year… I do not know maybe she dies before see this money. I would not say anything, if they do not give to her, it is also ok. I have only one mother in my life, without this money I still give her the best care, I can afford."*
>
> *(The caregiver)*

> *"No, no way to get it, if we are neither their relatives nor their family. Take a look!!! You can check every one who gets this fund in this district, mostly has the same last name as the village headman or village chief. Furthermore, their mother and father in laws, who live in another district but they do not get this money from there. They moved the name of mother and father in laws to their household registration and get the fund from my village. Go!!! Check it!!!"*
>
> *(The neighbor)*

> *"I got it, but my mother not. (Mother is 93 years old, daughter is 64 years old, researcher) Because mother did not do anything, everyday at home, but I am the village health volunteer, I worked for the village before I was 60 and still working now, why I should not have this fund because I work for the village…. I did not hear anyone complain about this, and now I am 64, why I should not get it?"*
>
> *(The caregiver)*

"I asked the officer, but noting happened. Not so long ago he came to see my father and said we have to wait until the elder one dies, then my father can get this fund.

(The caregiver)

Anyways, the relief fund policy has been dramatically developed to gain more benefit to the elderly. At this moment, the relief fund policy by the year 2007 is rising up to 500 Baht per month (approximately 10 Euros), which increasing approximately 65% from 300 Baht from the year 1996. However, even the new policy of 500 Baht per month had been announced since December 2006, but it was not significantly implemented in these areas. All respondents who received these funds still get 300 Baht per month, which might be dealing with the hierarchy of bureaucratic annual budget management take long times to practice. However, an informal interview with the village headman found that the new amount of this fund will be sent to the local authority office next year and will be sent to the elderly as soon as possible.

Even the nonagenarians seem to be far away from economic activities, some of them also have a supplementary income or make the benefit of their properties which they were accumulated in the former time when they were young. Rental properties are found in 20%, while helping their children to run their businesses is also found but only a few, which are sharing the percentage of 8.6%. (Table 11-5)

Table 11-5 Supplementary income of nonagenarians divided by gender and residence

Supplementary income	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Rental properties	14.3	23.8	20	46.2	4.5	20
Merchandise	7.1	9.5	8.6	-	13.6	8.6
No supplementary income	78.6	66.7	71.4	53.8	81.8	71.4
Total	100	100	100	100	100	100

11.2 Asset ownership

As Sherlock (2006) point out that, the asset ownerships are important factors influence the relationship between asset ownership and vulnerability. First, whether they are able to sell the assets at a time of economic difficulty, and second, whether they can use the promise of a future inheritance to ensure support from one or more relatives (Sherlock 2006)

From table 11-6, the research found high levels of home and land ownership, 51.4% and 65.7% respectively, especially in rural areas. It should be note here that in their generation, at that time, the land is easy to preempt even in the ravine or plain area, which depending on who is strong enough to open up. Due to this reason the nonagenarians in rural areas is roughly two to three times greater than in urban areas.

Table 11-6 Asset ownership of nonagenarians divided by gender and residence

Asset Ownership	Score	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Home							
Owner of the house	3	50	52.4	51.4	23.1	68.2	51.4
Transfer to the children	2	42.9	38.1	40	61.5	27.3	40
Dweller	1	7.1	9.5	8.6	15.4	4.5	8.6
Land and property							
Owner of the house	2	78.6	57.1	65.7	38.5	81.8	65.7
Transfer to the children	1	14.3	23.8	20	46.2	4.5	20
No land and property	0	7.1	19	14.3	15.4	13.6	14.3
Gold or other jewellery							
Yes	1	21.4	47.6	37.1	53.8	27.3	37.1
No	0	78.6	52.4	62.9	46.2	72.7	62.9
Saving							
Bank saving	2	21.4	23.8	22.9	23.1	22.7	22.9
Keep cash at home	1	42.9	52.4	48.6	46.2	50	48.6
No saving	0	35.7	23.8	28.6	30.8	27.3	28.6
Debt							
Yes	0	-	-	-	-	-	-
No	1	100	100	100	100	100	100
Total		100	100	100	100	100	100

As they know that they are become getting older, some of them separate and transfer houses and lands to the children to protect the unexpected problem after they died and to increase the vulnerable life of their children after they are married and have kids (40% of house and 20% of land ownership were already transferred). For this case, the name of ownership was changed to the name of their children, but the nonagenarians can be act as the household leader (appear on the house household certificate and registration system) but do not have any right to deal in the legal activities.

> *"I separated it already, I don't want to have such a problem like in the movies, It is like when their fathers and mothers died, all children are scramble for properties, of course not. I do not want this problem in my family."*
>
> *(Female nonagenarian, 93 years old)*

> *"I gave already to all of them; I don't need anything, what for? I put down my life like this for long times. I am too old and nearly to die soon, today or tomorrow I really don't know. Even I am dead, these things I could not take with me."*
>
> *(Male nonagenarian, 94 years old)*

"I transferred every thing to them long time ago…more than 20 years, after they were married and had kids. They should have it, if not their father and mother in laws might be unsatisfied, maybe looking down on my children. If all properties still at me, all son or daughter in laws would not be happy as well, it is possible, really! They may think that my children worked (agricultural field work-the researcher) just for me only, not for their families….To protects unexpected problems, I separated all land and properties to my children, equally. Everyone now has its own land, to do what they want… Only she (the first daughter who is the caregiver,) this house is belonging to her, because she did not marry and caring to me for long time. She has a treasure a bit more than the others; and I hope that she will take a good care for me like this until I die."

(Male nonagenarian, 91 years old)

For other valuable things, approximately 37% have gold, jewellery, silverware, etc, where females in urban area have these ornaments in the percentages of 47.6% and 53.8% respectively. Moreover, for saving, 48.6% keep cash at home, where the nonagenarians in these areas are illiterate and lack of distance between home and bank as mentioned before. When the proportions of bank saving was investigated the percentages of bank saving between urban and rural areas are nearly the same 23.1% and 22.7%, which deal to some rural areas who are close to the city, while 28.6 have no saving. Fortunately, at the very old age as nonagenarians in this study, 100% of them do not have any debt.

Table 11-7 Total scores of asset ownership of nonagenarians divided by gender and residence

Asset ownership (score)	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Good (6-8 scores)	35.7	42.9	40	30.8	45.5	40
Fair (3-5 scores)	64.3	52.4	57.1	-	54.5	57.1
Poor (0-2 scores)	-	4.8	2.9	7.7	-	2.9
Total	100	100	100	100	100	100

To classify the asset ownership of nonagenarians, the total scores of each indicator from table 11-6 were summarized which give a maximum of nine scores and it is able to classify the asset ownership as good (6-8 scores), fair (3-5 scores), and poor (0-2 scores). The table 11-7 shows that the majorities of

asset ownership of nonagenarians are fair (57.1%), followed by good set of ownership (40%) and only 2.9% are poor asset ownership.

11.3 Sufficiency of income

Surprisingly, neither monthly nor family income of the nonagenarians are achieved the minimum standard of poverty in Thailand and UNDP, the table 11-8 also shows that nearly half of them (48.6%) reported that their income is sufficient for daily living. While 31.4% claim that the income is relatively insufficient and 20% are insufficient.

However, an important information found in qualitative study, it can be said, that money, income or economic activity are out of interest and unimportant for them since they had been stopped working for wage for long times ago when they getting older. Moreover, the major expenditure, including buying home, land and others properties, has already been made. This probably means that the oldest old income needs are not as important as they were before. For nonagenarians, apart from the money, an important need is the family security and care from children and relatives.

Table 11-8 Sufficiency of income of nonagenarians divided by gender and residence

Sufficiency of income	Male (14)	Female (21)	Total (35)	Urban (13)	Rural (22)	Total (35)
Sufficient	35.7	57.1	48.6	76.9	31.8	48.6
Relatively insufficient	42.9	23.8	31.4	23.1	36.4	31.4
Insufficient	21.4	19	20	-	31.8	20
Total	100	100	100	100	100	100

> *"I have every thing already, that's enough, even not much like others has, but it comfortable and I'm happy. I don't need to seek for others thing, I don't want to make my life more trouble again."*
>
> *(Male nonagenarian, 91 years old)*

> *"Money is just like the ornaments…you cannot take with you when you die. So, don't think too much. If I don't have money, I can survive, even with a bit trouble, but really, I would not die with out the money. In deed, I did not use any single Baht in a day, sometime...longtime used once. Mostly my children paid for it. I think I'm so lucky, even I am not rich, but at least I have them to take care for me."*
>
> *(Female nonagenarian, 93 years old)*

"Life long like this is good enough, I don't need anything at all, just have a home to live, have rice to eat, and that's it"

(Male nonagenarian, 92 years old)

11.4 Conclusion

Table 11-9 shows the code and characterization of three main variables of economic well-being (Monthly income, asset ownership, and sufficiency of income) which are divided into three categories including good, fair, and poor.

Table 11-9 Code and characterization of economic well-being

Name of variables	Code	Characterization of the variable
Monthly income	3 = good 2 = Fair 1 = poor	Higher than 3,000 Baht per month 300-3,000 Baht per month Lower than 300 Baht per month
Asset ownership	3 = good 2 = Fair 1 = poor	6-8 scores 3-5 scores 0-2 scores
Sufficiency of income	3 = good 2 = Fair 1 = poor	Sufficient Relatively insufficient Insufficient

The figure 11-1 illustrates that, nearly 60% of the respondents are earning fair income approximately 300 – 3,000 Baht per month. Moreover, more than half of the respondents are having their own asset which is acceptable for them to live with the total scores of asset ownership 4-6 scores (Figure 11-2). Finally, nearly half of them report, to be satisfied with sufficient income (Figure 11-3)

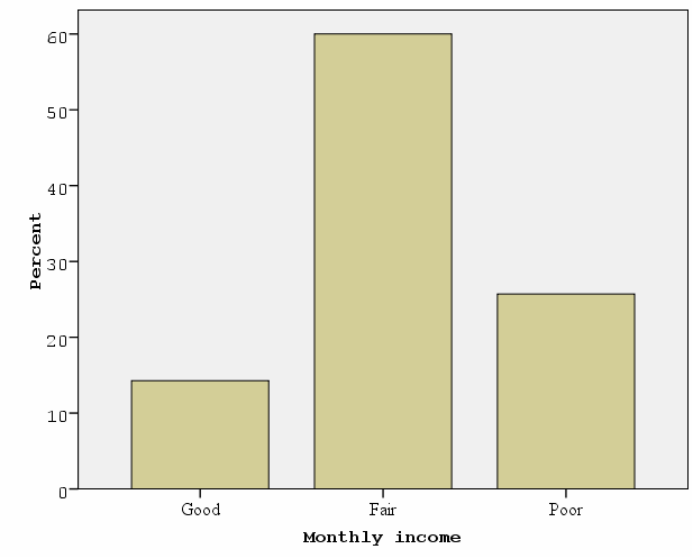


Figure 11-1 Conclusion of monthly income

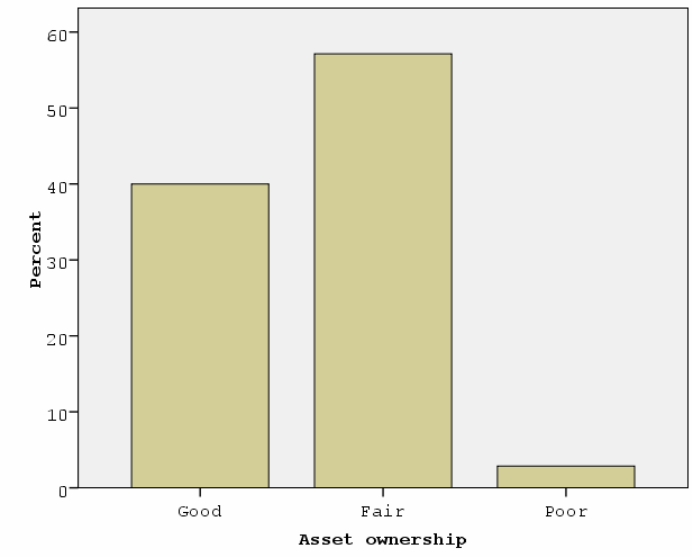


Figure 11-2 Conclusion of asset ownership

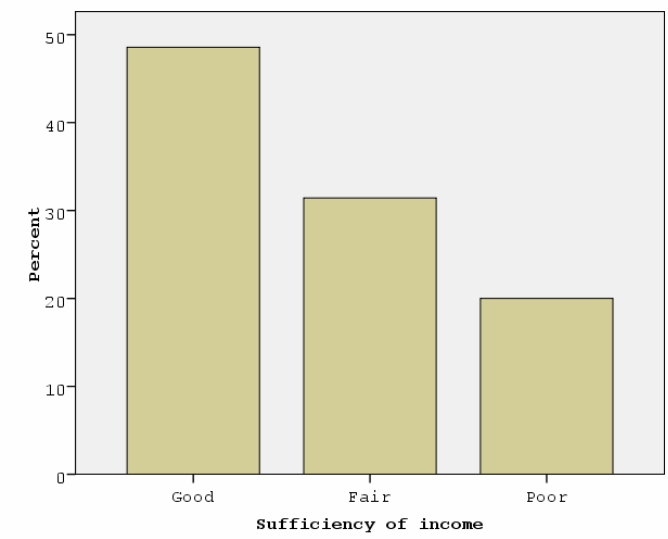


Figure 11-3 Conclusion of sufficiency of income

Finally, in the top view of economic well-being, the variable times are summarized with the possible scores can be ranged from 1-9 scores. (1-3= poor, 4-6 = fair, and 7-9 = good). The figure 11-4 shows that the vast majority of the respondents are living in the good and fair economic well-being with the percentages of 57.14% and 42.86% respectively.

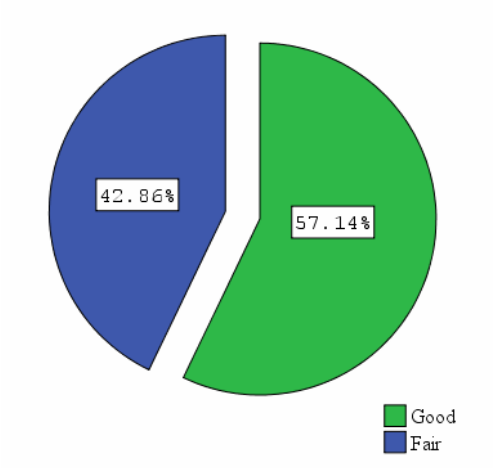


Figure 11-4 Main finding in economic well-being

CHAPTER 12

QUALITY OF LIFE OF NONAGENARIANS: GENDER AND RESIDENTAL DIFFERENCES

This chapter is encompassed the analysis of 23 factors and six domains of active aging. The descriptive statistic (means and standard deviation), factor analysis, and VENN diagram are applied to identify the gender and residential differences. The details are as following.

12.1 Quality of life of nonagenarians: an analysis of 23 factors of active aging

Table 12-1 lists the mean of the importance of the 23 items for active aging. The five highest ranking items are receiving social contact (social condition determinant), living in appropriate housing condition (physical and environmental condition), having the chance to participate in medical health care (health condition), having their own assets and properties, and satisfying or having sufficiency of income (both are in economic well-being).

The least poor reported items are having dementia (psychological well-being), suffering from malnutrition (behavioral determinant), being unhappy (psychological well-being), having less than 20 teeth or to be edentulousness (behavioral determinant), and having the physical limitation in the instrumental activities of daily living (IADL) (behavioral determinant). The Cronbach's alpha of the 23 items is 0.81, indicating good internal consistency. Moreover, the classification in the level of quality of life is also given in the table 12-1. The respondents, mostly are good in social contact (68.6%), living in good housing condition (60%), and approximately 57% are still living with their family members or relatives. On the other hand, in term of poor quality of life, 88.6% reported that they have to face with several kinds of the instrumental activities of daily living such as cleaning house, washing clothes, preparing food, using public transportation, shopping, money management, drug management, and reading - writing ability. Following by the happiness and remaining teeth which are sharing in the same proportion of report (71.4%). The mean scores regarding gender and residence are shown in table 12-2 and 12-3.

Table 12-1 Quality of life of nonagenarians divided in each item

Factor (N=35)	Mean (SD)	Good %	Fair %	Poor %
Social contact	2.60 (0.65)	68.6	22.9	8.6
Housing condition	2.45 (0.74)	60.0	25.7	14.3
Medical health care	2.42 (0.50)	42.9	57.1	-
Asset ownership	2.37 (0.54)	40.0	57.1	2.9
Sufficient of income	2.28 (0.78)	48.6	31.4	20.0
Living arrangement	2.25 (0.91)	57.1	11.4	31.4
Domestic violence	2.17 (0.51)	22.9	71.4	5.7
Social support	2.17 (0.66)	31.4	54.3	14.3
Social network	2.02 (0.29)	5.7	91.4	2.9
Depression	1.94 (0.41)	5.7	82.9	11.4
Monthly income	1.88 (0.63)	14.3	60.0	25.7
Stress	1.82 (0.66)	14.3	54.3	31.4
Activities of daily living	1.82 (0.92)	34.3	14.3	51.4
Health condition	1.74 (0.50)	2.9	68.6	28.6
Self-rated health	1.62 (0.68)	11.4	40.0	48.6
Self-rated oral health	1.60 (0.84)	22.9	14.3	62.9
Environmental hazard at home	1.54 (0.50)	-	54.3	45.7
Environmental participation	1.48 (0.61)	5.7	37.1	57.1
Cognitive function	1.48 (0.75)	15.2	18.2	66.7
Nutritional status	1.43 (0.50)	-	43.8	56.3
Happiness	1.40 (0.69)	11.4	17.1	71.4
Remaining teeth	1.37 (0.64)	8.6	20.0	71.4
Instrumental activities of daily living	1.11 (0.32)	-	11.4	88.6

Differences between male and female nonagenarians are statistically significant in health condition, the instrumental activities of daily living (IADL), and environmental participation. Generally, it can be said that female nonagenarians have to handle with a lower quality of life than male nonagenarians. For residential setting, the differences between urban and rural nonagenarians are statistically significant in environmental participation, housing condition, environmental hazards at home, living arrangement, and social contact. From this finding it might be claimed that urban nonagenarians have more quality of life than their rural counterparts, when considered by mean differences of rural and urban areas.

Table 12-2 Gender differences of 23 factors in active aging

Factors (N=35)	Male (14)	Female (21)	F	P
Health condition	2.00(0.40)	1.68(0.47)	7.972	.008*
Self-rated health	1.76(0.72)	1.63(0.68)	.003	.957
Medical health care	2.38(0.50)	2.52(0.51)	.834	.368
ADL	1.76(1.01)	2.00(0.88)	2.351	.136
IADL	1.00(0.00)	1.21(0.41)	24.174	.000*
Remaining teeth	1.53(0.77)	1.26(0.56)	3.605	.067
Self oral-rated health	1.92(0.95)	1.42(0.76)	2.586	.118
Nutritional status	1.61(0.50)	1.31(0.47)	.546	.466
Cognitive function	1.61(0.76)	1.42(0.76)	.088	.769
Happiness	1.46(0.77)	1.31(0.58)	1.785	.192
Stress	1.76(0.59)	1.84(0.68)	.174	.679
Depression	2.00(0.48)	2.00(0.33)	.157	.695
Environmental participation	1.61(0.76)	1.47(0.51)	4.518	.042*
Housing condition	2.53(0.77)	2.42(0.76)	.057	.814
Environmental hazards at home	1.69(0.48)	1.47(0.51)	2.885	.100
Living arrangement	2.15(0.98)	2.26(0.93)	.284	.598
Social network	2.07(0.27)	2.00(0.33)	.128	.723
Social contact	2.61(0.50)	2.52(0.77)	2.426	.130
Social support	2.30(0.63)	2.15(0.68)	.000	.996
Domestic violence	2.23(0.43)	2.15(0.50)	.000	.997
Monthly income	1.76(0.59)	1.94(0.62)	.242	.627
Asset ownership	2.38(0.50)	2.36(0.59)	.654	.425
Sufficiency of income	2.23(0.72)	2.31(0.82)	.955	.336

Table 12-3 Residential differences of 23 factors in active aging

Factors (N=35)	Urban (13)	Rural (22)	F	P
Health condition	1.69(0.48)	1.89(0.45)	1.777	.193
Self-rated health	1.53(0.66)	1.78(0.71)	.000	.988
Medical health care	2.38(0.50)	2.52(0.51)	.834	.368
ADL	2.07(0.95)	1.78(0.91)	.029	.866
IADL	1.07(0.27)	1.15(0.37)	1.929	.175
Remaining teeth	1.38(0.65)	1.36(0.68)	.006	.939
Self oral-rated health	1.61(0.86)	1.63(0.89)	.096	.759
Nutritional status	1.69(0.48)	1.26(0.45)	.274	.605
Cognitive function	1.30(0.63)	1.63(0.83)	3.743	.063
Happiness	1.53(0.77)	1.26(0.56)	3.605	.067
Stress	2.15(0.68)	1.57(0.50)	.112	.741
Depression	2.15(0.37)	1.89(0.31)	.623	.436
Environmental participation	1.61(0.76)	1.47(0.51)	4.518	.042*
Housing condition	3.00(0.00)	2.10(0.80)	28.503	.000*
Environmental hazards at home	1.92(0.27)	1.31(0.47)	16.001	.000*
Living arrangement	2.61(0.65)	1.94(1.02)	34.662	.000*
Social network	2.15(0.37)	1.94(0.22)	3.807	.060
Social contact	2.92(0.27)	2.31(0.74)	21.319	.000*
Social support	2.38(0.50)	2.10(0.73)	.501	.484
Domestic violence	2.15(0.37)	2.21(0.53)	2.073	.160
Monthly income	2.00(0.70)	1.78(0.53)	.096	.759
Asset ownership	2.23(0.59)	2.47(0.51)	.105	.748
Sufficiency of income	2.76(0.43)	1.94(0.77)	2.847	.102

To identify the most important components of the responses to the 23 factors about active aging, an exploratory factor analysis uses principal components extraction, Varimax rotation and Kaiser Normalization of the ratings are carried out. The extraction criterion is set as the Eigen-value of the component being greater than 1.0. The research found that, the 23 items identify eight new factors and explain approximately 79.51% of the total variance (Table 12-4)

Table 12-4 Total variance explain of factor analysis in 23 factors of quality of life

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.84	25.40	25.40	3.42	14.88	14.88
2	2.62	11.39	36.79	3.39	14.74	29.61
3	2.42	10.51	47.29	2.50	10.86	40.48
4	1.93	8.37	55.66	2.37	10.30	50.78
5	1.64	7.14	62.80	1.72	7.48	58.25
6	1.57	6.82	69.62	1.70	7.39	65.65
7	1.16	5.03	74.65	1.69	7.36	73.01
8	1.12	4.86	79.51	1.50	6.50	79.51
9	0.96	4.15	83.66			
10	0.80	3.48	87.14			
11	0.66	2.86	90.00			
12	0.48	2.07	92.08			
13	0.38	1.66	93.74			
14	0.32	1.38	95.12			
15	0.29	1.28	96.40			
16	0.26	1.13	97.52			
17	0.13	0.57	98.09			
18	0.12	0.54	98.63			
19	0.11	0.46	99.10			
20	0.08	0.36	99.45			
21	0.06	0.26	99.71			
22	0.06	0.24	99.96			
23	0.01	0.04	100.00			

The chosen factor labels are readily determined from inspection of the highest loading items on each factor (indicated in gray colors on table 12-5). They are family and social security, psycho-economic well-being, enjoyment of life, food consumption, subjective health, accidental risk, physical ability and medical accessibility, and objective health.

Family and social security covers items such as living arrangement, frequent visits with family member/friends/neighbors, housing condition, and sufficiency of income. Psycho-economic well-being also plays the important factor for them to live in an extremely old age. The items such as depression, stress, happiness, and support are significant for the quality of life, as well as having enough money and holding their own assets also have a high loading on this factor. Enjoy of life included three items: free from cognitive impairment, having

a chance for social interaction, and freedom from domestic violence against the elderly. Moreover, food consumption is an important factor from this finding, to achieve the good quality of life; the respondents should have appropriate teeth for chewing, good oral health, and having an adequate food consumption to maintain their nutritional status. In addition, to full fill the quality of life, subjective health such as the perception or satisfaction to their health is also important. The next factor is the accidental risk, where only the environmental hazard at home is involved. Physical ability and medical accessibility factor entailed the capabilities of activities of daily living (ADL), instrumental activities of daily living, and the accessibility of medical health care and services. Lastly, the objective health which means being physically healthy or not suffering from chronic diseases is also important for the quality of life.

Moreover, the principle components analysis (PCA) can explain and identify the quality of life of the respondents into three groups: good, fair, and poor. The three dimension of scatter pot is shown in figure 12-1. The star is representing good quality of life, which only found in 6 cases, the circle spot shows the respondents with fair quality of life, which found in the vast majorities of this study (19 cases), and the heart on the left hand side indicates poor quality of life (10 cases).

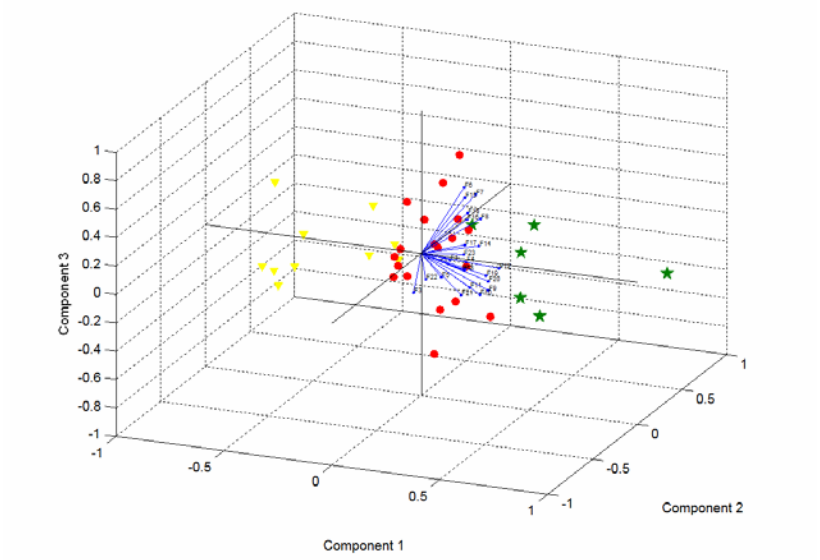


Figure 12-1 Three groups of quality of life of the respondents

Table 12-5 Factor analysis of the active aging items

Items	Family-social Security	Psycho-Economic well-being	Enjoy of life	Food Consumption	Subjective Health	Accidental Risk	Physical ability & medical accessibility	Objective Health
Living arrangement	0.89	0.05	0.08	0.16	0.01	0.04	0.02	-0.12
Social contact	0.88	0.17	0.03	0.12	0.02	0.19	0.00	-0.02
Housing condition	0.81	0.24	0.17	-0.17	-0.16	0.14	0.13	0.18
Sufficiency of income	0.64	0.54	-0.17	-0.01	-0.25	-0.09	0.23	-0.10
Depression	0.21	0.75	0.14	0.13	0.06	0.30	0.09	0.00
Social network	0.20	0.65	0.03	0.17	-0.03	0.17	-0.21	-0.35
Stress	0.47	0.65	0.22	-0.26	0.01	0.02	0.08	0.01
Social support	0.35	0.63	0.20	0.13	0.34	-0.14	-0.05	-0.09
Monthly income	0.11	0.63	0.16	-0.14	-0.04	-0.14	0.40	0.12
Happiness	0.06	0.60	0.58	-0.08	0.16	0.21	0.13	0.14
Asset ownership	-0.18	0.55	-0.24	0.12	-0.14	-0.37	-0.13	-0.05
Cognitive function	0.07	0.20	0.84	0.15	0.19	-0.20	0.02	-0.14
Environmental participation	-0.04	-0.05	0.81	-0.12	-0.32	0.26	0.08	-0.01
Domestic violence	0.41	0.20	0.67	0.09	0.30	-0.05	-0.03	0.20
Remaining teeth	0.07	-0.03	-0.08	0.93	0.17	0.09	0.06	0.07
Self-rated oral health	0.01	0.11	0.11	0.92	-0.19	0.04	0.02	0.15
Nutritional status	0.22	0.04	0.11	0.49	-0.68	0.26	0.20	0.06
Self-rated health	-0.05	0.06	0.17	0.11	0.82	0.17	0.22	0.26
Environmental hazards at home	0.24	0.10	0.02	0.22	0.00	0.85	0.00	-0.10
ADL	0.08	0.07	0.02	0.05	0.05	0.14	0.88	0.02
IADL	0.09	-0.01	0.09	0.15	0.04	-0.50	0.64	-0.24
Medical health care	-0.10	0.13	-0.11	-0.23	-0.01	-0.25	0.29	-0.58
Health condition	-0.07	-0.01	-0.06	0.09	0.15	-0.16	0.06	0.84

12.2 Characteristic of the respondents divided by the level of quality of life

To identify the characteristic of the respondents into the level group of quality of life: good, fair, and poor. The descending means of 23 items were indicated. As shown in table 12-6 to 12-8. The hierarchical means can be explained into three dimensions. First is good (mean scores higher than 2.5), indicates those factors do not need to be developed better, but in the long term should be promoted to maintain their good quality of life. Second is acceptable (mean scores between 1.5-2.50) denotes those factors are admissible and in need to be improved as point-out in the gray areas. Finally, poor (mean scores lower than 1.5), implies those factors are needed to develop, as soon as possible, to increase their basic need or quality of life to live in the extremely old age as label in dark gray areas.

12.2.1 Characteristic of nonagenarians with good life

The finding concluded that the natural characteristics of nonagenarians, who are able to enjoy their life with high quality, mostly having strong family ties (Table 12-6). Their families relationships everyday involve the connection between them, spouse, children, and grand children in extended families, with fully high mean scores of social contact (3.00), living arrangement (2.83) and social support (2.66). Moreover, it seems to be they are all far away from domestic violence (2.83) and living in good housing quality (2.83). Additionally, they enjoy more security in economic status which having their own properties and asset ownerships (2.50), they rated themselves as sufficient of income (2.66), and receive the medical support from the government which provided free from medical treatment (2.50). Only one factor that mean scores lower than 1.5 are the instrumental activities for daily living (cleaning house, washing clothes, preparing food, using public transportation, shopping, money management, drug management, reading and writing), where some activities are unable to perform as they deal with physical limitations and need someone's help or support.

12.2.2 Characteristic of nonagenarians with fair life

The characteristic of nonagenarians who are living in fair (acceptable) quality of life are receiving daily contact from family members which means and standard deviation of 2.73 and 0.56. The family pattern or living arrangement is different from the first one, as they are living in the imperfect-extended family where the family generations are less than three generations in one household, but at least they have some adult children or adult grand children to live with them and give them care or support. Anyways, they rated themselves as sufficient of income (2.52) and living in good quality of housing (2.73). The important things which are needed to be developed to increase their quality of life are found in several ways (mean scores is lower than 1.5) such as support from the caregiver in instrumental activities for daily living (1.15). The finding can be estimated that most of them are facing troubles with oral health condition, like having few or no teeth and might be affected to nutritional status, as they avoid consuming meat or fiber and eating soup only or boiled rice and vegetable. Moreover, the mental

health such as cognitive function and how to make them more happy, as well as social integration between them and social environment are needed to be worked out, the details are shown in table 12-7

12.2.3 Characteristic of nonagenarians with poor life

As explained in table 12-8, the worst cases as poor quality of life of nonagenarians in this study, it can be said that if 23 factors were asked, not even one factor is acceptable as passing the minimum requirement of the standard of quality of life in this study (mean scores over 2.5). On the other hands, 13 factors are needed to be concerned. Most of them are living alone and suffer from disabilities. Basically, they have their own health right to access the medical services (2.3) but might be facing with medical accessibility. Even they are poor, but they still have their own land and house (2.2), social contacts are also rare (2.1), as well as domestic violence normally is found in their life (1.9). According to the 13 factors where the mean scores are lower than 1.5 are shown in the table 12-4, most of them are unhappy (1.0) and unable to perform the activities (1.3) and instrumental activities of daily living (1.0). The mental health such as stress (1.3) and cognitive function (1.13) are needed to be solved. Oral health and food consumption are poor and it is needed to sort out the problem. They suffer from a low social integration and live in substandard housing and high risks of fall and accidence.

Table 12-6 Priorities of 23 factors of nonagenarians with good life

Factor (N=6)	Mean	SD
Social contact	3.00	0.00
Housing quality	2.83	0.41
Living arrangement	2.83	0.41
Domestic violence	2.83	0.41
Social support	2.67	0.52
Sufficiency income	2.67	0.52
Medical health care	2.50	0.55
Asset ownership	2.50	0.55
Self-rated oral health	2.33	1.03
Self-rated health	2.33	0.52
Monthly income	2.33	0.52
Happiness	2.33	0.82
Stress	2.33	0.52
Depression	2.33	0.52
Social network	2.17	0.40
Cognitive function	2.17	0.98
Health condition	2.00	0.00
Activities of daily living	2.00	0.89
Remaining teeth	1.83	0.75
Environmental participation	1.83	0.75
Nutritional status	1.67	0.52
Environmental hazards at home	1.66	0.51
Instrumental activities of daily living	1.17	0.41

Table 12-7 Priorities of 23 factors of nonagenarians with fair life

Factor (N=19)	Mean	SD
Social contact	2.74	0.56
Housing quality	2.74	0.56
Sufficient of income	2.53	0.61
Medical health care	2.47	0.51
Living arrangement	2.47	0.84
Asset ownership	2.42	0.61
Social support	2.37	0.50
Domestic violence	2.11	0.32
Activities of daily living	2.05	0.97
Social network	2.05	0.23
Depression	2.00	0.00
Stress	1.95	0.62
Monthly income	1.89	0.65
Health condition	1.74	0.56
Environmental hazard at home	1.58	0.51
Self-rated oral health	1.53	0.77
Self-rated health	1.53	0.61
Nutritional status	1.44	0.51
Cognitive function	1.42	0.69
Environmental participation	1.42	0.61
Happiness	1.32	0.58
Remaining teeth	1.32	0.67
Instrumental activities of daily living	1.16	0.37

Table 12-8 Priorities of 23 factors of nonagenarians with poor life

Factor (N=10)	Mean	SD
Medical health care	2.30	0.48
Asset ownership	2.20	0.42
Social contact	2.10	0.74
Domestic violence	1.90	0.57
Social network	1.90	0.32
Housing quality	1.70	0.67
Sufficient of income	1.60	0.84
Monthly income	1.60	0.52
Depression	1.60	0.52
Health condition	1.60	0.52
Social support	1.50	0.53
Living arrangement	1.50	0.85
Self-rated health	1.40	0.70
Environmental hazards at home	1.40	0.52
Environmental participation	1.40	0.52
Activities of daily living	1.30	0.67
Stress	1.30	0.48
Self-rated oral health	1.30	0.67
Nutritional status	1.25	0.46
Remaining teeth	1.20	0.42
Cognitive function	1.13	0.35
Happiness	1.00	0.00
Instrumental activities of daily living	1.00	0.00

12.3 Quality of life of nonagenarians: an analysis of six domains of active aging

According to the six domains of active aging (health condition, behavioral determinant, psychological health, physical environment, social condition, and economic well being), table 12-9 illustrates that 55.2% the respondents are associated of active aging at fair level, 28.1% are good and approximate 16.7% are at poor level.

Social condition and economic well-being domains tend toward a good level of 68.6% and 57.1%, respectively. Psychological well-being and physical environment are at the same percentage (71.4%) and health condition (68.6%) mostly found in fair level. Behavioral determinant is the only one determinant that the vast majority of the respondents are reported in poor level (51.4%).

Table 12-9 Level of quality of life of the nonagenarians in six domains of active aging

Active aging	Good %	Fair %	Poor %
Health condition and medical health care	-	68.6	31.4
Behavioral determinant	2.9	45.7	51.4
Psychological well-being	17.4	71.4	11.4
Physical environment	22.8	71.4	5.7
Social condition	68.6	31.4	-
Economic well-being	57.1	42.9	-
Total	28.1	55.2	16.7

Moreover, the research found that, there are no statistically significant differences between males and females in the six domains of active aging. Generally, it might be said that all of nonagenarians even male or female are having the same situation when using active aging approach for measure (Table 12-10) While residential setting, the differences between urban and rural are statistically significant in social condition, where urban nonagenarians are more enjoying with their family members, receiving visits, social contact and support as well as freedom from domestic violence are higher than in rural areas (Table 12-11).

Table 12-10 Gender differences of six domains in active aging

Factors (N=35)	Male (14)	Female (21)	F	P
Health condition	6.00 (1.03)	5.66 (1.11)	.106	.747
Behavioral determinants	7.71 (2.19)	6.90 (2.32)	.007	0.935
Psychological health	6.57 (2.34)	6.57 (1.74)	.469	.498
Physical environments	5.35 (2.13)	5.28 (1.14)	3.844	.058
Social conditions	11.21 (2.15)	11.23 (2.36)	147	.703
Economic well-being	6.28 (1.38)	6.71 (1.52)	.058	.811

Table 12-11 Residential differences of six domains in active aging

Factors (N=35)	Urban (13)	Rural (22)	F	P
Health condition	5.61 (0.86)	5.90 (1.19)	3.507	.070
Behavioral determinants	7.84 (2.23)	6.86 (2.27)	0.000	.987
Psychological health	7.15 (1.99)	6.22 (1.92)	0.84	.774
Physical environments	6.53 (0.87)	4.59 (1.46)	0.96	.332
Social conditions	12.23 (1.42)	10.63 (2.46)	11.874	.002*
Economic well-being	7.00 (1.29)	6.27 (1.51)	1.523	.226

To make it clearer, the VENN diagram is drawn to give the picture of the differentiation between gender and residential setting of nonagenarian in Mae Sariang district. The total scores of 23 items were counted and computed in the average value (percentage) of the six domains. Pair simple T-test and the 0.5 level of significant was used to determine the differentiation between gender and residential setting. The figure 12-2 is representative the quality of life of the total respondents (N=35 cases).

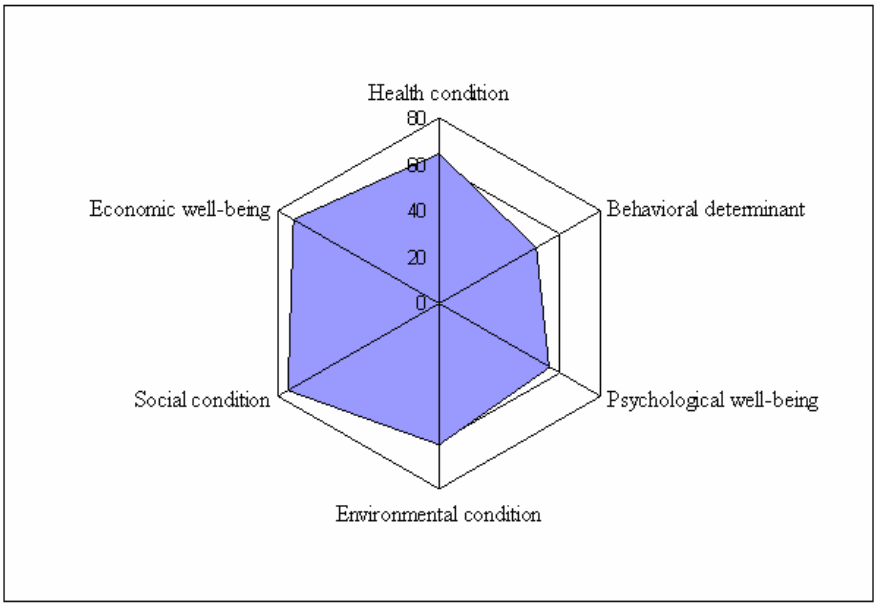


Figure 12-2 Quality of life of nonagenarians

From figure 12-2 it might be said that social condition plays an important factor in quality of life of the nonagenarians, followed by economic well-being, health condition and environmental condition, psychological well-being and behavioral determinant.

Figure 12-3 and 12-4 show the differences between male and female nonagenarians, it found that the quality of life of males seem to be better than of their female counterparts, especially in health condition, behavioral determinant, psychological well-being, and environmental condition, but there are no statistically significances (P-value = 0.368) between gender and quality of life (Figure 12-7). For residential setting (Figure 12-5 and 12-6), quality of life, urban nonagenarians live with better conditions than in rural areas in every domain, except health condition, there are statistically significant differences between residence and quality of life of nonagenarians in this research (P-value = 0.039) (Figure 12-8).

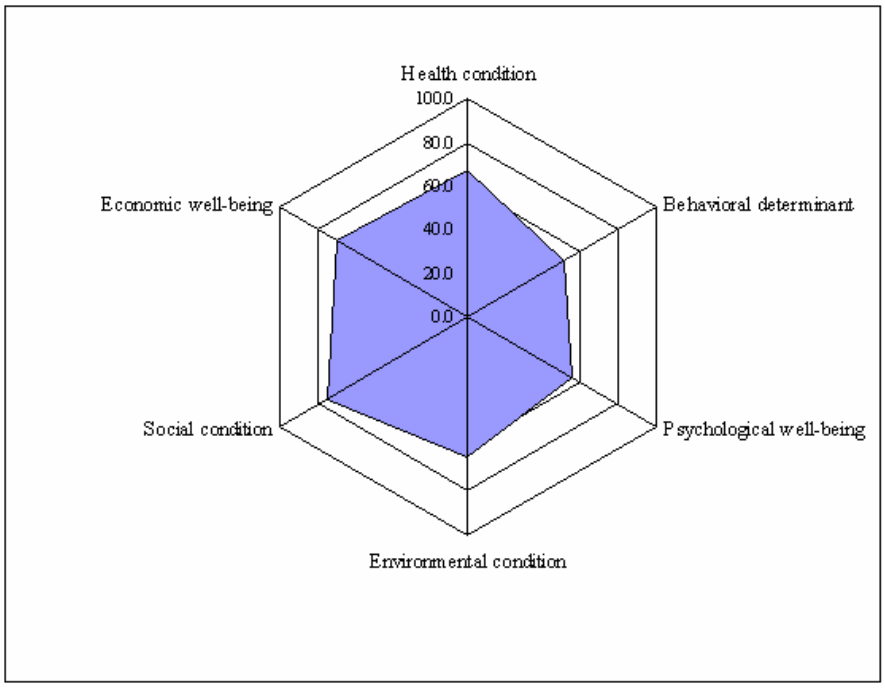


Figure 12-3Quality of life of male nonagenarians

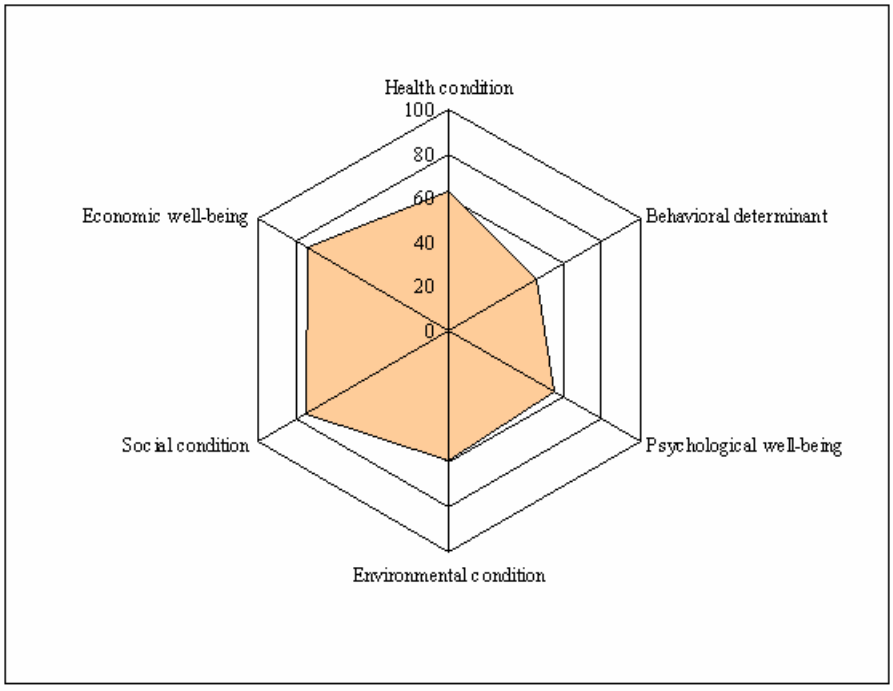


Figure 12-4 Quality of life of female nonagenarians

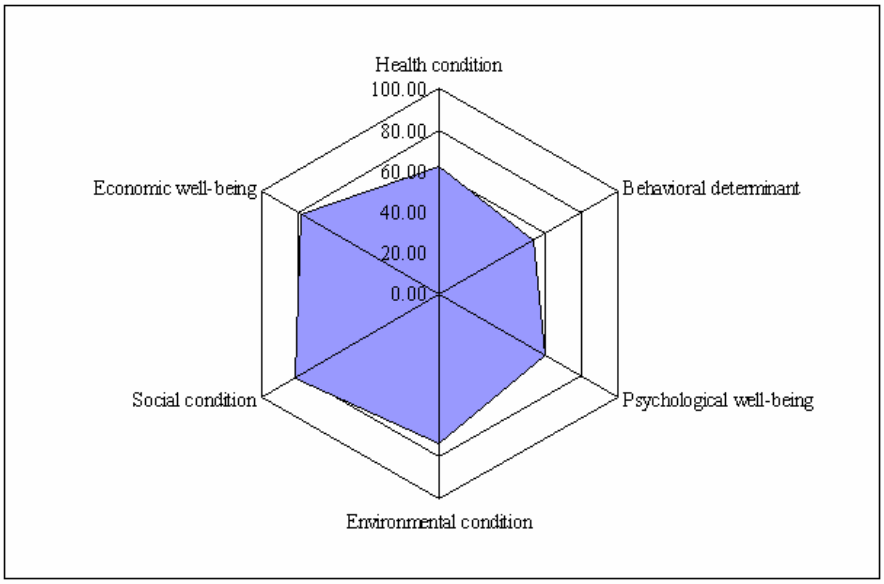


Figure 12-5 Quality of life of urban nonagenarians

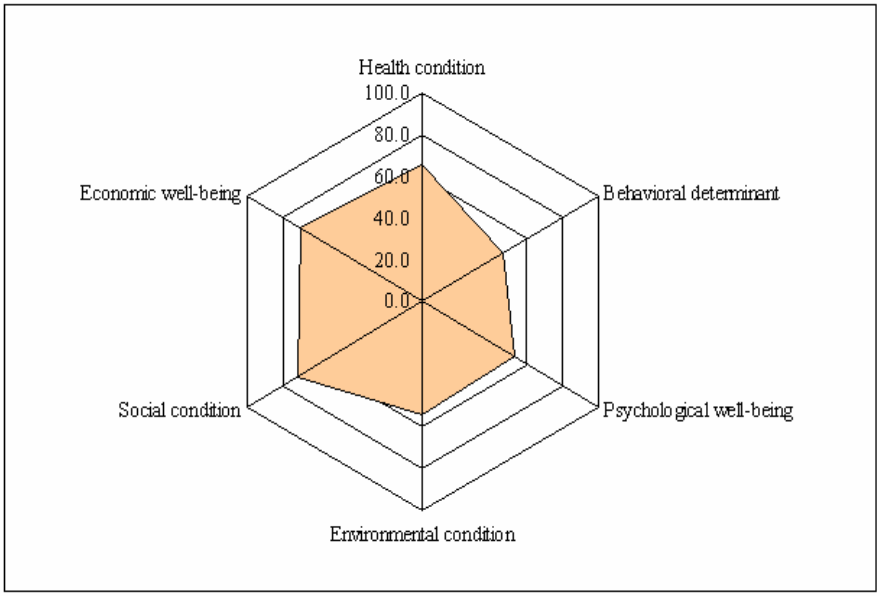


Figure 12-6 Quality of life of rural nonagenarians

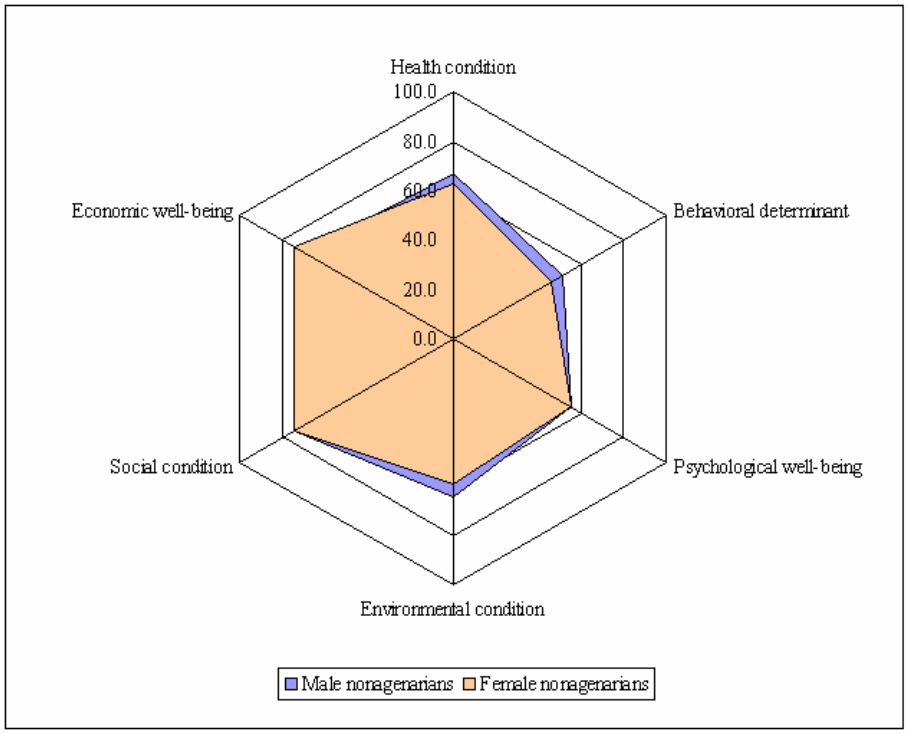


Figure 12-7 Gender differences in quality of life of six domains of active aging

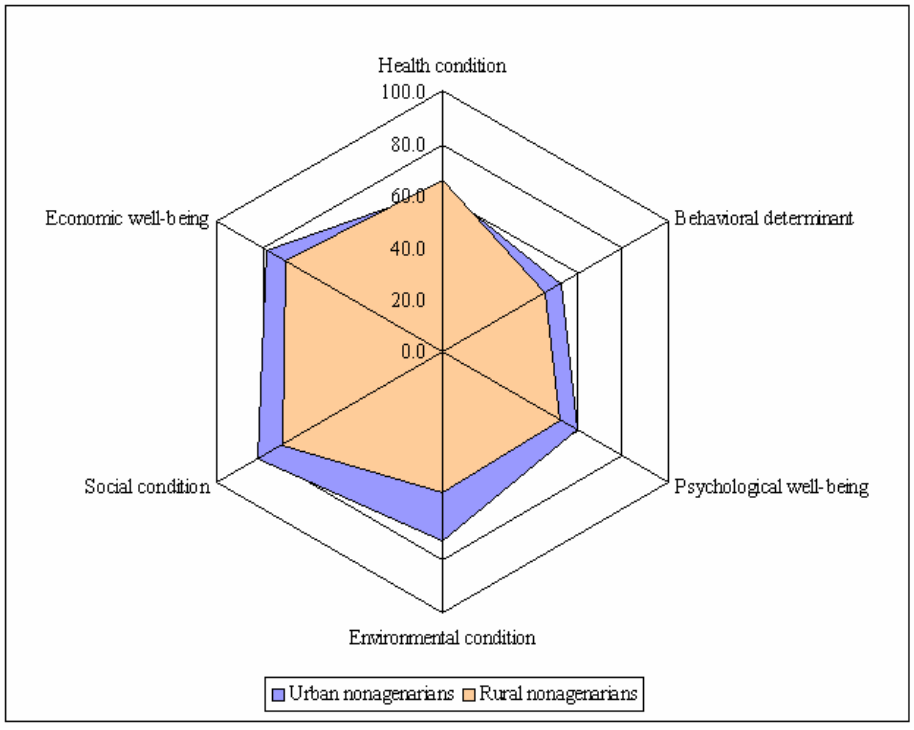


Figure 12-8 Residential differences in quality of life of six domains of active aging

CHAPTER 13

SUMMARY, DISSCUSSION AND RECOMMENDATIONS

13.1 Summary

According to the rapid increase in the size of the aging population, the elders themselves are aging. The oldest old or the people who are living at age 85 years old and over are dramatically increasing through out the world, including Thailand.

The aims of this research has three objectives 1) to investigate factors affected to the increasing number of the elderly in Thai society 2) to explore life situation and quality of life of the oldest old in Thai society, and 3) to explain the residential and gender differences in quality of life of the oldest old.

In this research, the combination between documentary, quantitative, and qualitative research are applied together to gain as much information as possible and to support the reliability of data. The cross sectional study was occurred in Mae Sariang district, Mae Hong Son province, in the northern part of Thailand. The six months of the anthropological fieldwork can be divided into two periods and carried out continuously to the sample areas as long as three month each between July-September 2005 and July–September 2006.

Reasonably to study the oldest old population, the centenarians (100 years old or over) had been the main subject of this study. Unfortunately, after the personal verification and aged validation was checked, only a very few were found in this area of study, which could not be seen representational for this research. Then, the reduction of aged range in this study changed from 100 years old and over to 90-99 years old. After aged of the respondents were proved, 35 cases were found as correct, which can be separated into 13 cases for rural and 22 cases for urban areas, or in another way, 14 cases were males and 21 cases were females.

13.1.1 First objective: Factors affected the increasing number of the elderly in Thai society

This part reviews the various possible factors for improving health and aging of population. The explanations focusing on the five main themes including demographic transition, medical and health care development, economic development, educational development and lifestyle changes. The international statistical data based, Thai census survey, international and national researches during the year 1994-2006 were applied for this analysis.

The 14 possible factors of longevity for this research were including 1) the percentage of aging population 2) crude birth rate 3) crude death rate 4) number

of doctors 5) number of professional nurses 6) drug consumption 7) economic growth 8) improving poverty 9) literacy rate 10) improving sanitation 11) improving drinking water 12) decreased smoking 13) decreased drinking alcohol, and 14) making more exercise.

The research illustrates that the increasing of the proportion of aging people were statistically significant correlation in the same direction at the 0.01 level, including improving hygienic toilet (r=1.00), drug consumption (r=0.99), number of doctors (r=0.88), crude death rate (r=0.84), and number of professional nurses (0.84). But the correlation in the different direction with crude birth rate (r= -0.83). Moreover, improving the poverty (r=0.99), literacy rate (r=0.82), and decreased smoking (r=0.70) correlated with the increasing proportion of aging people at the 0.05 level. For the other factors such as economic growth, improving drinking water, decrease of drinking alcohol, and making exercise were also associated with the increasing proportion of aging people, but none statistical significances.

13.1.2 Second objective: Life situation and quality of life of the oldest old in Thai society

The questionnaires, checklist, closed-end and opened-end questions, rating scales, and physical measurements were applied together to obtain the data, while in-depth interviews, observations, or case studies and parallel presentation also were done. The entire variables are classified into six different categories and 23 sub-categories by using the active aging framework from World Health Organization (WHO). The quality of life of each variable can be categorized into three groups including good, fair, and poor.

From table 13-1, social condition was found in the high percentages of good quality of life (68.6%) where they have at least one family member to stay with them and regularly receiving social contact and support. Social networking seems a bit small, as they are unable to move out. Anyways, domestic violence in the old aged should be concerned as 71.4% experienced in their daily life.

Economic well-being seems acceptable (57.1%). Even their monthly income was not much when compare to the other part of the country, but at least they have their own asset and ownership such as home, land and property, gold and other jewellery, saving money, and no debt. Moreover, the living cost in Mae Sariang district is not as high as the area is rich by natural resources which can be used by them for food without paying. Then, when the sufficient income for living was asked, the majorities of the respondents rated themselves as sufficient.

Physical environment factor was found in the third priority in the category of good quality of life (22.8%). Most of them living in good hosing condition and always stay inside the house; very few cases are able to take part in social and community activities. Environmental hazard at home should be mentioned in this

research, as more than half of the respondents now are dealing with 1-5 hazards at home, which might be shape them at risk of fall and accidence.

The forth priority was psychological well-being, where approximately 17.4% were found in good category. Cognitive ability, 66.7% were found in poor circumstances, followed by low happiness (71.4%). Stress and depression were also found at the aged which sharing the percentage of 54.3% and 82.9%, respectively.

Table 13-1 Quality of life of nonagenarians divided in each category and sub-category

Factor (N=35)	Good	Fair	Poor
Health condition and medical health care	**-**	**68.6**	**31.4**
- Health condition	2.9	68.6	28.6
- Self-rated health	11.4	40.0	48.6
- Medical health care	42.9	57.1	-
Behavioral determinant	**2.9**	**45.7**	**51.4**
- Activities of daily living	34.3	14.3	51.4
- Instrumental activities of daily living	-	11.4	88.6
- Remaining teeth	8.6	20.0	71.4
- Self-rated oral health	22.9	14.3	62.9
- Nutritional status	-	43.8	56.3
Psychological well-being	**17.4**	**71.4**	**11.4**
- Cognitive function	15.2	18.2	66.7
- Happiness	11.4	17.1	71.4
- Stress	14.3	54.3	31.4
- Depression	5.7	82.9	11.4
Physical environment	**22.8**	**71.4**	**5.7**
- Environmental participation	5.7	37.1	57.1
- Housing condition	60.0	25.7	14.3
- Environmental hazard at home	-	54.3	45.7
Social condition	**68.6**	**31.4**	**-**
- Living arrangement	57.1	11.4	31.4
- Social network	5.7	91.4	2.9
- Social contact	68.6	22.9	8.6
- Social support	31.4	54.3	14.3
- Domestic violence	22.9	71.4	5.7
Economic well-being	**57.1**	**42.9**	**-**
- Monthly income	14.3	60.0	25.7
- Asset ownership	40.0	57.1	2.9
- Sufficient of income	48.6	31.4	20.0

Behavioral determinant was found very rare in category of good quality of life (2.9%). Approximately 51.4% were suffering with behavioral limitation (poor quality of life), especially activities of daily living (ADL) and instrumental activities of daily living which sharing the percentages of 51.4% and 88.6%, respectively. More than half of them have only a few teeth, and rated themselves as poor oral health condition, which caused them confronting with nutritional problem.

Health conditions were the big problem of their life. 68.6% were suffering at least on one to five chronic diseases and 40% rated themselves as acceptable. For medical health care, 42.9% were able to take part in professional, folk, and popular sectors for treatment or healing when they got sick.

13.1.3 Third objective: Residential and gender differences in quality of life of the oldest old

This part was encompassed the analysis of 23 factors and six domains of active aging. The factor analysis, and VENN diagram are applied to identify the gender and residential differences.

Differences between male and female nonagenarians are statistically significant in health condition, the instrumental activities of daily living (IADL), and environmental participation. Generally, it can be said that female nonagenarians have to handle with a lower quality of life than male nonagenarians. For residential setting, the differences between urban and rural nonagenarians are statistically significant in environmental participation, housing condition, environmental hazards at home, living arrangement, and social contact. From this finding it might be claimed, that urban nonagenarians have a better quality of life than their rural counterparts, when considered by mean differences of rural and urban areas.

According to the six domains of active aging which are including health condition, behavioral determinant, psychological health, physical environment, social condition, and economic well being. The research found that, there are no statistically significant differences between males and females in the six domains of active aging. Generally, it might be said that all of nonagenarians even male or female are having the same situation when using active aging approach for measure. While residential setting, the differences between urban and rural areas are statistically significant in social condition, where urban nonagenarians are more enjoying with their family members, receiving visits, social contact and support as well as freedom from domestic violence is higher than in rural areas.

To identify the most important components of the quality of life, an exploratory factor analysis uses principal components extraction; Varimax rotation and Kaiser Normalization of the ratings are carried out. The research found that, the 23 items identify eight new factors and explain approximately 79.51% of the total

variance including 1) family and social security 2) psycho-economic well-being 3) enjoying life 4) food consumption 5) subjective health 6) accidental risk 7) physical ability and medical accessibility 8) objective health.

Lastly, this part tried to identify the characteristic of the respondent divided by the level of quality of life. For the nonagenarians with good life, mostly having strong family ties, living in extended families, and daily social contact and support. Most of them were far away from domestic violence and living in good housing condition. Additionally, they enjoyed more security in economic status, as they had their own properties and asset ownerships; they rated themselves as sufficient of income, and receive the medical support from the government which provided free for medical treatment. Anyways, they also were suffering with the instrumental activities for daily living, where some activities were unable to perform as dealing with physical health limitations.

The characteristic of nonagenarians who are living in fair (acceptable) quality of life were receiving daily contact from family members. The family pattern or living arrangement is different from the first one, as they are living in the imperfect-extended family, but at least they have some adult children or adult grand children to live with them and give them care or support. Anyways, they rated themselves as sufficient of income and living in good quality of housing. The important things which are needed to be developed to increase their quality of life are found in several ways such as support from the caregiver in instrumental activities for daily living. Moreover, the mental health, such as cognitive function and to cheer them up, as well as social integration between them and social environment is needed to be worked out.

The characteristic of nonagenarians with poor life were living alone and suffer from disabilities. Basically, they have their own health right to access the medical services but might be facing with medical accessibility. Even they are poor, but they still have their own land and house, social contacts are also rare, as well as domestic violence normally is found in their life. Most of them are unhappy and unable to perform the activities and instrumental activities of daily living. The mental health such as stress and cognitive function are needed to be solved. Oral health and food consumption are poor and it is needed to sort out the problem. They suffer from a low social integration and live in substandard housing and high risks of fall and accidence.

13.2 Discussion

The oldest old perhaps hope to have a happy ending of their life. Unfortunately, many of them may suffer from several illnesses and chronic diseases, living alone, low social contact and support or other problems which make their life much more difficult and far away from their wishes.

Even scores of six domains of active aging are more likely reported at male than at female population, but there were no statistical differences. This means that

the nonagenarians who are living at the extreme longevity are coping similarly with quality of life, which is accordant to the prior studies in Thailand such as Panawattanakul (1991), Sricharoen (2001) where the aspect of gender is not associated with quality of life of the elder. It might be said that, for the oldest old, all their physical organs and abilities are degenerated. Either males or females have to confront the same chronic diseases, psychological and physical disabilities, where all those symptoms are influencing their life situation. Anyways, from this cross-sectional study, the gender differences could not be interpreted or forecasted the differences of quality of life as the retrospective and postspective point of view are unclear.

For the young old (60-75 years old) the previous researchers found that gender is associated with the level of quality of life (Kunjeat, 1998; Kumarnjan, 2000; Gold et al, 2002; Thongsawang, 2003; Murtagh & Hubert, 2004). Palungrit (2004) and Thanakwang & Soonthornthada (2006) found that elderly males were enjoying their quality of life and much more active than female counterparts. While the finding from Manitayasirikul (1994) which was carried out in Chiang Mai province found that female elderly had a better level of life quality than males.

For the residential differences, the previous researchers confirmed that the residential differences are strongly related to the quality of life, where the elder in rural areas mostly having lower level of quality of life when compared to the urban elder, especially, lack of medical accessibilities, technology access, health status, economic, housing condition, etc. (Kunjeat, 1998; Graham, 2005; Marcellini et al, 2007). The finding from this research also found in the same direction as the mean scores of six domains of the rural nonagenarians are lower than urban nonagenarians. Especially in the medical health care and medical technology, in that approximately 59% are limited themselves from physical, monetary and local limitations. Only in primary care unit where providing only the basic illness in general practices, and 54.5% still using the spiritual healer to cure and treatment.

Therefore, from six domains of active aging, only >social determinant< is significantly different between rural and urban nonagenarians, which means living arrangement, social network, social contact, social support, and domestic violence of the urban nonagenarians are better than at their rural counterparts.

The finding concludes that nearly the half (46.5%) of nonagenarians in rural areas are living alone, while only 7.7% of the loneliness are reported in urban areas. This percentage is much higher than the result from China (35.2%) (Dong et al, 2007). It is expected that for the next decade, rural elderly living alone at home might be increasing and perhaps become the new trend in Thai society. The lonely nonagenarians seem to be low of social contact, support, network, health and mental condition, which is corresponding with the remarks of Dong and colleagues (2007) that loneliness in the old age is a high risk of mistreatment, neglect and Alzheimer disease (Wilson et al, 2007). As the social

contact is on a low level and their cognitive abilities are not often practiced. Moreover, the finding of this study partially supported the propositions suggested by Kobrin (1976), Solo & Lauriat (1976), Yoo & Sung (1997) are gender differences in living arrangements: more females than male elderly tend to live alone.

The reasons of being alone may results from social transitions. Nowadays, everything in Thailand has been changed. Economy is growing well, educational system has been established, but especially for nonagenarians, these changes had gone to fast. All these changes took the most of their relatives, as they are enjoying and are successful in the new life at the new places and it is hard for them to return and spend their life with the old traditions in the native village. Thus, the impact on out-migration on elderly who are left behind should be more concerned and carried out. Moreover, many types of domestic violence are also found in rural areas, especially cultural abuse in Karen society, where there is an ethnical taboo for females, who have no daughter, should live alone in small house, until the end of their life, even if they are very old and need all the time care and support.

This new phenomenon is contrary from the previous writers, as they mentioned about traditional norm of caring, respecting, and repaying as a sign of gratitude (Katunyu Katawethi or Bunkun) to the parents when they become old are strongly practiced in Thai society (Phromyoo, 1983; Srisuntisuk; 1996; Knodel et al, 2002; Yodpet, 2002), Even here in Mae Sariang district, local traditions and religion are strongly practiced, but the loneliness, elder abuse, mistreatment or neglect are also found. Thus, the study of the intergeneration relation among the young generations towards the elderly, the way of thinking of the younger generations toward the elderly during the time of transition are needed to be worked out to explain the factors affecting to this new trend.

Moreover, social services and welfares for the aging people are rarely provided. For example the financial aid is limited, only 300-500 Baht (6-10 Euro per month), and also limited for a small number of people, so that not everyone can benefit form this service. These things have not changed or made any progress for a long time. Unfortunately, for some cases, this money is spent for other purposes such as study fees of the grandchildren, electricity, and so on, which is far away from the way to improve and support their quality of life, as well as the unjustifiable distribution of this money exists. This finding corresponds to a finding of Palaungrit (2004) which carried out in Phra Naknon Sri Ayutthaya province, central part of Thailand, where the financial aid not benefit for the elderly who really need this money, but goes to the elders who have a close relationship with the local governmental officers.

The interpretations of the level of life quality in this research are good, fair, and poor. The characteristic of the nonagenarians from those categories are identified.

»The nonagenarians with good quality of life« It seems, they do not need the support from the government as they are in good circumstances with their economic security. Money to spend for their life is monthly provided by family members, as well as they still have their own properties and assets. Most of them live in good housing condition, extended family, crowded with children and grandchildren, and so are enough people to provide care and support. According to economic security and strong family ties, they are able to design what they need and how their life should be. Even, if the instrumental activities of daily living are declined and reported as the main problem of daily living, but the general phenomenon of the elder is that physical disabilities are increasing with the age (Rangberg et al, 1999). Fortunately, at least they know how to deal with it and have numerous caregivers to give hands when they need help. Thus, the way to support this group, even it might be not necessary, is how to maintain and protect those good things for long term activity. Another chance might be suitable is inviting them more chance for social interactions, for successful aging, and active aging concepts. Both tried to promote the continuous activities to maintain the aging value and increasing self-esteem (Yatniyom, 2004; Hsu, 2007). In case of oldest old in this study, it can be seen as a representative of longevity or role model to inform the next-coming generation of the old aged, as well as telling the secrets and experiences how to be an active nonagenarians, and might be helpful for young generations in term of basic preparation for good health and active aging.

»The nonagenarians with fare quality of life« are the vast majority group from this research. The finding associates with the previous researches in that, when the quality of life of the elderly in Thailand was measured, even in the different areas, measurements, and theories, the results were mostly found in fair or moderate level (Kumarnjan, 2000; Sricharoen, 2001; Thongsawang, 2003; Thanakwang & Soonthorndhada, 2006). The nonagenarians in this group have at least one caregiver or family member to stay with them. Social contact, network, and support are found, but varying as some family members are working outside the village or in another province. Time to meet and get in touch is depending on opportunities and spare time from their jobs. Mostly it is the long weekend, New Year, or Song Kran (Thai traditional New Year) who are the special times to meet.

The nutritional status, cognitive impairment, low environmental participation, unhappiness, few of teeth, and non-performance of the instrumental activities of daily life are reported as the main problems in the group who life in fair level. To solve their problems, the caregivers are very significant and necessary to empower the vitality. From the observation it might be said, that the knowledge of aging and special care is needed to be known from the caregivers. Generally, in cases of care and support, they often follow local wisdom, cultural way of treatment and common sense of humanism which is good on the one hand in sense of sustainability. But on the other hand it might bring them to a high risk for detrimental and insalubrious situations. For example, some respondents who have no teeth and are unable to chew, rice soup, which is normally mixed with

aromatic herbs and Monosodium Glutamate, is served every day at every meal, which bring them at risk for malnutrition and health problems as in every meal the nutrients are not diverse. In some cases where the nonagenarians prefer to consume the dessert, the caregivers serve the dessert as snake or main dish instead of rice or the other dishes, to make the nonagenarians enjoying the meal. It is a fact that diversity of nutrient is necessary not only to maintain the nutritional status, and also significant for health treatment and protection (Horwath et al, 1999).

Thus, the researcher strongly recommends that nutritional knowledge for the caregiver or to establish new dishes for the nonagenarians which differing from the health condition and diversity to gain more nutrients are needed. But the way to combine scientific knowledge and local wisdom, as well as the availability of natural resources should be concerned. Moreover, not let them stay alone and allow them to enjoy some activities that they used to do before. Especially easy works in the garden might be supporting their health and cognitive function. Rappe and Evers (2001) found that gardening or growing plant is effecting positively on the well-being of the elderly. Moreover, home visits by family members, as much as possible, also bring more happiness to their life.

»The nonagenarians with poor quality of life« The life situations of nonagenarians in this group are severely troubled. They are living without family members, very low in social support, contact and network, few supports and receiving food from the neighbors is only the one way to extend their life. They are unable to perform, neither activities of daily living nor instrumental activities of daily living. Their homes are often in bad repair. Cognitive functions are impaired, much stress, lack of happiness, and malnutrition are often the main reasons for their poor quality of life. This group seems to be not much interesting for the politicians, as there no plan, no activities and no interest from the government was found. It seems they are hidden in their dark small world, out from public view. To support and solve their problems, only one perspective in this development might be unsuccessful. The multidimensional and multidisciplinary strategies should be arrived to bring them up from the grief, and medical care, health problems and supports might be strongly confirmed from this study, as these nonagenarians are very poor.

One of the main ideas, which should be mentioned here is, that Thailand went into the trap of community empowerment. According to this key word, and if it enhances, it will directly have negative effects on the quality of life of the oldest old. No plan, no activities from the government, just wording “people should take care of each other”, in fact that Thai people, especially some part in rural areas are not ready for this concept. They have to work and do not have time to take care of each other, all the time, or everyday. So, it might be said that the government made this problem for the people.

For the nonagenarians it seems to be that they are too old and far away from the line of development and for them it is impossible to make a connection between

the new and the old traditional lifestyle. This research found that they have no developing plan for the oldest old, actual programs seem to be made only for the coming generation of retired people. Obviously, aging clubs, health promotion, health prevention and medical services are freely providing, but available in the health care centre of district hospital, which is very hard for them to access and participate, especially for nonagenarians who are alone and without social support.

Final discussion goes to active aging concept, which was applied as the main conceptual framework of this study. It might be said that six domains are an advantage for to measure the quality of life of the oldest old, as it can observe more perspectives of their daily life. But it is also found, that the imitation of this framework the factor in detail of each domain is open for the interpretation of the researcher. The important factors of six domains are the overview and explanation from World Health Organization which is good on the one hand that can be varies related by the local characteristic of the countries, population, and areas. But on the other hand it is hard to compare when the literature or comparison study is needed.

Since the exact factor in each domain was not fixed, the factors which were chosen by the different researches were going on as the same as previous concept and theory such as reproductive aging, successful aging, healthy aging which those concepts are consisting as same domain as active aging. This made it difficult to identify how to differentiate between essential characters of active aging from the others. Then to make active aging more unique, the standard of factor of each domain and should be established where the researchers all over the world can keep going on in the same way and that might be more useful for comparison study.

Finally, active aging concept was applied for some research in Thailand, but very rare. Only two researches were found, one in the qualitative study with six elite elderly people (Yatniyom, 2004) as another applying the data from 2002 survey of the elderly (Thanakwang & Soonthorndhada (2007). Even some factor of each domain was different, but those finding are correlated with this study in that social condition and family support play a significant factor to maintain the quality of life of the elderly if measured with active aging framework.

13.3 Recommendation

13.3.1 Policy recommendation

1) Obviously, the population data on the oldest old, especially the centenarian population group is completely incorrect. The renewal of data should be activated as soon as possible to increase more advantages in population, health, and welfare planning.

2) Importantly, the category of the oldest old in population data or vital statistic should be separately established. Policy makers and Thai government should pay more attention on the diversity of the aging population. Not only 60 years old and over are existing, but also oldest old, and if they are still hidden in the aged range of 60 years old and over like in the moment, their problems might be neither appearing nor being solved in the national or health care policy.

3) Urgently, day care, home care, palliative care, or long-term care at home or in communities which are integrated by all facilities and potentiality from health personals, communities, and villagers should be activated as soon as possible to support the oldest old who are nearly inactive to be more energetic for aging and health in place.

4) Significantly, even community empowerment is enhanced, but takes long time to emerge. This paradigm might be suitable for other population group, but not the oldest old who really need help. The policy makers or stakeholders should step backward and re-think how to give them a hand, not only concerning on the way of community empowerment. The oldest old need help and assistance all the times. They can not wait for the successfulness in the long process of community empowerment. It might be said that some of them, every day: living, suffering, and consuming only the sorrow. Thus, active and direct policy is need to increase or maintain their life, and should be activated as soon as possible, before all die with poor quality of life.

5) Meaningfully, nursing home or hospice for the oldest old who are sick, living alone, no family and social support, and disabilities by using medical and scientific knowledge (not in term of social welfare or home for the aged) should be established in Thai society. As they really needed help and care, the government should skip to develop them by applying the community empowerment in this population group and come to take the responsibility according to the human right under the kingdom of Thailand.

6) Lastly, this research found that money is not necessary for them for living, but the care and support by family member is absolutely needed. The way to give a support only by financial aid, obviously from this research is spent for the other purposes and unfair. The new way of support only the money should be re-solved. The importance is how to call their family members who are working or studying outside the village in the big city come back to their home village. The way to establish the market workforce at home, establish good equal educational system in sub-district or district that they can stay overnight with the elderly might be the best wishes for the oldest old. Even this recommendation might be seen as so difficult in practice, but it enhances for the government in term of sustainable development where everything is getting better together in the long term perspective.

13.3.2 Recommendation for the next research

1) Although this study adds to a growing body of literature that examines the oldest old in Thai society, it is important to note that findings from the study should not be generalized to the national level. Future studies of nonagenarian will benefit from a larger and more diversified sample including big city or institutional setting.

2) Since the study is cross-sectional one cannot state that nonagenarian leads to less quality of life or better coping. This may reflect a cohort phenomenon.

3) Active aging concept and researches in Thai elder are not numerous. More studies on six domains, especially concerning by specialist in each branch for multidisciplinary research are needed to maintain physical health, mental health, behavior, economy, environment and social condition as long as possible.

BIBLIOGRAPHY

Abijatabutra, J.(1997). *Relationships between personal factors, family support, and community health services with quality of life of the elderly in slum area, Bangkok Metropolis*. Thesis (M.N.S.), Faculty of Nursing, Chulalongkorn University, Bangkok, Thailand.

Anderson, K. (2006). *Oral health in old age: perceptions among elderly persons and medical professionals*. Dissertation, Karolinska Institute, Stockholm, Sweden.

Amatayakul, C. & Viwatpanich, K. (2002). *Developing study situation analyses the policy advocacy and management for health promotion in elderly of MOPH. (Ministry of Public Health).* Faculty of Community Medicine, Thammasat University, Pathum Thani, Thailand. (Photocopied document).

Amella, E.J. (2007). *Assessing Nutrition in Older Adults*. The Hartford Institute for Geriatric Nursing, 9, http://www.hartfordign.org/publications/trythis/ issue_9.pdf.

Andrews, F.M., Withey, S.B. (1976). *Social Indicators of Wellbeing: America's Perception of Life Quality*. New York: Plenum Press.

Angel, J.L., Jimenez, M.A. & Angel R.J. (2007). The economic consequences of widowhood for older minority women. *The gerontologist, 47*(2), 224-234.

Angel, R. & Guarnaccia, P. J. (1989). Mind, body, and culture: Somatization among Hispanics. *Social Science and Medicine, 28*(12), 1229–1238.

Arkinson, T., Cantillon, B., Marlier, E. & Nolan B. (2002). *Social indicators: the EU and social inclusion*. New York: Oxford University Press.

Armstrong, G. K., & Morgan, K. (1998). Stability and change in levels of habitual physical activity in later life. *Age and Ageing, 27*(3), 17–23.

Athens, J. (2004). *Healthy housing in Nicaragua: an intersectoral approach to improving livelihoods*. Working paper series no.2. Wisconsin coordinating council on Nicaragua. http://www.wccnica.org/files/healthy_housing.pdf.

Atkins, G.L. (1992). Making it last: Economic resources of the oldest old. In Suzman, R.M, Willis, D.P. & Manton, K.G. (Eds.), *The oldest old* (pp 359-377). New York: Oxford University Press.

Baggio, G., Donazzan, S., Monti, D., Mari, D., Martini, S., Gabelli, C., Vestra, M.D., Previato, L., Guido, M., Sigozzo, S., Cortella, I., Crepaldi, G. & Franceschi, C. (1998). Lipoprotein(a) and lipoprotein profile in healthy centenarians: a reappraisal of vascular risk factors. *The Federation of American Societies for Experimental Biology, 12*(6), 433-437.

Barnes, D.E., Tager, I.B., Satariano, W.A. & Yaffe, K. (2004). The relationship between literacy and cognition in well-educated elders. *Journal of Gerontology, 59*(4), 390-395.

Barron, S., Okell, J., Yin, S.M., Vanbik, K., Swain, A., Larkin, E., Allott, A.J. & Ewers, K. (2007). *Refugees from Burma: their backgrounds and refugee experiences*. In Ranard, D.A. & Barron, S. (Eds.), Cultural profile No. 21. http://www.cal.org/co/pdffiles /refugeesfromburma.pdf.

Beardi, V.A. & Kunharibowo Y. (2001). Living arrangements and support relationships among elderly Indonesians: Case studies from Java and Sumatra. *International journal of population geography, 7*(1), 17-33.

Becker, M. & Yost, B. (1991). *1990 recreation participation survey: Final report. Harrisburg, PA*: Center for survey research, Penn State Harrisburg.

Bednar, M., Workman, R. & Abbey, R. (1977). Planning for the elderly without architecture is like architecture for the elderly without planning. *Journal of Architectural Education, 31*(1), 40-43.

Beekman, A. T. F., Deeg, D. J. H., Van L.J., Braam, A.W., De Vries, M. Z., & Van T.W. (1997). Criterion validity of the Center for Epidemiologic Studies Depression Scale (CES-D): Results from a community-based sample of older subjects in the Netherlands. *Psychological Medicine, 27*(1), 231–235.

Bemben, M.G., Masses, B.H., Bemben, D.A., Boileau, R.A. & Misner, J.E. (1998). Aged-related variability in body composition methods for assessment of percent fat and fat-free mass in men aged 20-74 years. *Age and Ageing, 27*(2), 147-153.

Bennett, G. & Kingston P. (1993). Elder abuse: concepts, theories and interventions. London: Chapman & Hall.

Berglund, A.L. & Eriksson, K. (2003). Different meaning of quality of life: a comparison between what elderly persons and geriatric staff believe is of important. *International Journal Nursing Practices, 9*(2), 1121-1129.

Bevil, C. A., O'Connor, P. C., & Mattoon, P. M. (1993). Leisure activity, life satisfaction, and perceived health status in older adults. *Gerontology & Geriatrics Education, 14*(2), 3–19.

Blazos, K.A., Wahlqvist L.M., Trichopoulop, A., Polychromopoulos, E., &Trichopoulos, D. (1996). Health and nutritional status of elderly Greek migrant to Melbourne, Australia. *Age and Ageing, 25*(3), 177-189.

Boonkhamsaen, S. (2005). *Participatory evaluation in health promotion activities of Intaeam Temple elderly club, Chai Prakan District, Chiang Mai Province*. Thesis (MPH), Graduate school, Chiang Mai University, Chiang Mai, Thailand.

Branch, L.G. (2001). Community Long-term care services: what works and what doesn't. *The Gerontologist, 41*(3), 305–306

Bruce, M. L., Seeman, T. E., Merrill, S. S., & Blazer, D. G. (1994). The impact of depressive symptoms on physical disability: MacArthur Studies of Successful Aging. *American Journal of Public Health, 84*(11), 1796–1799.

Buntin, M.B. & Huskamp, H. (2002). What is known about the economics of end-of-life care for Medicare beneficiaries? *The gerontologist, 42* (special issue III), 40-48.

Buono, M.D., Urciuoli, O., & Leo. D.D. (1998). Quality of life and longevity: a study of centenarians. *Age and Aging, 27*(2), 207-216.

Buranruk, O. (2000). Effect of Chi-Kung exercise on chest expansion and lung volume in the elderly people. *KKU Research Journal, 5*(1), 18-25.

Bureau of Epidemiology. (2004). *The avian influenza in human surveillance summary*, Ministry of Public Health, http://203.157.15.4/wesr/file/F51343.pdf.

Bureau of Policy and Strategy, Ministry of Public Health. (2006). *Report on Health Resources Survey, 2005*. Bureau of Policy and Strategy, Ministry of Public Health.

Bureau of the Budget. (2006). *Statistic of annual budget expenditures (1999-2008)*-online. http://www.bb.go.th.

Caffrey, R. A. (1992a). Family care of the elderly in Northeast Thailand: Changing patterns. *Journal of Cross-Cultural Gerontology, 7*(2), 105–116.

Caffrey, R. A. (1992b). Caregiving to the elderly in Northeast Thailand: Changing patterns. *Journal of Cross-Cultural Gerontology 7*(2), 117–134.

Callahan, C.M., Hall, K.S., Hui, S.L., Musick, B.S., Unverzagt, F.W. & Hemdrie, H.C. (1996). Relationship of age, education, and occupation with dementia among a community-based sample of African Americans. *Archives of Neurology, 53*(2), 134-140.

Campbell, A., Converse, P.E., & Rodgers, W.L. (1976). *The Quality of American Life: Perceptions, Evaluations, and Satisfactions.* New York: Russell Sage Foundation.

Canadian Centre for Justice Statistics. (2000). *Family violence in Canada: a statistical profile 2000*. Ottawa, Health Canada.

Carter, S.E., Campbell, E.M., Sanson-Fisher, R.W., Redman, S. & Gillespie, W.J. (1997). Environmental hazards in the homes of older people. *Age and Ageing, 26*(3), 195-202.

Chaisee, C. (1995). Health problem solving of the elders by establishment of the elderly club in Wangthong Village, Tambon Nongyaplong, Wamgsapoong District, Loei Province. Thesis (MPH), Graduate school, Chiang Mai University, Chiang Mai, Thailand.

Chapin, F.S. (1951). Some housing factors related to mental hygiene. *American Journal of Public Health*, *41*(7), 839-845.

Chareonthaithawee, P. (2005). Free teen and self leadership training. *Family news*, 12, http://www.samakki.com/forum/index.php?action=printpage;topic=634.0.

Charlton, K., Bourne, L.T., Steyn, K. & Laubscher, J.A. (2001). Poor nutritional status in older black South Africans. *Asian Pacific Journal Clinical Nutrition, 10*(1), 31-38.

Chayowan, N. & Knodel, J. (1996). *Report on the survey of the welfare of elderly in Thailand 1995*. Collage of Population Studies, Chulalongkorn University, Bangkok, Thailand.

Chen, C. (2001). A survey of the dietary nutritional composition of centenarian. *Chinese Medical Journal, 114*(10), 1095-1097.

Chen, C. (2001). Aging and life satisfaction. *Social Indicators Research, 54,* 57-79.

Chen, S.Y., Lin, J.R., Kao, M.D. & Hang, C.M. (2005). The usage of dietary supplements among elderly individuals in Taiwan. *Asia Pacific Journal Clinical Nutrition, 14*(3), 230-237.

Chen, Z. & Davey, G. (2008). Happiness and subjective well-being in mainland China. *Journal of Happiness Studies, 10* (1), DOI 10.1007/s10902-008-9092-7, (no page numbers).

Chiamchanya, C., Suwannarurk, K. & Kietinan, S. (2004). The screening cervical cancer by pap smear in woman age 15-65 years in Tambol Kukot, Lumlukka district, Pathumthani province. *Thammasat Medical Journal, 5*(1), 20-32.

Chiriboga, D.A., Black, S.A. & Aranda, M. (2002). Stress and depressive symptoms among Mexican American elders. *Journal of Gerontology, 57*(6), 559-568.

Chooprapawan C. (Editor) (1997). *National health survey on the population age 50 and over in 1995*. Bangkok: Design.

Chumlea, W.C. & Baumgartner, R. (1989). Status of anthropometry and body composition data in elderly subjects. *American Journal of Clinical Nutrition 50*(5), 1158–1166.

Cicirelli, V.G. (2002). Fear of death in older adults: Predictions from terror management theory. *Journal of Gerontology, 57*(4), 358-366.

Cooperative office for polio elimination (2007). *Progress report on polio elimination 2007*. Department of disease control, Ministry of Public Health. http://www.nvco.go.th/ upload/20080605_PolioErad01.pdf.

Cornell, C.P. & Gelles, R.J. (1982). Elder abuse: the status of current knowledge. *Family relations, 31*(3), 457-465.

Costa, D.L. (2005). Causes of improving health and longevity at older ages: a review of the explanations. *Genus, LXI* (1), 21-38.

Cowgill, D. O. (1972). The role and status of the aged in Thailand. In D. O. Cowgill & L. D. Holmes (Ed.), *Aging and modernization* (pp 91-101). New York: Appleton-Century- Crofts.

Cummings, S. R., Rubin, S. M., & Black, D. (1990). The future of hip fractures in the United States: Numbers, costs, and potential effects of postmenopausal estrogen. *Clinical Orthopedics and Related Research, 252*, 163–166.

Danpongpee, E. (2003). Globalization and ministry with the Karen. Paper presentation on 2003 International Conference on Region and Globalization, Institute of Religion, Culture and Peace, Payap University, Chiang Mai, Thailand, Http://www.isrc.payap.ac.th /document/panel/panel10.pdf.

Darmadi, I., Horie, Y., Wahlqvist, M.L., Blazos, A.K., Horie, K., Sugase, K., & Wattanapenpaiboon, N. (2000). Food and nutrient intakes and overall survival of elderly Japanese. *Asia Pacific Journal Clinical Nutrition, 9*(1), 7-11.

Darmadi, I., Kouris, B.A. & Wahlqvist, M.L. (2001). Dietary predictors of survival amongst Greeks in Melbourne. *Asian Pacific Journal Clinical Nutrition, 10*(suppl), S36.

Darmojo, R.B. (2002). Trends in dietary habits of the elderly: the Indonesian case. *Asia Pacific Journal of Clinical Nutrition, 11*(1), 351-354.

Dean, K. (1992). Health-related behavior: Concepts and methods. In Ory, M.G., Abeles, R.P. & Darby, P. (Eds.), *Aging, health and behavior*. Lipman Sage Publishing.

Department of Community Development. (1998). *Report on the Quality of Life of Thai People, from Basic Minimum Needs (BMN) Data base 1997*. Bangkok: Permsermkit Press.

Department of Mental Health. (2007). *Suanprung Stress Test-20 (SPST-20).* http://www.dmh.go.th / test/stress/

Diwan, S., Ivy, C., & Brower, T. (2001). Assessing need for intensive care management in long term care. *The gerontologist, 41*(5), 680-686.

Dodge, H.H., Kadowaki, T., Hayakawa, T., Yamakawa, M., Sekikawa, A. & Ueshima, H. (2005). Cognitive impairment as a strong predictor of incident disability in specific ADL-IADL tasks among community-dwelling elders: The Azuchi Study. *The Gerontologist, 45*(2), 222-230.

Dong, X., Simon, M.A., Gorbien, M., Percak, J. & Golden, R. (2007). Loneliness in older Chinese adults: a risk factor for elder mistreatment. *The American Geriatrics Society, 55*(11), 1831-1835.

Dong, X., Simon, M.A., Odwazny, R. & Gorbien, M. (2008). Depression and elder abuse and neglect among a community-dwelling Chinese elderly population. *Journal of Elder Abuse and Neglect, 20*(1), 25-41.

Drinka, P.J. & Goodwin J. (1991). Prevalence and consequences of vitamin efficiency in the nursing home: a critical review. *Journal of The American Geriatrics Society, 39*(10), 1008-1017.

Dunlop, D.D., Hughes, S.L. & Manheim, L.M.(1997). Disability in activities of daily living: patterns of change and a hierarchy of disability. *American Journal of Public Health, 87*(3), 378-383.

Dwyer, J. (1994). Strategies to detect and prevent malnutrition in the elderly: the nutrition screening initiative. *Nutrition Today, 29*(5), 14-24.

Eaton, W., & Kessler, R. (1981). Rates of symptoms of depression in a national sample. *American Journal of Epidemiology, 114*(4), 528–538.

Ekachampaka, P. & Wattanamano, N. (2008). Situations and trends of health determinants. In Wibulpolprasert, S. (Ed.), *Thailand Health Profiles 2005-2007* (pp-39-160). Bangkok: The war veterans organization of Thailand press.

Enzi, G., Biondetti, P.R., Fiore, D., Semisa. & Zurio, F. (1986). Subcutaneous and visceral fat distribution according to sex, age, and overweight, evaluated by computed tomography. *The American Journal of Clinical Nutrition, 44*(6), 739-746.

Excel, E.V., Gussekloo, J., Craen, A.J.M., Wiel, A, B-van der, Houx, P., Knook, D.L. & Westendorp, R.G.J. (2001). Cognitive function in the oldest old: women perform better than men. *Journal of Neurology, Neurosurgery, and Psychiatry, 71*(1), 29-32.

Faramnuayphol, P., Ekachampaka, P., Taverat, R. and Wattanamano, N. (2008). Health service systems in Thailand. In Wibulpolprasert, S. (Ed.), *Thailand Health Profiles 2005-2007* (pp 257-339). Bangkok: The war veterans organization of Thailand press.

Fauth, E.B., Zarit, S.H., Malmberg, Bo. & Johansson, B. (2007). Physical, cognitive, and psychosocial variables from the disablement process model predict patterns of independence and the transition into disability for the oldest-o1d. *The gerontologist, 47*(5), 613-624.

Fiadzo, E.D., Houston, J.E. and Godwin, D.D. (2001). Estimating housing quality for poverty and development policy analysis: CWIQ in GHANA. *Social Indicators Research, 53*(2), 137-162.

Finlayson, M. (2002). Changes predicting long-term care use among the oldest old. *The Gerontologist. 42*(4), 443-453.

Fisher, J.D., Johnson, D.S., Merchand, J.T., Smeeding, T.M. & Torrey, B.B. (2007). No place like home: older adults and their housing. *Journal of Gerontology, 62*(2), 120-128.

Fisky, A., Gatz, M. & Pedersen, N.L. (2003). Depressive symptoms and aging: The effects of illness and non-health related events. *Journal of Gerontology, 58*(6), 320-328.

Folstein, M.F., Folstein, S.E. & McHugh, P.R., (1975). Mini-Mental-State: a practical method for grading the cognitive state of patient for the clinician. *Journal of Psychiatry Research, 12*(3), 189-198.

Fonda, S., Herzog, A.R. (2001). Patterns and risk factors of change in somatic and mood symptoms among older adults. *Annual of epidemiology, 11*(6), 361-368.

Foster, B. (1975). Continuity and change in rural Thai family structure. *Journal of Anthropological Research, 31*(1), 34–50.

Franceschi, C. & Bonafe, M. (2003). Centenarians as a model for healthy aging. *Biochemical Society Transactions, 31*(2), 457-461.

Fucharoen, S., Winichagoon, P., Thonglairoam, V., Siriboon, W., Siritanaratkul, N., Kanokpongsakdi, S. & Vantanasiri, C. (1991). Prenatal diagnosis of thalassemia and hemoglobinopathies in Thailand: experience from 100 pregnancies. *Southeast Asian Journal of Tropical Medicine and Public Health, 22*(1), 16-29.

Fung, H.H., Lai, P. & Ng, R. Age differences in social preferences among Taiwanese and Mainland Chinese: the role of perceived time. *Psychology and aging, 16*(2), 351-356.

Geiselmann, B. (1995). Differential diagnosis of depressive disorders in a cross-sectional field study of the elderly. In Bergener, M., Brocklehurst, J.C. & Finkel, S.I. (Eds.), *Aging, health, and healing* (pp 407-419), New York: Springer Publishing.

Gibson, R.C. & Jackson, J.M. (1992). The black oldest old: Health, functioning and informal support. In Suzman, R.M, Willis, D.P. & Manton, K.G. (Eds.), *The oldest old*. (pp 321-340). New York: Oxford University Press.

Ginn, J. & Arber, S. (1991). Gender, class and income inequalities in later life. *The British Journal of Sociology, 42*(3), 369-396.

Giurani, F. & Hasan, M. (2000). Abuse in elderly people: the Granny battering revisited. *Archives of Gerontology and Geriatrics, 31*(2000), 215-220.

Gold, C.H., Malmberg, B., McClearn, G.E., Pedersen, N.J. & Berg, S. (2002). Gender and health: a study of older unlike-sex twins. *Journal of Gerontology, 57*(3), 168-176.

Goldstein, S. (1970). Religious fertility differentials in Thailand, 1960. *Population studies, 24*(3), 325-337.

Graham, E.L.D. (2005). *Rural-urban differences in self-care behaviors of older Canadians: the effects of access to primary care*. Thesis (M.A.), Department of Gerontology, Simon Fraser University, Burnaby, Canada.

Green, S.M. & Watson, R. (2006). Nutritional screening and assessment tools for older adults: literature review. *Journal of Advanced Nursing, 54*(4), 477–90

Gu, D. & Xu, Q. (2007). Sociodemographic effects on the dynamics of Task-specific ADL functioning at the oldest old ages: The case of China. *Journal Cross Culture Gerontology, 22*(1), 61-81.

Gu, D. & Yi, Z. (2004). Sociodemographic effects on the onset and recovery of ADL disability among Chinese oldest-old. *Demographic research, 11*(1), 1-42.

Gupta, I. & Sankar, D. (2003). Health of the elderly in India: a multivariate analysis. *Journal of Health & Population in Developing Countries*. URL: http://www.jhpdc.unc.edu.

Hagberg, B., Alfredson, B.B., Poon,. L.W. & Homma, A. (2001). Cognitive functioning in centenarians: A coordinated analysis of results from three countries. *Journal of Gerontology, 56*(3), 141-151.

Handson, A.B., Edin, E., Gislason, T. & Skoog, I. (2004). The prevalence of dementia in 95 year olds. *Neurology, 63*(12), 2436-2438.

Harper S. (2006). Addressing the implications of global ageing. *Journal of Population Research, 23*(2), 205-223.

Hatthachote P, Suwan K, Pongmanee K, Areekul W. (2005). Albuminuria in rural Thai people: a community-based screening with Combur Test and Micral Test strips. *Journal of the medical association of Thailand, 88*(3), 164-174.

Haug, M. R., Akiyama, H., Tryban, G., Sonoda, K. & Wykle, M. (1991). Self care: Japan and the U.S. compared. *Social Science and Medicine, 33*(9), 1011–1022.

Hellstrom, Y., Persson, G., & Hallberg, I.R. (2004). Quality of life and symptoms among older people living at home. *Journal of Advance Nursing, 48*(6), 584-93.

Helmchen, H., Baltes, M.M., Geiselmann, B., Kanowski, S., Linden, M., Reischies, F.M., Wagner. M., Wernicke, T & Wilms, H.U. (1999). Psychiatric illnesses in old age. In Baltes, P.B. & Mayer, K.U. (Eds.), *The Berlin aging study: Aging from 70 to 100*. New York: Cambridge University Press.

Hermalin, A.I., Chang, M. & Roan, C. (1992). Economic well-being: Insights from multiple measures of income and assets. In Hermalin A.I. (Ed.), *The well-being of the elderly in Asia: A four-country comparative study* (pp 295-360).Michigan, University of Michigan Press.

Herman, D.R., Solomons, N.W., Mendoza, I. & Qureshi, A.K. (2001). Self-rated health and its relationship to functional status and well-being in a group of elderly Gutemalan subjects. *Asia Pacific journal of clinical nutrition, 10*(3), 176-182.

Hilleras, P.K., Jorm, A.F., Herlitz, A. & Winblad, B. (1999). Activity patterns in very old people: A survey of cognitively intact subjects aged 90 years or older. *Age and Ageing, 28*(2), 147-152.

Hooijer, C., Ojen, R.V., Jonke, C., Lindeboom, J. & Tilburg, W. (1995). Prevalence of depression in elderly: a curvilinear story. In Bergener, M., Brocklehurst, J.C. & Finkel, S.I. (Eds.), *Aging, health, and healing* (pp 399-405). New York: Springer Publishing.

Horwath, C., Blazos, A.K., Savige, G.S., & Wahlqvist, M.L. (1999). Eating your way to successful old age, with special reference to older women. *Asia Pacific Journal Clinical Nutrition, 8*(3), 216-225.

Hovbrandt, P., Stahl, A., Iwarsson, S., Horstmann, V. & Carlsson, G. (2007). Very old people's use of the pedestrian environment: functional limitations, frequency of activity and environmental demands. *European Journal of Ageing, 4*(4), 201-211.

Hsu, H.C. (2007). Exploring elderly people's perspectives on successful ageing in Taiwan. *Ageing & Society, 27*, 87-102.

Hughes, V.A., Roubenoff, R., Wood, M., Frontera, W.R., Evans, W.J. & Singh, M.A.F. (2004). Anthropometric assessment of 10-y changes in body composition in the elderly. *The American Journal of Clinical Nutrition, 80*(2), 475-482.

Hyyppä, M. T. & Mäki, J. (2001). Individual-level relationships between social capital and self-rated health in bilingual community. *Preventive Medicine, 32*(2), 148–155.

Iecovich, E. (2005). Elder abuse and neglect in Israel: A comparison between the general elderly population and elderly new immigrants. *Family relations, 54*(3), 436-447.

Institute of geriatric medicine (2005). *History, mission, and visions*. http://agingthai.org

Institute of Thai Traditional Medicine (1999). Value of indigenous vegetable, *Thai Traditional Medicine Newsletters. 4*(1), 4-5.

Jaovisidha, A., Ajjimarkorn, S., Panburana, P., Somboobsub, O., Herabutya, Y. & Rungsiprakarn, R. (2000). Prevention and control of thalassemia in Ramathibodi Hospital, Thailand. *Southeast Asian Journal of Tropical Medicine and Public Health, 31*(3), 561-565.

Jensen, E., Dehlin, O., Hagberg, B., Samuelsson, G., Sevensson, T. & Lidfeldt, J. (1997). Blood pressure in relation of medical, psychological and social variables in population of 80-year-olds: survival during 6 years. *Journal of Internal Medicine, 241*(3), 205-212.

Jinunthuya, P. (1993). *Elderly quality of life in Din Daeng elderly social club*. Thesis (M.N.S.), Faculty of Nursing, Mahidol University. Bangkok, Thailand.

Jitapunkul, S. & Bunnag, S. (1998). *Aging in Thailand 1997*. The Thai society of gerontology and geriatric medicine, Ministry of Public Health.

Jitapunkul, S. (1998) *Women Elderly: a Current Status*. Bangkok: Thai Society of Gerontology and Geriatric Medicine.

Jitapunkul, S. (2000) *Current Status of Thai Older Persons and Actions of the Nation*, Bangkok: Thai Society of Gerontology and Geriatric Medicine.

Jitapunkul, S., Kunanusont, C., Phoolcharoen, W. and Suriyawongpaisal, P. (1999). *Health Problems of Thai Elderly (A National Survey)*. Bangkok: National Health Foundation and Ministry of Public Health.

Jitapunkul, S., Kunanusont, C., Phoolcharoen, W., Suriyawongpaisal, P. & Erbahim, S. (2003). Disability-free life expectancy of elderly people in a population undergoing demographic and epidemiologic transition. *Age and Aging, 32*(4), 401-405.

Johnson, C. L., & Barer, B. M. (1997). *Life beyond 85 years: The aura of survivorship*. New York: Springer.

Joshipura, K.J., Hung, H.C., Rimm, E.B., Willett, W.C. & Ascherio A. (2003). Periodontal disease, tooth loss, and incidence of ischemic stroke. *Stroke, 34*(1), 47–52.

Joshipura, K.J., Rimm, E.B., Douglass, C.W., Trichopoulos, D., Ascherio, A. & Willett, W.C. (1996). Poor oral health and coronary heart disease. *Journal of Dental Research, 75*(9), 1631–1636.

Junhariri, N. (1993). *The effect of an aerobic exercise upon the physical fitness components in the elder women*. Thesis (M.Ed.), Faculty of Education, Srinakharinwirot University, Bangkok, Thailand.

Juva, K., Sulkava, R., Verkkoniemi, A & Niinisto (2001). Sex differences in cognitive performance among the very old – mini state examination in a population aged 85 years and over. *Journal of Clinical Gerophycology, 7*(1), 39-45.

Jylha, M., Guralnik, J.M., Ferrucci, L., Jokela, J. & Heikkinen, E. (1998). Is self-rated health comparable across cultures and genders? *Journal of Gerontology, 53*(3). 144-152.

Kachondham, P. (2000). *Disabilities and active expectancy in the Thai elderly population.* Doctoral dissertation, Institute of Population and Social Science, Mahidol University. Nakhon Pathom, Thailand.

Kahn, J.R. & Fazio, E.M. (2005). Economic status over the life course and racial disparities in health. *Journal of Gerontology, 60* (special issues II), 76-84.

Kamnuansilpa, P., Wongthanavasu, S., Bryant, J. & Prohmmo, A. (2000). An assessment of the Thai government´s health services for the aged. *Asia-Pacific Population Journal, 15*(1), 3-18.

Kamo, Y. & Zhou, M. (1994). Living arrangements of elderly Chinese and Japanese in the United States. *Journal of Marriage and the Family, 56*(3), 544-558.

Kanchanaprutthiphong, R. & Thawongklang, W. (2002). *The community Mental Health, Yupparat Tha Boa Hospital, Nhong Khai Province.* http://www.jvkk.go.th/researchnew /datails.asp?code=0101245.

Kane, R.A. (2001). Long-term care and good quality of life: Bringing them closer together. *The gerontologist, 41*(3), 293-304.

Kane, R.L., Bershadsky, B., Kane, R.A., Degenholtz, H.H., Liu, J., Giles. Katherine & Kling, K.C. (2004). Using resident reports of quality of life to distinguish among nursing home. *The gerontologist, 44*(5), 624-632.

Katz, S., Ford, A.B., Moskowitz, R.W., Jackson, B.A. & Jaffe, M.W. (1963). Studies of illness in the aged. The index of ADL: a standardized measure of biological and psychosocial function. *The Journal of the American Medical Association, 185*,914-919.

Kawachi, I., Kennedy, B. P. & Glass, R. (1999). Social capital and self-rated health: a contextual analysis. *American Journal of Public Health, 89*(8), 1187–1193.

Ked-Sawang, S. (2003). *Homosexual.* Health System Research Institute, Ministry of Public Health. Bangkok: Samchareonpanich publishing.

Kelman, H.Z., Thomas, C. Kenedy, G.J. & Cheng, J. (1994). Cognitive impairment and mortality in older community residents. *American Journal of Public Health, 84*(8), 1255-1260.

Kennedy, J. & LaPlante, M.P. (1997). *A Profile of adults needing assistance with activities of daily living, 1991-1992*. Washington, D.C., U.S. Department of Education, Office of Special Education and Rehabilitative Services.

Khui-apai, K. (2005). *Effect of Tai Chi Qigong exercise on blood pressure and drug use among the elderly with Essential Hypertension*. Thesis (M.N.S.), Faculty of Nursing, Chiang Mai University, Chiang Mai, Thailand.

Kim, C.S. & Rhee, K.O. (1997). Variations in preferred living arrangements among Korean elderly parents. *Journal of Cross-Cultural Gerontology, 12*(2), 189-202

Kittipovanonth, S. (2002). *The status, roles and quality of life of elderly Thais*. Doctoral dissertation, School of Applied Statistics, National Institute of Development Administration, Bangkok, Thailand.

Kivelä, S.L., Kongäs-Saviaro, P., Kesti, E., Pahkala, K. & Ijäs M.L. (1992). Abuse in old age: Epidemiological data from Finland. *Journal of elder abuse and neglect, 4*(3), 1–18

Klein, D., Turvey, C. & Wallace, R. (2004). Elders who delay medication because of cost: health insurance, demographic, health and financial correlates. *The Gerontologist, 44*(6), 779-787.

Kleinman, A. (1980). *Patients and healers in the context of culture*, Berkeley: University of California Press.

Klin-ual, A. (2001). *Effects of exercise program n physical fitness and well-being among the elderly*. Thesis (M.N.S.), Faculty of Nursing, Chiang Mai University, Chiang Mai, Thailand.

Knodel, J., Ofstedal, M.B. & Hermalin, A.I. (2002). The demographic, socioeconomic, and cultural context of the four study countries. In Hermalin, A.I. (Ed.), *The well-being of the elderly in Asia: a four-country comparative study* (pp 25-63).Michigan, University of Michigan Press.

Knodel J. & Sangtienchai C. (1999). Studying living arrangement of the elderly: Lesson from a quasi-qualitative case study approach in Thailand. *Journal of Cross-Cultural Gerontology, 14*(3), 197–220.

Knodel, J. & Chayovan, N. (1997). Family support and living arrangements of Thai elderly. *Asia Pacific Population Journal, 12*(4), 51–68.

Knodel, J. & Debavalya, N. (1992). Social and economic support systems for the elderly in Asia: An introduction. *Asia-Pacific Population Journal, 7*(3), 5–12.

Knodel, J., Amornsirisomboon, P. & Khiewyoo, J. (1997). *Living arrangements, family support and the welfare of the elderly: Implications of the 1994 Survey of Elderly in Thailand*. Comparative Study of the Elderly in Asia, Population Studies Center, University of Michigan.

Knodel, J., Saengtienchai, C. & Sittitrai, W. (1995). The living arrangements of elderly in Thailand: Views of the populace. *Journal of Cross-Cultural Gerontology, 10*(1-2), 79–111.

Knodel. J., Havanon, N. & Pramualratana, A. (1984). Fertility transition in Thailand: a qualitative analysis. *Population and development review, 10*(2), 297-328.

Kobrin, F. E. (1976). The fall in household size and the rise of the primary individual in the United States. *Demography, 13*(1), 127–138.

Kongwatmai, M. (1999). *A comparative study on quality of life among Thai Buddhist and Thai Muslim elderly in Ranong Province*. Thesis (M.A.), Graduate School, Mahidol University. Nakhon Pathom, Thailand.

Krieger, J. & Higgins, D.L. (2002) Housing and health: time again for public health action. *American Journal of Public Health, 92*(5), 758-768.

Krol, B. (1996). *Quality of life in rheumatoid arthritis patients: the relation between personality, social support, and depression*. No data of publication.

Kumarnjan, W. (2000). Quality *of life among elderly in the upper Southern region*. Thesis (M.N.S.), Faculty of Nursing, Chiang Mai University, Chiang Mai, Thailand.

Kunjeat, A. (1998). The Quality of life of the elderly in Chantaburi province. Thesis (M.N.S.), Faculty of Nursing, Burapha University, Chonburi, Thailand.

Laoakka, T. (2007). *The impact of Inspiratory Muscle Training on elevated arm and leg exercise capacity in the elderly*. Thesis (M.Sc.), Graduate School, Khon Kaen University, Khon Kaen, Thailand.

Larkin, M. (1999). Centenarians point the way to healthy ageing, *The Lancet, 353*(9158), 107.

Launer, L.J. & Harris, T. (1996) Weight, height and body mass index distributions in geographically and ethnically diverse samples of older persons. *Age and Ageing, 25*(4), 300–306.

Lawrence, R.J. (2004). Housing and well-being: moving forward. *Reviews on Environmental health, 19*(3-4), 161-176.

Lean, M.E.J., Han, T.S. & Morrison, C.E. (1995) Waist circumference as a measure for indicating need for weight management. *British Medical Journal, 311*, 158–161.

Lee, G.R., Bavin, S. & Sullivan, R. (2001) Gender differences in the depressive effect of widowhood in later life. *Journal of Gerontology, 56*(1), 56-61.

Lee, J.S., Weyant, R.J., Corby, P., Kritchevsky, S.B., Harris, T.B., Rooks, R., Rubin, S.M. & Newman, A.B. (2004). Edentulism and nutritional status in a biracial sample of well functioning, community-dwelling elderly: the health, aging, and body composition study. *American Journal Clinical Nutrition, 79*(2), 295–302.

Lee, K.M.W. (1998). Income protection and the elderly: An examination of social security policy in Singapore. *Journal of Cross-Cultural Gerontology, 13*(4), 291-307.

Leichtentritta, R.D. & Rettigb K.D. (2001). The construction of the good death: A dramaturgy approach. *Journal of Aging Studies, 15*(1), 85-103.

Leo, D.D., Diekstra, R,F., & Cleiren J. (1994). *Quality of life assessment-instrument to measure self-perceived functioning and well-being in the elderly (LEIPED project).* Copenhagen, Denmark: WHO Regional Office for Europe.

Leo, D.D., Frisoni, G.B. & Rozzini R, et al. (1991). *The profile of elderly quality of life (PEQOL): a quick package to assess general health conditions in old age*. 5th congress of the international psychogeriatric association, Rome, Italy.

Li, H. & Tracy, M.B. (1999). Family support, financial needs, and health care needs of rural elderly in China: A field study. *Journal of Cross-Cultural Gerontology, 14*(4): 357-371.

Liang, J., Dvorkin, L., Kahana, E. & Mazian, F. (1980). Social integration and morale: A re-examination, *Journal of Gerontology 35*(5): 746–757.

Limchairungrueng, S. (1993). *Factor affecting perceived aging process and quality of life*. Doctoral dissertation, Faculty of Education, Srinakharinwirot University. Bangkok, Thailand.

Link, B. G., & Phelan, J. (1995). Social conditions as fundamental causes of disease. *Journal of Health and Social Behavior, 36,* 80–94.

Litwin, H & Landau, R. (2000). Social network type and social support among the old old. *Journal of Aging Studies, 14*(2): 213-228.

Lopanich, T.(1998). *Mental health of the elderly in elderly club of Uttaradit Hospital, Uttaradit province.* Thesis (M.P.H.), Graduate School, Chiang Mai University, Chiangmai, Thailand.

Mae Hong Son Hill Tribe Development and welfare center. (2007). *Number of hilltribe people-online*. http://www.mhsdc.org/interest2.htm.

Mae Sariang Hospital (2006). *Annual report 2006*. (Photocopied document).

Mahaarcha, W. & Kittisuksathit S. (2007). *Thai youth happiness: Evidences from Kanchanaburi province*. Paper international conference on happiness and public policy Organized by Public Policy Development Office (PPDO). Institute of population and social research, Mahidol University, Thailand.

Manimmanakorn, A., Manimmanakorn, N., Tunkamnerdthai, O. and Sangpongsanon, S. (2001). Effects of modified Thai Esan folk dance on VO2 max and satisfaction among elderly people. *KKU Research Journal, 6*(1), 84-91.

Manthorpe, J., Biggs, S., McCreadie, C., Tinker, A., Hills, A., O'keefe, M., Doyle, M., Constantine, R., Scholes. S. & Erens, B. (2007). The U.K. national study of abuse and neglect among older people. *Nursing Older People, 19*(8), 24-26.

Manton, K.G. (1988). A longitudinal study of functional change and mortality in the United States. *Journal of Gerontology, 43*(5), 153-161.

Manton, K.G., Corder, L. & Stallard, E. (1997). *Chronic disability trends in elderly United States populations: 1982-1994*. Proceedings of the National Academy of Sciences of the United States of America, 94, 2593-2598.

Maranetra, N., Chuichoo, B., Detsumritharuthai, V., Jearkul, N., Nana, A., Naruman, C., Suthumsamai, T., Augsorn-in, M., Pengsombun, N. & Srilum, V. & Lertarkayamani, J. (1997). *Finding an appropriate way to diagnose early stage of chronic obstructive pulmonary disease (COPD) in Thai elderly.* http://www.si.mahidol.ac.th/project/ geriatrics/Research/COPD.htm.

Marcellini, F., Giuli, C., Gagliardi, C. & Papa, R. (2007). Aging in Italy: urban-rural differences. *Archives of Gerontology and Geriatrics, 44*(2007), 243-260.

Mariotti, S., Barbesino, G., Caturegli, P., Bartalena, L., Sansoni, P., Fagnoni, F., Monti, D., Fagiolo, U., Franceschi, C. & Pinchera, A. (1993). Complex alteration of thyroid function in healthy centenarians. *Journal of Clinical Endocrinology and Metabolism, 77*(5), 1130-1134.

Marshall, T.A., Warren, J.J., Hand, J.S., Xie, X.J. & Stumbo, P.J. (2002). Oral health, nutrient intake and dietary quality in the very old. *Journal American Dental Association, 133*(10), 1369-1379.

Maungtoug, S. (2006). *Effects of Tai Chi Qigong exercise on pulmonary function and dyspnea among the elderly with Chronic Obstructive Pulmonary Disease (COPD).* Thesis (M.N.S.), Faculty of Nursing, Chiang Mai University, Chiang Mai, Thailand.

McGarry, K. & Schoeni, R.F. (2005). Widow(er) poverty and out-of-pocket medical expenditures near the end of life. *Journal of Gerontology, 60*(3), 160-168.

Medical Council of Thailand (2008). Statistic of Medical Doctors. http://www.tmc.or.th/statistics.php.

Meng, G. and Hall, G.B. (2006). Assessing housing quality in metropolitan Lima, Peru. *Journal of Housing and the Built Environment. 21*(4), 413-439.

Ministry of Interior, Department of Provincial Administration. (2007) *Thai population data based-online.* http://www.dopa.go.th/hpstat9/people2.htm.

Mojon, P., Budtz-Jorgensen, E., & Rapin C.H. (1999). Relationship between oral health and nutrition in very old people. *Age and Ageing, 28*(5), 463-468.

Mongkol, A and others (2002). *The Thai Happiness Indicators (THI-15). The software for the community mental health survey project 2002*. Department of Mental Health, Ministry of Public Health, Thailand.

Morganti, J. B., Nehrke, M. F., Hulicka, I. M. & Cataldo, J. F. (1988). Life-span differences in life satisfaction, self-concept, and locus of control, *International Journal of Aging and Human Development, 26*(1), 45–56.

Mowlam, A., Tennant, R., Dixon, J. & McCreadie, C. (2007). *UK study of abuse and neglect of older people: Qualitative findings.* National Centre for Social Research.http://www.comicrelief.com/docs/elder-abuse/ComicRelief-ElderAbuse-Full-Stage2.pdf.

Murtagh, K.N & Hubert, H.B. (2004). Gender differences in physical disability among an elderly cohort. *American Journal of Public Health, 94*(8), 1406-1411.

Naess, S., Mastekaasa, A., Moum, T. and Sorensen, T. (1987). *Quality of life research: concepts, methods, and applications*. Institution of Applied Social Research, Oslo.

Nakongmuang, N. (2004). *A process of popularization on the Ministry of Public Health's experiencing policy through mass media*. Thesis (M.A.), Faculty of Communication Arts, Chulalongkorn University. Bangkok, Thailand.

National Housing Authority (2005). *Annual report 2005*. http://www.nha.co.th /download/AnnualNHA_2548_Thai.pdf.

National Research Council of Thailand. (2004). *Thailand and Vietnam report spread of bird flu,* http://www.nrct.net/eng/modules.php.

National Statistical Office. (1995). *Report of the 1994 Survey of Elderly in Thailand*, Bangkok: National Statistical Office, Office of the Prime Minister.

National Statistical Office. (2004). *Report on Sports Playing and Watching Behaviours of Thai People Aged 11 Years and Over*. Bangkok: Statistical Forecasting Bureau, Office of the Prime Minister.

National Statistical Office. (2007). *Report on Population Change Survey, 2005-2006.* Bangkok: Statistical Forecasting Bureau, National Statistical Office, Office of the Prime Minister.

National Vaccine Committee Office (2005). *National policy and strategic plan for immunization and vaccine.* Department of disease control, Ministry of Public Health http://www.nvco.go.th/pdf/Plan.pdf

Netcharat, M & Hongdumnern, A. (2007). *Reducing the generational gap, tied up the family relations, and care for the aged: A case study of Nhong Ngu Lerm*, paper presentation, the 6th International Conference on Psychiatry (Mental health in the city) 1-3 August, 2007.Prince Palace Hotel, Bangkok, Thailand

Nolen-Hoeksema, S. (1990). *Sex differences in depression*. Stanford, CA: Stanford University Press.

Nyqvist, F., Gustavsson, J. & Gustafson, Y. (2006). Social capital and health in the oldest old: The Umea 85+ study. *International Journal of Ageing and Later Life, 1*(1): 91–114.

O'connor, D.W., Pollitt, P.A., Treasure, F.P., Brook, C.P.B. & Reiss, B.B. (1989). The influence of education, social class and sex on Mini Mental State scores. *Psychological Medicine, 19*(3), 771-776.

Office of agriculture and cooperation of Mae Hong Son, *Important cultivation products in Mae Hong Son Province*. http://geocities.com/moac_msn/menu03.htm.

Office of the prime minister (2000). *Thailand and its people*. Bangkok: Amarin Printing.

Ofstedal, M.B., Knodel, J. & Chayovan, N. (1999). *Intergenerational support and gender: a comparison of four Asian countries*. Report No. 99-54, Population Studies Center, University of Michigan.

Ofstedal, M.B. & Natividad, J.N. (2005). Pattern of health care utilization. In Hermalin, A.I. (Ed.), *The well-being of the elderly in Asia: A four-country comparative study* (pp 417-459.Michigan, University of Michigan Press.

Oh, J., Kim, H.S., Martin, D. & Kim, H. (2006). A study of elder abuse in Korea. *International Journal of Nursing Studies 43*(2), 203-214.

Ohno, Y., Hirai, K., Sowa, S., Oka, S. & Murai, Y. (2005). Food and nutrient intakes among nomads living in three different areas of inner Mongola, China. *Asian Pacific Journal Clinical Nutrition, 14*(1), 7-18.

Palungrit, S. (1998). *Model of health care development of the elderly in urban area Amphor Phranakorn Sri Ayutthaya, Ayutthaya province*. Faculty of Community Medicine, Thammasat University, Pathum Thani, Thailand. (Photocopied document).

Palungrit, S. (2004). *Improvement of the elderly's quality of life through individual empowerment, family care and community support: Phra Nakhon Sri Ayutthata province*. Doctoral dissertation, College of Population Studies, Chulalongkorn University, Bangkok, Thailand.

Panawattanakul, S. (1991). *Self concept, self-care agency and quality of life in elderly persons.* Thesis (M.N.S.), Faculty of medicine (Ramathipbodi), Mahidol University. Bangkok, Thailand.

Panichchevakul, P. (1994). *Development of multidimensional quality of life instrument for the rural elderly.* Doctoral dissertation, Faculty of Nursing, Chulalongkorn University, Bangkok, Thailand.

Pantharuksakul, S. (2002). *Effectiveness of Qigong exercise program applying self-efficacy theory in the elderly with depression*. Thesis (M.N.S.), Faculty of Nursing, Burapha University, Chonburi, Thailand.

Passeri, G., Pini, G., Troiano, L., Vescovini, R., Sansoni, P., Passeri, M., Gueresi, P., Delsignore, R., Pedrazzoni, M. & Franceschi, C. (2003). Low vitamin D status, high bone turnover, and bone fractures in centenarians. *The Journal of Clinical Endocrinology & Metabolism, 88*(11), 5109-5115.

Pastalan, L.A. (1977). Designing Housing Environments for the Elderly. *Environments and Aging. 31*(1); 11-13.

Perissinotto, E., Pisent, C., Sergi, G., Grigoletto, F. & Enzi, G. (2002). Anthropometric measurments in the elderly: age and gender differences. *British Journal of Nutrition, 87*(2), 177-186.

Perls, T.T., Bochen, K., Freeman, M., Alpert, L. & Silver, M.H. (1999). Validation of reported age and centenarian prevalence in New England. *Age and Ageing, 28*(2), 193-197.

Petchan, O. (2006). *The effect of arm swing exercise on maximal oxygen consumption in the elderly women*. Thesis (M.Sc.), Interdisciplinary Graduate Program. Kasetsart University, Bangkok, Thailand.

Peterson, P.E. & Yamamoto, T. (2005). Improving the oral health of the older people: the approach of the WHO global oral health program. *Community Dentistry and Oral Epidemiology, 33*(2), 81-92

Phromyoo, J. (1983). *Understanding Thai Society*. Bangkok: Peeraputtana.

Pillemer, K.A. & Moore, D.W. (1989). Abuse of patients in nursing homes: findings from a survey of staff, *Gerontologist, 29*(3), 314-320.

Pombunmee, K. (1995). *Effects of exercise program on physical fitness of the elderly.* Thesis (M.N.S.), Faculty of Nursing, Chiang Mai University, Chiang Mai, Thailand.

Pong, M.A. (1957). The influence of housing on health. *Marriage and family living, 19*(2), 154-159.

Pongpaew P, Tungtrongchitr R, Phonrat B et al: Activity, dietary intake, and anthropometry of an informal social group of Thai elderly in Bangkok. *Archives of gerontology and geriatrics*, 30(3), 245-260.

Pongpaew, P., Tungtrongchitr, R., Phonrat, B., Supawan, V., Lertchavanakul, A., Tawprasert, S.,Vudhivai, N., Schelp, F.P., 1995. Serum protein and nutritional status of free living Thai elderly. *Archives of gerontology and geriatrics, 20*(3), 219–227.

Poon L.W., Jang, Y., Reynolds, S.G. & McCarthy, E. (2005). Profiles of the oldest-old. In: Johnson, M.L. (Ed.) *The Cambridge Handbook of Age and Ageing*. New York: Cambridge University Press.

Population reference bureau staff. (2004). Transitions in world population. *Population Bulletin, 59*(1), 1-41.

Post today (2008). *Increasing gays VS decreasing reproductive age*. 12 July, 2008.

Prachuabmoh, V. & Mithranon, P. (2003). Below-replacement fertility in Thailand and its policy implications. *Journal of Population Research, 20*(1), 35-50.
Pramualratana, A. (1990). *Support systems of the old in a rural community in Thailand.* Ph.D. Thesis. Australian University, Canberra, Australia.

Prasat Neurological institute (2003). *Clinical practice guideline for dementia*. http://www.rcpt.org/rcpt_boffice/images_upload/news/115/files/soneuroclinic.pdf
President and Fellows of Harvard College. (2002). Living to 100: What's the secret?. Harvard Health Letter, *article, 30*, 126-128.

Pruchno, R.A., Rose, M.S. (2002). The effect of long-term care environments on health outcomes. *The Gerontologist, 40*(4), 442-448.

Purba, M., Lukito, W., Wahlqvist, M.L., Blazos, A.K., Hadisaputro, S., Lestiani, L., Wattanapenpaiboon, N. & Kamso, S. (1999). Food intake and eating patterns of Indonesian elderly before 1998 economic crisis. *Asian Pacific Journal Clinical Nutrition, 8*(3), 200-206.

Puthsri, N. (2004). *Effects of Tai Chi exercise on sleep quality and well-being among elders living in residential care facilities*. Thesis master of Nursing Science (Adult Nursing). Prince of Songkla University, Songkla, Thailand.

Ranberg, K.A., Christensen, K., Jeune, B., Skytthe, A., Vasegaard, L., & Vauper, J.W. (1999). Declining physical abilities with age: a cross-sectional study of older twins and centenarians in Denmark. *Age and Ageing, 28*(4), 373-377.

Ranberg, K.A., Vasegaard, L., & Jeune, B. (2001). Dementia is not inevitable: A population-based study of Danish centenarians. *Journal of Gerontology, 56*(3), 152-159.

Ranberg, K.A., Hoier-madsen, M., Wilk, A., Jeune, B. & Hegedus, L. (2004). High prevalence of autoantibodies among Danish centenarians. *Clinical and Experimental Immunology, 138*(1), 158-163.

Reddy, K.K.R., Reddy, B.K., & Rao, A.P. (2004). Interaction among body composition, self-rated health and functional status of elderly in an Indian population. *Asia Pacific Journal Clinical Nutrition, 13*(1), 78-85.

Reproductive Health Division (2005). *Reproductive statistics-online*. Department of health, Ministry of Public Health. http://rh.anamai.moph.go.th/static.htm

Rice, D.T., (1989). Health and long-term care for the aged. *The American Economic Review, 79*(2), 343-348.

Ritchie, C. S., Joshipura, K., Silliman, R.A., Miller, B. & Douglas, C.W. (2000). Oral health problems and significant weight loss among community-dwelling older adults. *Journal of Gerontology, 55*(7), 366–371.

Robinson, J. & Godbey, G. (1997). *Time for life: The surprising way Americans use their time.* Pennsylvania: Pennsylvania State University Press.

Robinson, J. (1991). Quitting time. *American Demographics, May*, 34-36.

Rowles, G.D. (1983). Ageing in rural environment. In Altman, I., Lawton, M.P. & Wohlwill, J.F. (Eds.). *Elderly people and the environment: Human behavior and environment: advance in theory and research; V.7* (pp. 129-158). New York, Plenum Press.

Samuelsson, S.M., Alfredson, B.B., Hagberg, B., Samuelsson, G., Nordbeck, B., Brun, A., Gustafson, L. & Risberg, J. (1997). The Swedish centenarian study: a multidisciplinary study of five consecutive cohorts at age of 100. *International Journal Human Development, 45*(3), 223-253.

Scannapieco F. (1999). Role of oral bacteria in respiratory infection. *Journal of Periodontology, 70*(7), 793–802.

Schou L. (1995). Oral health, oral health care, and oral health promotion among older adults: social and behavioral dimensions. In Cohen, L.K. & Gift, H.C. (Eds.), *Disease Prevention and Oral Health Promotion*. Copenhagen: Munksgaard.

Schwartz, R. (1998) Obesity in the elderly. In Bray, G.A., Bouchard, C. & James, W.P.T. (Eds.), *Handbook of Obesity* (pp. 103–114). New York: M Dekker.

Shahar, S., Earland, J. & Rahman, S.A. (2000). Food intakes and habits of rural elderly Malays. *Asian Pacific Journal Clinical Nutrition, 9*(2), 122-129.

Sharon, N., & Zoabi, S. (1997). Elder abuse in a land of tradition: The case of Israel's Arabs. *Journal of Elder Abuse and Neglect, 8*(4), 43–58.

Shin, D.C., Rutkowski, C.P. & Park, C.M. (2003). The quality of life in Korea: comparative and dynamic perspectives. *Social Indicators Research, 62*(63), 3-16.

Shlossman, M., Knowler, W.C., Pettitt, D.J. & Genco, R.J. (1990). Type 2 diabetes and periodontal disease. *Journal of American Dental Association, 121*(4), 532–536.

Sho, H. (2001). History and characteristics of Okinawan longevity food. *Asia Pacific Journal Clinical Nutrition, 10*(2), 159-164.

Shrestha, L.B. (2000). Population aging in developing countries. *Health Affairs, 19*(3), 204-213.

Sila, C. (2003). *Effectiveness of Serng exercise program applying self-efficacy theory among the elderly*. Thesis (M.N.S.), Faculty of Nursing, Burapha University, Chonburi, Thailand.

Silver, M.H., Jilinskaia, E. & Perls, T.T. (2001). Cognitive functional status of age-confirmed centenarians in a population-based study. *Journal of Gerontology, 56*(3), 134-140.

Silverstein, M. & Angelelli J.J. (1998). Older parent's expectations of moving closer to their children. *Journal of Gerontology, 53*(3), 153-163.

Singalavanija A, Metheetrairut A, Ruangvaravate N, Tuchinda R, Wanumkarng N. (2001). Ocular diseases and blindness in elderly Thais. *Journal of the medical association of Thailand, 84*(10), 1383-1388.

Siriboon, S. (1992). *Fact and attitude on support and care for the elderly by the young generation*. Collage of Population Studies, Chulalongkorn University, Bangkok, Thailand.

Siripanich, B., Thirapat, C., Singhakachen, M., Panichachewakul, P. & Pradubmook, P. (1997). Elderly club: finding the appropriate way to develop: 1996. *Journal of health promotion and environmental sanitation, 20*(2), http://advisor.anamai.moph.go.th.

Sirithongthaworn, S., Nhuddhamma, U. & Langapin, S. (2004). Happines and depression of the physically handicapped people in Chiang Mai province. http://61.19.124.3/ library/ research/21_47.htm.

Siwadul, T. & Petphun, R. (2000). Prevention and control of Thallassemia in health region 3. http://hpc3.anamai.moph.go.th/data/academic/ac01.doc.

Smith, J.M. & Sheiham, A. (1979). How dental conditions handicap the elderly. *Community Dent Oral Epidemiology, 7*(6), 305–310.

Soldo, B. & Lauriat, P. (1976). Living arrangements among the elderly in the United States: A loglinear approach. *Journal of Comparative Family Studies, 7*, 352–366.

Somboonsit, J (1992). *The relationship between demographic factors, daily-life activities and satisfaction with life among aging*. Thesis (M.P.H.), Faculty of Public Health, Mahidol University, Bangkok, Thailand.

Sonphaiboon, B. (2005). *Effects of Tai Chi Qigong exercise on functional capacity among the elderly with Coronary Artery disease*. Thesis (M.N.S.), Faculty of Nursing, Chiang Mai University, Chiang Mai, Thailand.

Sricharoen, P. (2001). *Factors related to the quality of life of aged persons in the association of retired civil servants in Loei*. Thesis (M.A.), Graduate School, Rajabhat Institute Loei, Loei, Thailand.

Srisuntisuk, S. (1996). *Sociology of aging: reality and forecast in Thai society.* Bangkok: Chulalongkorn University Press.

Sternfeld, B., Ngo, J., Satariano, W.A. & Tager, I.B. (2002). Associations of body composition with physical performance and self reported: functional limitation in elderly men and women. *American Journal of Epidemiology, 156*(2), 110-121.

Stewart A, L. & King, A.C. (1994). Conceptualizing and measuring quality of life in older populations. In Abeles, R.P., Gift, H.C. & Ory, M.G. (Eds.), *Aging and quality of life* (pp. 27-54). New York: Springer Publishing.

Stookey, J.D., Zhai, F., Zohoori, N. & Popkin, B.M. (2000). Nutrition of elderly people in China. *Asian Pacific Journal Clinical Nutrition, 9*(4), 243-251.

Strain, L.A., Grabusic, C.C., Searle, M.S. & Dunn, N.J. (2002). Continuing and ceasing leisure activities in later life: A longitudinal study. *The Gerontologist, 42*(2), 217-223.

Suchatchit, W. (2007). Depression and relative factors in HIV/AIDS patients, members of power of love club, Laemsing Hospital, Chantaburi Province. *Journal of Prapokklao Hospital Clinical Medical Education Center, 24*, 180-189.

Suominen, M. (2007). *Nutrition and nutritional care of elderly people in Finish nursing homes and hospitals.* Academic Dissertation, Faculty of Agriculture and Forestry, University of Helsinki, Finland.

Suwannarurk, K., Sueblinvong, T., Sermboon, A., Treetampinich, C. & Pongrojpaw, D. (2004). Knowledge and attitudes in Pap smear screening among women at antenatal and postpartum clinic at Thammasat University Hospital. *Thammasat Medical Journal, 5*(1), 11-19.

Taeuber, C.M. & Rosenwaike, I. (1992). A demographic portrait of America's oldest old. In Suzman, R.M., Willis, D.P., & Manton, K.G. (Eds.), *The oldest old* (pp. 17-49). New York: Oxford University Press.

Tantiwong A, Soontrapa S, Sujijantrarat P, Vanprapar N, Sawangsak L. (2002). The prevalence of prostate cancer screening in Thai elderly. *Journal of the medical association of Thailand, 85*(4), 502-508.

Thanakwang, K. & Soonthorndhada, K. (2006) Attributes of active aging among older persons in Thailand: evidence from the 2002 survey. *Asia-Pacific Population Journal, 21*(3), 113-135.

Tharmaphornpilas, P., Yoocharoan, P., Prempree, P., Youngpairoj, S., Sriprasert, P. & Vitek, C.R. (2001). Diphtheria in Thailand in the 1990s. *Journal of infectious diseases, 184*(8), 1035-40.

The JBHE Foundation. (1998). The incidence of dementia drops sharply when blacks are college educated. *The journal of blacks in higher education, 19*(spring), 72.

The Thai National Council on Aging (2006). Number of elderly club under the Thai National Council on Aging networks. http://www.thaiinfonet.com/ user/senior/num.htm.

Thongsawang, K. (2003). *Factors related to the quality of life of the elderly in O-ngoen housing community*. Thesis (M.A.), Faculty of Education, Ramkhamhaeng University, Bangkok, Thailand.

Thongsomboon, J. (2005).*Health Promoting behaviors and quality of life among the elderly in Srisamrong district, Sukhothai province*. Thesis (M.P.H.), College of Public Health, Chulalongkorn University. Bangkok, Thailand.

Tietz, N.W., Shuey, D.F. & Wekstein, D.R. (1992). Laboratory values in fit aging individual-sexagenarians through centenarians. *Clinical Chemistry, 38*, 1167-1185

Tocharus, J., Boonsong, T. & Surangkul, D. (2000). Antioxidative capacity of indigenous vegetable planes in northern Thailand. *Warasan Mahawiihayalai Naresuan. 8*(2), 36-40.

Tombaugh, T.N. & McIntyre, N.J (1992) The Mini-Mental State Examination: a comprehensive review. *Journal of the American Geriatrics Society, 60*, 922-935.

Toochinda, R., Singkalvanit, A., Methitrirat, A., Ruengvoravet,N., Aussuntachai, P., Praditsuwan, R., Methitrirat, C. (1997) *Screening of cataract and prevalence in Thai elderly*. http://www.si.mahidol.ac.th/project/geriatrics/Research /glaucoma.htm.

Townsend, A.L., Miller, B. & Guo, S. (2001). Depressive symptomatology in middle-aged and older married couples: A dyadic analysis. *Journal of Gerontology, 56*(6), 352-364

Trakoontivakorn, G. & Saksitpitak, J. (2000). Antioxidative potential of Thai indigenous vegetable extracts. *Food, 30*, (3) Institute of Food Research and Product Development, Kasetsart University. http://singburi.doae.go.th/acri/ www/Research/mainmenu.htm.

Tubtimtad, P. (2003). Factors affecting exercise behavior of elderly persons in the elderly social group of Srithanya Hospital. Thesis (M.Sc.). Faculty of Education. Kasetsart University, Bangkok, Thailand.

United Nations (1997). Quality of life in the ESCAP region. http://www.un.org/Depts/ escap/sps/1462.htm.

United Nations (1999). Abortion policies: a global review. http://www.un.org/esa population /publications/abortion.

United Nations (2007). World population prospects: the 2006 revision population database-online. Population division, http://esa.un.org/unpp.

United Nations Development Programme. (2005). Human development report 2005. International cooperation at a crossroads: Aid, trade and security in an unequal worldhttp://hdr.undp.org/en/reports/global/hdr2005/chapters.

United Nations Human Settlement Programme (2003). Statistical Online Database: http://ww2.unhabitat.org/programmes/guo/statistics.asp.

United Nations. (2002). World Population Ageing: 1950-2050. ST/ESA/SER.A/207

Vatteesatogkit, P. (2004). *The estimates calculated on smoking among Thai people. Action on smoking and health foundation*. (Photocopied document).

Vaupel, J.W.& Lundstrom, H. (1994). The future of mortality at older ages in developed countries. In Lutz, W. (Ed.), *The Future Population of the World: What Can We Assume Today?* London: Earthscan.

Ventegodt, S., Merrick, J. & Anderson N, J. (2003). Quality of life theory I. The IQOL theory: an integrative theory of the global quality of life concept. *The Scientific World Journal, 3*, 1030-1040.

Viriyaporn, D. & Tanwandee, T. (2006). Screening for Hepatocellular Carcinoma. *The royal collage of physician newsletter, 23*(3), 27-43.

Walls AWG, Steele JG, Sheiham A, Marcenes W, Moynihan PJ. (2000). Oral health and nutrition in older people. *Journal of Public Health Dentistry, 60*(4), 304–307.

Wang, Z., Zeng, Y., Jeune, B., Vaupel, J.W. (1998). Age validation of Han Chinese centenarians. *Genus, 54*(1-2). 123-141.

Wanpira, V., Kittimanon, N., Pukdee-Amnaj, S., Yhukhong, P., Viputnaphun, L. & Vijitpruk, K.(2005). *Model development of cervical cancer screeing in primary care center, Puttachinarat Hospital, Pitsanulok Province*. Paper seminar in 11th Synergistic diversity for healthy Thailand. 19-21 December, 2005.

Water Supply & Sanitation Collaborative Council. (2008). Improving Sanitation is Achievable, *Factsheet No*.5. http://www.wsscc.org.

Wilson, R.S., Krueger, K.R., Arnold, S.E., Schneider, J.A., Kelly, J.F., Barnes, L.L., Tang, Y. & Bennett, D.A. (2007). Loneliness and risk of Alzheimer disease. *Archives of General Psychiatry, 64*(2), 234-240.

Wiltz, C.J. (1982). Fear of crime, criminal victimization and elderly black. *Phylon, 43*(4), 283-294.

Wivatvanit, S. (2002). *The relationship between the duration of health behavior and quality of life of the elderly*. Doctoral dissertation, Institute of Population and Social Science, Mahidol University, Nakhon Pathom, Thailand.

World Health Organization (2002) *Active Ageing: A Policy Framework*. WHO/NMH/NPH/02.8. Geneva, Switzerland.

World Health Organization (2002*). Missing voices: views of elderly person and elder abuse*. WHO/NMH/NPH/02.2, Geneva, Switzerland.

World Health Organization (2002). *Public health and violence: European facts and trends. Factsheet 10/02*, Copenhagen, http://www.euro.who.int/document /mediacentre /fs1002e.pdf.

World Health Organization (2004). *Immunization and vaccine development strategic plan 2002-2005 South-East Asia Region*. http://www.who.int/topics/vaccines/en.

World Health Organization. (1994). *Health promotion glossary 1998*. WHO/HRP/HEP/ 98.1. Geneva. Switzerland.

World Health Organization. (2006). *WHO Statistical Information System (WHOSIS),* http://www.who.int/whosis/database/core/core_select.cfm

Wu, Z. & Schimmele, C.M. (2006). Psychological disposition and self-reported health among the oldest old in China. *Age and Society, 26*(1), 135-151.

Yan, E.C. & Tang, C.S. (2004). Elder abuse by caregiver: A study of prevalence and risk factors in Hong Kong Chinese families. *Journal of Family Violence, 19*(5), 269-277.

Yang, Z., Norton, E.C. & Stearns, S.C. (2003). Longevity and Health Care Expenditures: The Real Reasons Older People Spend More. *Journal of Gerontology, 58*(1), 2-10.

Yatniyom, P. (2004). Active aging attribution: a case of elite Thai elderly. Thesis (M.N.S.), Faculty of Nursing, Chulalongkoorn University, Bangkok, Thailand.

Yi, Z. & Vaupel, J.W. (2002). Functional capacity and self-evaluation on health and life of oldest old in China. *Journal of Social Issues, 58*(4), 733-748.

Yodpet, S. (2002). The elderly and family. In Jitapunkul, N., Chayowan, N. & Yodpet, S. (Eds.), *Ageing in Thailand: the report of the knowledge review and current situation: the recommendation for policy and research*. Bangkok: The research fund.

Yoo, S.H. & Sung, K.T. (1997). Elderly Korean's tendency to live independently form their adult children: Adaptation to cultural differences in America. *Journal of Cross-Cultural Gerontology, 12*(3), 225–244.

Zeng, Y., & Vaupel, W.J. (2002). Functional capacity and self-evaluation of health and life of oldest old in China. *Journal of Social Issues, 58*(4), 733-748.

Zhang, Z. (2006). Gender differentials in cognitive impairment and decline of the oldest old in China. *Journal of Gerontology, 61*(2), 107-115.

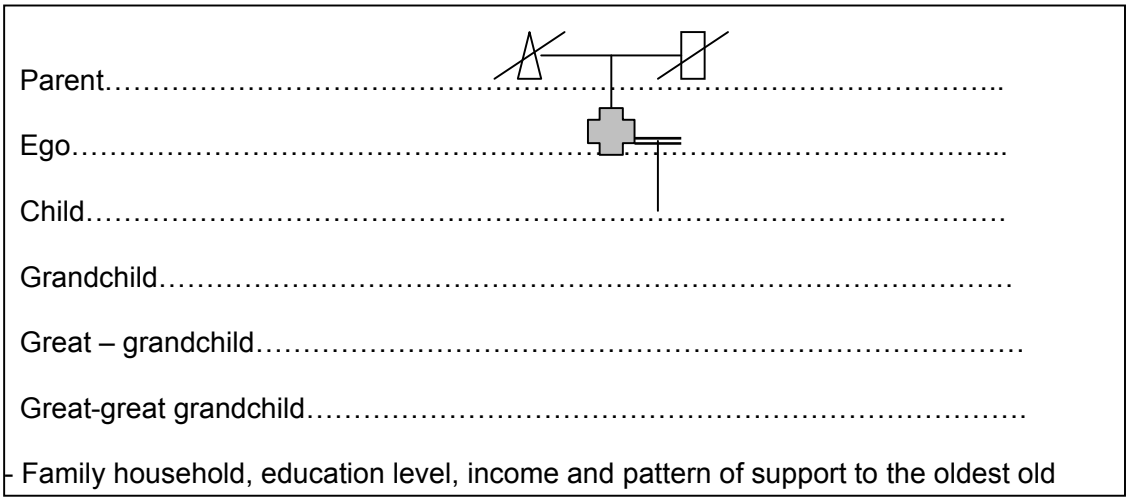
APPENDIX A

QUESTIONNAIRE

PART 1: GENERAL CHARACTERISTIC OF THE RESPONDENT

Name……Sex…….Age…….
Date of Birth……Marital status…….
Level of Education……Domicile……....
Ethnical background…….History of longest job……..
Religion……..Other respect……..

- Family Diagram



- Family household, education level, income and pattern of support to the oldest old

No.	relation	education	occupation	income	pattern of support
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

- Body composition

Weight……High……BMI……..Waist Circumference……Hip Circumference……..WHR……..

PART 2: HEALTH CONDITION AND MEDICAL SERVICES

- Chronic diseases

Chronic diseases	Yes	No
High blood pressure		
Heart problem		
Diabetes		
Cataract		
Ear problem		
Rheumatism		
Back pain		
Asthma		
Stomach problem		
Liver disease		
Fracture		
Cancer		
Paralysis		
Kidney/Urinary problem		
Parkinson		

- How would you rate your health at the present time?

☐ Good ☐ Fair ☐ Poor

- Which medical facilities you would choose them you get ill?

Medical facilities	Name/Location	Cause of illness/sickness
Government hospital……		
Private hospital……		
Private clinic……		
Primary care unit…….		
Pharmacy/ drug store……..		
Traditional drug store……..		
Herbal/traditional healer……		
Spiritual healer……		

- Did you ever receive home visit by the health personal during the past six months? (when, how?)……
……..
- How you maintain your health status and prevent the illness?.....
……..
……..
- Which herbs do you normally use when your are sick?.....
……..

PART 3: BEHAVIORAL DETERMINANT

- Physical performance

Activities	Excellent	need help	unable to do
Activity of daily living (ADL)			
Bathing	.....	.....	.....
Toileting	.....	.....	.....
Walking upstairs	.....	.....	.....
Eating	.....	.....	.....
Dressing	.....	.....	.....
Transferring	.....	.....	.....
Instrumental activities of daily living (IADL)			
Cleaning house	.....	.....	.....
Washing clothes	.....	.....	.....
Preparing food	.....	.....	.....
Using public transportation	.....	.....	.....
Shopping	.....	.....	.....
Money management	.....	.....	.....
Drug management	.....	.....	.....
Reading and writing	.....	.....	.....

- Oral health behavior

Remaining teeth……..

How you clean your teeth……

How many times a day do you clean your teeth…….....

Using denture ☐ Yes (any problem when using denture?)……

☐ No (why?)……

How would you rate your oral health at the present time?

☐ Good ☐ Fair ☐ Poor

- Food pattern

How many meals a day do you have?……

Have you ever eaten raw food? Please explain…….

Who is preparing your meals?....…….

Do you prefer some additive in your meal? What kind?……

Times of your meals? Breakfast……Lunch…..…..……Dinner……

-What kinds of the taste are you prefer?

Tasty	Very satisfied	Satisfied	Neither satisfied nor dissatisfied	Dissatisfied	Very dissatisfied
Sweet					
Salt					
Sauer					
Spice					
Lard					
Bitter					
Tasteless					
Other…….					

- Food frequency

Type of food	Everyday	2-3 times a week	One a week	2-3 times a month	Once a month	Never or quit
Food variety						
Pork						
Beef						
Buffalo						
Entrils						
Chicken						
Egg						
Duck						
Fish						
Small fish						
Seafood						
White rice						
Brown rice						
Green bean						
Soy bean						
Pork lard						

Type of food	Everyday	2-3 times a week	One a week	2-3 times a month	Once a month	Never or quit
Vegetable oil						
Soybean oil						
Milk						
Condensed milk						
Sugar						
Palm sugar						
Dessert						
Fish sauce						
Soy sauce						
Soy paste						
Shrimp paste						
Salt						
Vegetable						
Fruit						
Fruit juice						
Carbonated drink						
Coco						
Tea						
Coffee						
Liqueur						
Beer						
Ya Dong						
Syrup						
Type of food	Everyday	2-3	One	2-3	Once a	Never

		times a week	a week	times a month	month	or quit
MSG						
Additive ingredient						
Smoking						
Chewing beetle nut						
Other……						
Type of food preparation						
Deep fried						
Baked						
Fried						
Grilled						
Boiled						
Smoked						
Chili paste						

- Mini Nutritional Assessment (MNA)

1) Has food intake declined over the past three months due to loss of appetite, digestive problems, chewing or swallowing difficulties?

- ☐ Severe loss of appetite
- ☐ Moderate loss of appetite
- ☐ No loss of appetite

2) Weight loss during the last 3 months?

- ☐ Weight loss greater than 3kg
- ☐ Does not know
- ☐ Weight loss between 1 and 3 kg
- ☐ No weight loss

3) Mobility?

- ☐ Bed or chair bound
- ☐ Able to get out of bed/chair but does not go out
- ☐ Goes out

4) Suffered psychological stress or acute disease in the past three months?

- ☐ Yes
- ☐ No

5) Neuropsychological problems?

- ☐ Severe dementia or depression
- ☐ Mild dementia
- ☐ No psychological problems

6) Body mass index (BMI)? (Weight in kg/height in m2)

- ☐ BMI less than 19
- ☐ BMI 19 to less than 21
- ☐ BMI 21 to less than 23
- ☐ BMI 23 or greater

7) Lives independently (not in a nursing home or hospital)?

- ☐ No
- ☐ Yes

8) Takes more than 3 prescription drugs per day?

☐ Yes
☐ No

9) Pressure sores or skin ulcers
☐ Yes
☐ No

10) How many full meals does the patient eat daily?
☐ 1 meal
☐ 2 meals
☐ 3 meals

11) Selected consumption markers for protein intake
- At least consuming dairy products ☐ Yes ☐ No
- Two or more consuming legumes or eggs per week ☐ Yes ☐ No
- Meat, fish or poultry every day ☐ Yes ☐ No

12) Consumes two or more servings of fruits or vegetables per day?
☐ No
☐ Yes

13) How much fluid is consumed per day?
☐ Less than 3 cups
☐ 3 to 5 cups
☐ More than 5 cups

14) Mode of feeding
☐ Unable to eat without assistance
☐ Self-fed with some difficulty
☐ Self-fed without any problem

15) Self view of nutritional status
☐ View self as being malnourished
☐ Is uncertain of nutritional state
☐ View self as having no nutritional problem

16) In comparison with other people of the same age, how do they consider their health status?
☐ Not as good
☐ Does not know
☐ As good
☐ Better

17) Mid-arm circumference (MAC) in cm
☐ MAC less than 21
☐ MAC 21 to 22
☐ MAC 22 or greater

18) Calf circumference (CC) in cm
☐ CC less than 31
☐ CC 31 or greater

PART 4: PSYCHOLOGICAL DETERMINANTS

- Cognitive function: Mini-mental state examination- Thai version (MMSE-Thai 2002)

Score

1) Orientation for time (5 scores) ☐

What is the day of today? ……..
What date is today? ……..
What is the actual month? ……..
What is the actual year? ……..
What is the actual season? ……..

2) Orientation of place (5 scores) ☐

What is your actual address? ……..
What is the name of your village? ……..
What is the name of your district? ……..
What is the name of your province? ……..
What is the name of your region? ……..

3) Registration (3 scores) ☐

Now I will tell you three things. Please, remind.
Because, I will tell you only one time, then you reply to me afterward.
☐ Flower ☐ River ☐ Train ("Cabbage" for Karen respondent)

4) Attention/calculation ☐

100 minus 7 (5 times)
…….. …….. …….. …….. ……..

5) Recall (3 scores) ☐

Can you remember for the last three things that I told you before (Question 3)?
…… …….. ……..

6) Naming (2 scores) ☐

I will show you these two things, then you tell me how to designate this?
- The researcher show the pencil to the respondent ……
- The researcher show the watch to the respondent ……

7) Repetition (1 score if repeated correctly and completely): ☐

"Grandmother goes to buy some things at the market."

8) Verbal command (3 scores) ☐

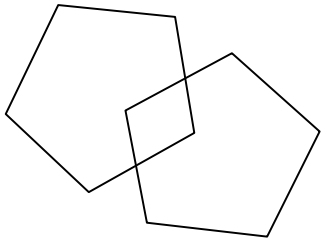
"I will give you a piece of paper. Take it with your right hand."
"Fold the paper in the middle and lay it down on the floor."
(The researcher gives the respondent the paper, size A4.)
"Take it with the right hand!" ……
"Fold it in the middle!" ……
"Lay it down on the floor!" ……

9) Written command (1 score) ☐

"I will show you a paper on which I already wrote something.
Then you read it carefully and do what I wrote."
The paper with the message "Close your eyes!" is shown.

10) Writing (1 score) ☐

Please, write your first name and your family name on this paper.
……
11) Visual construction (1 score)
Please, try to draw the picture you can see below again as exactly as possible.



……

- Happiness: The Thai happiness indicators (THI-15)

- Stress: The Suanprung Stress Test-20 (SPST-20)

Situation	Level				
	0	1	2	3	4
Afraid of getting things wrong in your work					
Unsuccessfulness to meet the expected goal					
Family has the economic problem or house chores conflict					
Worrying about poison or air, water, noise, earth pollutions					
Feel have to compete and compare					
Money is not enough					
Muscle pain					
Headache from stress					
Back pain					
Loss of appetite					
One-sided headache (Migraine)					
Feel anxiety					
Feel doubt or suspect					
Feel angry or bad mood					
Feel sad					
Loss of recall					
Fell confused					
Loss of concentration					
Feel easy to get tried					
Get cold easily					

- Happiness: The Thai Happiness Indicators (THI-15)

The Thai Happiness Indicators (THI-15)	3	2	1
1. You feel happy with your life			
2. You feel proud of your life			
3. You have to go to the hospital regularly for treatment then you can work and survive			
4. You satisfied with your body and feature			
5. You have a good relationship with your neighbors			
6. You feel your life is successful and progressive			
7. You believe that you can survive even the bad thing is happened			
8. You will be in the bad mood when unexpected thing is happened			
9. You can do daily routine work by yourself			
10. You feel happy when you help someone when they are in the trouble			
11. You feel happy to start or create a new job and attempt that it will be success			
12. You feel your life is worthless and unuseful			
13. You have friends or other relatives to give you a hand or support when you need help			
14. You believe that the community where you are living is safe and secure for you			
15. You have time to relax and avoid stress			

- Depression: Center for Epidemiological Studies-Depression (CES-D)

Situation	Level			
	Rarely	Some-time	Occasi o-nally	All the time
I was bothered by things that usually don't bother me	0	1	2	3
I did not enjoy eating; my appetite was poor	0	1	2	3
I felt that I could not shake off the blues	0	1	2	3
I felt that I was just as good as other people	3	2	1	0
I had trouble keeping my mind on what I was doing	0	1	2	3
I felt depressed	0	1	2	3
I felt that everything I did was an effort	0	1	2	3
I felt hopeful about the future	3	2	1	0
I thought my life was a failure	0	1	2	3
I felt fearful	0	1	2	3
My sleep was restless	0	1	2	3
I was happy	3	2	1	0
I talked less than usual	0	1	2	3
I felt lonely	0	1	2	3
People were unfriendly	0	1	2	3
I enjoyed life	3	2	1	0
I had crying spells	0	1	2	3
I felt sad	0	1	2	3
I felt that people dislike me	0	1	2	3
I could not get "going"	0	1	2	3

PART 5: PHYSICAL ENVIRONMENT

- Did you leave your home during the past six months (where, when, why)

……..
……
……..
……
……..
……
……..
……

- Housing utilization (Observe-floor plan, general environmental condition)

……..
……
……..
……
……..
……
……..

- Housing quality: categories and material checklists

Wall

Cement	……
Real wood	……
Bamboo	……
Others	……

Floor

Cement	……
Real wood	……
Bamboo	……
Others	……

Roof

Cement tile roof	……
Zinc roof	……
Grass roof	……
Others	……

Window

Installed	……
Uninstalled	……

Kitchen fuel

Gas	……
Charcoal	……
Firewood	……
No kitchen	……

Lighting fuel

Electricity	……
Kerosene	……
No lightening resources	……

Main source of drinking water

Filter water .....
Rain water .....
Ground water .....

Running water for use

Available .....
Unavailable .....

Toilet and bathroom

Inside the house .....
Outside the house .....
No toilet .....

Sewage system

Flush toilet .....
Latrine .....
No system .....

Safe from dangerous animals

Window, door mosquito net .....
Bed-mosquito net .....

- Accidental risks and Hazard (Observe)

.....
.....
.....
.....
.....

- What are the potential hazards which lead the respondents fall down, accident, injury, or obstacle for daily living?

.....
.....
.....
.....
.....

- Do you have any experience of falling? (when, where, how?)

.....
.....
.....
.....
.....

PART 6: SOCIAL CONDITION

Who are significant for you in term of assistance and support?

Person	Type of support	Frequency of contact		
		daily	2-3 times a week	Less than once a week

- Domestic violence

Do you have any experience of physical abuse?

……

……

Do you have any experience of verbal abuse?

……

……

Do you have any experience of financial abuse?

……

……

Do you have any experience of sexual abuse?

……

……

Do you have any experience about suicide?

……

……

PART 7: ECONOMIC WELL-BEING

Do you have any income for the moment?

☐ Yes ☐ No

How much for the income per month……

Who give you the income……

Do you have the supplementary income?.....

Do you have your own properties and other assets?

House ☐ Yes ☐ No

Land and property ☐ Yes ☐ No

Gold, silver, or other jewellery ☐ Yes ☐ No

Do you have saving deposit?.....

Do you have any debt?.....

How would you rate your economic status?

☐ Sufficient ☐ Relatively insufficient ☐ Insufficient

……

APPENDIX B

QUOTATION FROM THE KEY INFORMANTS AND OTHER PROXIES (IN THAI)

Page 75 (1) "โรคดับนี่ก็ไม่รู้ว่าแกเป็นหรือเปล่า แต่แกก็แข็งแรงดีนะ ไม่มีอะไร ไม่เคย ตรวจสุขภาพ แต่เวลาไปหาหมอ ก็ไม่เห็นหมอว่าอะไรนี่ ถ้าเป็นหมอคงบอก แล้วล่ะ"

Page 75 (2) **"ตรวจสุขภาพประจำปีนี่ไม่เคยนะ เวลาแกไม่สบายก็พาไปอนามัยใกล้ๆ เนี่ยแค่บอกว่าเป็นอะไรแล้วก็เอายามากิน นี่นั่นเขาไม่มีตรวจนี่สุขภาพน่ะ ไม่รู้อ่ะ แต่คิดว่าคงไม่เป็นอะไรมั้ง แกก็สบายดี"**

Page 75 (3) "ยายนี่แกแข็งแรงดี แกกินได้ทุกอย่างแหละ นี่ไม่เคยควบคุมหรือไปห้ามหรอก น้ำตง.. น้ำตาล ก็ไม่ห้าม คงไม่เป็นหรอกเบาหวานนะ แน่นอน"

Page 80 (1) "โรคประจำตัวก็มีแต่ลมเท่านั้นแหละเป็นบ่อยเกือบทุกวัน เห็นไหมเนี่ย ต้องพกตลอด (หยิบ จากตะกร้าที่อยู่ข้าง ๆ โชว์ให้นักวิจัย) นี่อยู่ไม่ได้หรอก ถ้าไม่มีไอ้ยานี่"

Page 80 (2) "เป็นลมก็ต้องกินยาลม จะไปกินยาหมอโรงบาลไม่ได้หรอก มันไม่เข้ากัน หมอใหญ่เคยให้ มาหนึ่ง เป็นยาเม็ดนะ แกกินเข้าไปทีนี้ ลมตีขึ้น ตึง...ตึง เลยล่ะ เรอตลอด เห็นแล้ว สงสารแม่น่ะ ทนไม่ไหว ไม่เคยให้ อีกเลย ก็แก แก่แล้ว แก่ขนาดนี้ นึกออกไหมล่ะว่าแม่ เขาจะทรมานขนาดไหน นอนก็ นอนไม่ได้นะ ต้องนั่งตลอด ก็ลมมันตี เอิ๊ก เอิ๊ก เอิ๊ก... ในความคิดของป้า ป้าว่ายาลมก็ต้องยาลมโบราณเนี่ยแหละถูกกับคนแก่ดี แล้วก็ดีกว่า ยาเม็ดจากโรงบาลด้วย"

Page 80 (3) "ก็ต้องยาหม่องล่ะ ที่มันจำเป็น ก็ที่นี่มันล้อมด้วยภูเขา ป่าทั้งนั้นน่ะ ฝนมาที ยุงก็แห่กันมา ขนาดนอนกันไม่ได้เลยนะบางทีน่ะ ขนาดมีมุ้งนะ จุดยากันยุง ก็จุดแล้ว บางทีน่ะ ไอ้อะไรล่ะ ไอ้ยาฆ่ายุง ยังเอาไม่อยู่ ก็ฉีดไปก็หมดไป ก็บ้านมันไม่ได้กั้น มันโล่ง ฉีดไปทาง...ลมก็พัด ไปอีกทาง ต้องยาหม่องนี่ล่ะ ที่ช่วยได้ เพราะเนี่ยมันเกาได้ที่ไหนล่ะ เลือดออกเนี่ย มันแก่ หนังมันบางมั้ง"

Page 81 (1) "น้ำมันไพลนี่ เรียกว่าเป็นยาประจำตัวแกเลยล่ะ ก็คนแก่อ่ะ คิดดูก็แล้วกัน ไม่ได้ทำงาน ไม่ได้ลงนา ไม่ได้ไปไหนเลย วัน ๆ อยู่แต่บ้าน นอนอย่างเดียว ทั้งวันทั้งคืน มันก็ต้องปวด ต้องเมื่อยใช่ไหมล่ะ ก็นวด ต้องนวดกันเลยล่ะ ตามแขน ตามขา เส้นเอ็นนี่นวดแบบจับเส้น เลยน่ะ บางทีน่ะ มันร้อนไง คลายเส้นได้ กลิ่นก็หอมด้วย ตาจะชอบมาก"

Page 81 (2) "ก็ไม่รู้เหมือนกันล่ะว่าแกอยากกินยา หรืออยากจะกรึ๊บเหล้าพี่ว่าแก ติดแล้วล่ะ ติดมานาน แล้ว ไอ้ยาดองเนี่ย แกต้องร้อง หาทุกเย็น หลัง กินข้าวเสร็จ อ่ะนะ ก็ให้แต่ให้แค่แก้วเดียว แก้วเล็กๆ น่ะ ให้ได้ถ้า อยากจะกินน่ะ แต่บางทีมันรอไม่ได้เนี่ยอ่ะซิ แกเดินเลยนะ เดินไป ที่ครัวน่ะ ไปหยิบรินเอง (หัวเราะ) ก็ไม่รู้ว่ามันมีผลยังไงต่อร่างกายแก แต่ก็ดีไปแกเมา ก็อารมณ์ดี เพราะเวลาแกกินแล้วอารมณ์แกจะดี บางทีเรียกหาแล้วเราเงียบเนี่ย มีถึงขึ้น ทะเลาะกันเลยนะ"

Page 81 (3) "เมื่อก่อนตาเขาเป็นหมอผีด้วยไง ก็กินเหล้ามาก พวกเหล้าขาวใช่ไหม เพราะมันต้องใช้ เหล้าเวลาทำพิธี (ใช้เหล้าขาวเป็นสื่อในการติดต่อ สื่อสาร กับอำนาจเหนือธรรมชาติ ผู้วิจัย)แต่ตอนนี้แกไม่ได้ทำแล้ว ไม่มีใครมารักษา แกก็ยังต้องกินทุกวัน เนี่ยเขาก็พยายาม กันอยู่ ที่จะให้แกเลิกไม่ให้กิน แกก็หันไปหายาดองทีนี้ แกบอกกินแก้เมื่อย เป็นยา ไอ้ตัวพี่น่ะไม่เชื่อหรอก พี่ว่าตาเขาติดเหล้า แต่ยาดองเนี่ย น่าจะอันตรายกว่าเหล้าขาว น่ะ ใช่ไหม เพราะไม่รู้เลยว่าเขาผสมอะไรในนั้นบ้าง ไอ้เหล้าขาวเนี่ยเรายังรู้ ยังเห็นว่ามันใสไม่มี อะไร"

Page 82 (1) "บางทีเราก็ไม่รู้ใช่ไหมล่ะ ว่าซื้อยาสมุนไพรจากพวกร้านในอำเภอ พวกตลาดนัด พวกรถ ขายยาพวกนี้มันดีไหม เราไม่รู้ว่าจริง ๆ แล้วมันเก่าหรือเปล่าเราก็ไม่รู้ ทำแต่สมัยไหน แต่ก็มีเขาเตือนกัน ป้าก็เห็นอยู่ว่า มันมีอะไรนะ..พวกเสตียรอยด์เนี่ยผสมมา

แต่เขา ก็ขายกันน่ะ คนขายก็บอกว่าดี คนซื้อกันเยอะ หายกันมาเยอะแล้ว ถ้าของมันไม่ดีจริง เราก็ มีเพื่อนตาย ไม่ได้ตายคนเดียว (หัวเราะ) ก็เลยซื้อตามเขามา เพราะว่าแก(ผู้สูงอายุ) ต้องใช้ ประจำไง เราไม่มีรถด้วยอีกอย่างนึง จะไปซื้อในเมืองก็ไปไม่ได้"

Page 82 (2) "มีครั้งนึง ปีที่แล้ว คนข้างบ้านกันเนี่ย ผู้หญิงนะ แพ้ไอ้เครื่องสำอางสมุนไพร หน้านี้นะ แดงเป็นผื่น สิว ฝ้าขึ้เต็มเลย แล้วสักพักก็ดำ ดำเลยนะ เขาก็บอกว่าเป็นเพราะยาที่ซื้อ เนี่ยล่ะ..ใช่ชิเราก็กลัว แต่ของที่เราซื้อมันยาธรรมดา พวกยาหม่อง ยาลม คงไม่เป็นไรมั้ง หรือเราว่าไง เพราะมันยาธรรมดา ทำกันง่ายๆ เขาคงไม่จำเป็นต้องมาใส่พวกสารเคมีลงไป หรอก คิดว่านะ"

Page 82 (3) "พวกรถเร่พวกนี้อ่ะเหรอ โอ้ย มากันเนี่ยไม่รู้ว่ามากันวันละกี่รอบ มาดูเหอะเสาร์-อาทิตย์ เนี่ยมา เราจะเห็นเลยมากันเอาของมาโชว์ ถ้าต้องการซื้อไอ้ที่แพงหน่อยหรือว่าจะซื้อ ไว้ใช้ ทีละเยอะ ๆ แต่ไม่มีเงิน เขาก็ให้เชื่อนะ ผ่อนเอาได้"

Page 83 (1) "ที่นี่ทำ..ไม่เคยขาดถึงแม้จะเล็กน้อย เราก็ไปเรียกหมอมาเรียกขวัญ ดูที่ข้อมือแกชิ เพิ่งทำ เมื่ออาทิตย์ที่แล้ว เพราะยายเขาฝันร้าย ตอนแรกเราก็ไม่รู้ว่าแกเป็นอะไร ทำไมแกตื่นสาย เพราะปกติ 6 โมง นี่แกตื่นแล้ว แต่วันนั้น 8 โมง ได้มั้งนังไม่ตื่นเลย ก็เลยไปดูยายแกที่ห้อง แกก็นอนฉี่ราด ร้องให้บนเตียงนั่นล่ะ แสดงว่าแกกลัวมากๆ"

Page 83 (2) "โดยมากก็ทำกันปีละ 2 ครั้ง เอาอาหารไปให้ผีบ้านผีเรือน ไม่เคยลืม ไม่เคยขาด ขาดไม่ได้ เพราะบ้านเรามีคนแก่ ถ้าไม่เคารพเขาแล้วเกิดอะไรไม่ดีขึ้นมามันไม่คุ้ม"

Page 84 (1) "ผมก็มีรูปแม่ไว้บนหัวเตียง เอาไว้กราบก่อนนอน ทำทุกคืนเลยไม่เคยลืม ยังเสียดายที่รูป พ่อไม่มี..ไม่ได้ถ่ายไว้..ตายไปนานแล้วก็เหลือแต่รูปแม่ไว้ให้ไหว้.ก็มีแม่คนเดียว ไม่ไหว้แม่ แล้วจะให้ไปไหว้ใคร แม่เขาก็คุ้มครองครอบครัวลูกหลาน นี่ยังบอกให้พวกเด็ก ๆ พวกนี้ ไหว้ด้วย"

Page 84 (2) "มันก็บอกเอาแน่เอานอนไม่ได้หรอกว่าอะไรจะเกิดขึ้น ถ้าไม่นับถือ มันขึ้นอยู่กับว่าเราดวง เป็นยังไงด้วย บางคนนะ ที่ไปเซี่ยวลงตามแม่น้ำ ตัดต้นไม้ที่ต้นใหญ่ ๆ หรือ ทำอะไรไม่ได้ ในบ้าน พวกนี้บางทีก็จะปวด อ่อนแอ ปวดหัว หรือไม่ก็ปวดท้อง ไปหาหมอก็ไม่หาย มัน เหมือนกับว่าไม่สบายหาสาเหตุไม่ได้แล้วถ้าเป็นแบบนี้แล้วยังไม่ไปขอขมา บางทีถึงตายนะ เพราะว่าผีบ้านผีเรือนเขาลงโทษก็มี"

Page 84 (3) "ถ้าเราทำดีกับเขา เขาก็จะให้แต่เรื่องดีกับเรา…คิดว่านะ"

Page 86 (1) "นี่ลูกเขาก็ซื้อมาเก็บไว้ในตู้เย็นนมน่ะ แล้วก็ต้องมาถามว่าวันนี้กินนมยัง ไอ้เราก็ไม่ชอบ บอก เขาไปไม่รู้กี่ครั้งแล้วว่าไม่ต้องซื้อมา ไม่ชอบ แต่ก็ยังซื้อ เขาก็บอกนะว่า หมอเขาสั่ง มาให้กิน ไม่เคยเห็นเหรอว่าในโทรทัศน์คนแก่เขากินมกันทั้งนั้น ไม่อยากอายุยืนเหมือน ในโทรทัศน์บอกหรือยังไง ก็เลย เอ้า กินก็กิน ก็ต้องกินตามเขา ไม่ชอบก็ต้องกิน ไม่งั้นก็ เสียดายเงิน"

Page 86 (2) "เราเคยลองไหม (ถามกลับนักวิจัย) มันเหม็นคาวจะตาย รสชาติก็ไม่ได้เรื่อง เหม็นมาก (เครื่องดื่มชุปไก่สกัด) คนในบ้านนี่ไม่มีใครยอมกินนะ มันบอกว่าไม่ใช่ของเด็ก แต่เป็นของ คนแก่ ก็เลยต้องกินเพราะเรามันแก่ ไม่งั้นก็เสีย หมดอายุ ไม่อยากให้เขาเสียเงิน เสียดาย"

Page 86 (3) "เขาไม่อยากให้ไปไหนด้วยหรอกลูกชายอ่ะนะ ถ้าจะไปกับเขาต้องใส่ผ้าอ้อมก่อนเพราะ เขาอายเวลาที่ยายฉี่รดผ้าถุง ทำไงได้ล่ะ มันคุมไม่ได้ เขาก็บอกว่า คนแก่เขาใส่กันทั้งนั้น เวลาจะไปไหน ทำไมยายไม่ใส่ ก็เลยบอกเขาไป ไม่ชอบก็คือไม่ชอบ ก็ทะเลาะกันโอ้ย ไม่รู้กี่ครั้ง ก็เลยบอกกับลูกชายไปว่าเอาล่ะจะอยู่บ้าน ไม่ไปไหนถ้าต้องใส่ไอ้นี่ อย่ามาถาม ไม่เอา รู้ไหม เล่นซื้อมาไม่รู้กี่ถุง แต่ขายไม่ใช่หรอก แต่ถ้าไปวัด สงกรานต์ เข้าพรรษา งานบุญใหญ่ ที่ต้องไปวัด ขายถึงใส่"

Page 100 (1) "มันกินไม่ได้เหมือนเมื่อก่อนอ่ะชิ ไอ้พวกก๋วยเตี๋ยว ใส่หมูสับ ลูกชิ้น โอ้ยชอบมาก เมื่อก่อน ตอนนี้มันไม่มีฟันจะเคี้ยว เวลาอยากจริงๆ ก็ขอให้ลูกสาวไปซื้อให้กินที ซื้อมาก็กินได้แต่น้ำ ผักจะเคี้ยวยังขย่ำไม่แหลกเลย บางทีต้องให้เขาตัดลูกชิ้นเป็นชิ้นเล็กๆ

แล้วก็กลืนลงไปเลย เพราะอยากจะกิน (หัวเราะ) แต่ก็ไม่ได้ทำบ่อยหรอก มันปวดท้อง จนได้อ๊วกน่ะบางที ทุกวันนี้ก็ได้แค่ข้าวสวยแฉะๆ ข้าวต้ม พวกต้มเจ็ด เท่านั้นล่ะที่กินได้ น้ำพริกเนี่ยก็ได้ น่าเบื่อ ไหมล่ะ"

Page 100 (2) "ผักเนี่ย พอกินได้ แต่ต้องต้มให้เละเลยนะ เละจนแบบจะเป็นอาหารเด็กน่ะ แกถึงจะกินได้"

Page 101 (1) "แกกินเนื้อไม่ได้มาหลายปีแล้ว..หมูสับก็พอกินได้ แต่ก็ได้แค่ดูด ๆ อมๆ เอาพอเป็นรสชาติ เท่านั้นล่ะแล้วก็คายออกมา นี่เคี้ยวไม่ได้หรอก กลืนก็ไม่ได้ ถ้ากลืนเข้าไปก็ปวดท้อง เอาอีก"

Page 101 (2) "บางทีเห็นแกก็สงสารนะ แกกินแบบเรากินไม่ได้ไง เวลาที่ลูกหลานมีอาหารที่แกชอบ ต้อง ซ่อน ก่อนอ่ะ รอให้แกกินข้าวสำรับแกให้เสร็จซะก่อน พวกเราถึงไปกินกันทีหลัง ที่ครัว... ก็เข้าใจไงว่า แกอาจจะไงดีล่ะ ทรมานถ้าเห็นเรากินของที่แกชอบแต่แกกินไม่ได้ บางทีเวลา ที่เรามีอาหารดี ๆ ก็เลยต้องอะไรพิเศษๆ มาให้แกด้วย แบบขนม ขนมเค้กอะไรพวกนี้ หรือไม่ ก็พวกน้ำหวาน ที่แกชอบมาให้แทน แต่พ่อก็ชอบนะ พวกเค้กพวกนี้เพราะว่ามันนิ่ม และกิน ง่าย"

Page 101 (3) "ผอมซิ แน่นอน เพราะว่าแกกินอะไรไม่ได้เลย เวลาที่แม่แกกินอะไรไม่ได้ มันก็ทำให้เรา กังวลเหมือนกันนะ มันเหมือนแบบเป็นสัญญาณแล้วว่า แต่ต้องป่วยแน่ ๆ ก็ต้องพยายาม เอาอาหารเสริมให้กิน อะไรที่แกชอบก็หามา พวกขนมเค้ก นมหวาน น้ำส้ม น้ำผลไม้ พวกเนี่ยะ ไม่รู้จะทำยังไงแล้วนะเนี่ย ฟันปลอมก็มี แต่แกไม่ใช้ เนี่ยล่ะคือปัญหาใหญ่ที่สุด เวลาที่ดูแลคนแก่ เวลาที่แกกินไม่ได้ น้ำหนักก็จะลด จากนั้นก็จะไม่สบายตามมา แล้วคนแก่ อ่ะ เวลาไม่สบายแต่ละที มันแย่กว่าที่คิดอีกนะ"

Page 101 (4) "แกเปลี่ยนไปเยอะเลยล่ะ ตอนสมัยที่ยังมีฟันแกก็กินได้ทุกอย่างเป็นปกติ ยิ้มแย้มและก็ชวน เขาคุยไปเรื่อย เพื่อนบ้านเนี่ยทุกเช้า แล้วแกยังมีกลุ่มแกที่วัดอีกนะ ไปเจอไปคุยกันที่นั่น บ่อยจะตาย แต่ช่วงหลังนี่ เหมือนแกเงียบไปเหมือนกัน ไม่ค่อยพูดค่อยจา ไม่ว่ากับเพื่อนกับฝูงหรือเพื่อนบ้านเหมือนเมื่อก่อน ส่วนใหญ่จะอยู่แต่ในบ้านไม่ค่อยได้ออกไปไหน พูดก็แบบไม่ค่อยชัด ไม่รู้ว่าเป็นเพราะไม่มีฟันหรือเปล่า...และเวลาที่แกใส่ฟัน มันก็หลุด แกก็เลยเลิกใส่แล้วก็อยู่แต่บ้าน คิดว่าแกคงอายนั่นแหละถ้ามันหลุดบ่อยๆ อ่ะนะ"

Page 102 (1) "มี..สมัยก่อนมีกับเขาอยู่คู่นึง แต่มันไม่ชอบ มันรำคาญ ลูกเขาก็ทำมาให้อย่างแพงอย่างดี เลยล่ะ หมื่นกว่าบาท ตอนนี้ไม่รู้แล้วว่ามันอยู่ไหน ไม่ได้ใช้มันนานแล้ว มันใส่ไม่สบายเลย มันไม่เหมือนฟันจริง จะพูด จะเคี้ยวก็ลำบาก เลยบอกลูกว่าขออยู่แบบนี้ล่ะ ไม่เอาแล้ว ฟันปลอม"

Page 102 (2) "มีอยู่ชุดนึงหมอเขาทำให้ฟรีที่โรงพยาบาล เพราะว่ามันฟรีหรือเปล่าก็ไม่รู้ มันเลยไม่ค่อยดี ใส่แล้วเจ็บ บางทีใส่แล้วก็เลือดออก คิดว่ามันเล็กไป ใส่แล้วมันไม่ลงไปในเหงือก เลยไม่ เคยใช้มันอีกเลย ไม่เคยใช้เลย"

Page 102 (3) "แกอายมากนะ เวลาที่คุยๆอยู่หรือกินข้าวอยู่แล้วมันหลุดออกมา เพราะว่าแกไม่มีฟันแล้ว มันเลยไม่มีที่จะไปเกาะยึดกับฟันปลอม เหงือกแกมันตื้น เลยเหมือนกับแค่ ฟันปลอมไปวาง ไว้บนเหงือกเฉย ๆ ไม่ได้มีอะไรไว้เกาะเลย ทีนี้เวลาพูดเวลาเคี้ยวมันก็เลยหลุดง่าย จำได้ว่า มีอยู่ครั้งนึงแกคุยอยู่กับเพื่อนๆ หัวเราะเนี่ยล่ะ แล้วมันหลุดออกมา แกอายมากไม่รู้ทำไง เลยขว้างฟันปลอมลงกับพื้นทันที แกโกรธมากๆ จนถึงวันนี้ จะ 10 ปีได้แล้วมั้ง แกไม่เคยใช้ มันอีกเลย"

Page 102 (4) "ไม่เอา ไม่เอาเลย ฟันปลอมเนี่ย เบื่อแล้ว เข็ด มันเจ็บ ดูแลก็ยาก มันแตกง่าย นี่ก็คนหนึ่งล่ะ ที่ไม่ใส่ มันวุ่นวาย รำคาญ มันใช้ยาก...รู้ซิ..เพราะว่าเคยใช้มาแล้ว....ไม่ได้ใช้มานาน มากแล้ว"

Page 102 (5) "ใส่แล้วมันลำบาก ยิ่งเวลาเคี้ยวข้าว มันชอบหลุด มันมีไว้ให้ดูสวยงามเท่านั้นแหละ ไม่ได้ มีไว้เพื่อใช้งานหรอก เพราะไม่เคยเห็นมันจะช่วยอะไรได้ เรามันก็ไม่ได้ต้องการ ความสวย ความงามอะไร แล้วก็ไม่ได้ไปไหน เลยไม่เอา ไม่มีฟันปลอมก็ไม่ตายนี่"

Page 104 (1) “บางวันก็กิน.....บางวันก็ไม่ได้กิน.....ไอ้ตอนกลางวันบางทีก็ไม่ค่อยอยากกินหรอกข้าวน่ะ กินตอนเช้ากับตอนเย็นก็พอแล้ว เรามันแก่ใกล้จะตายแล้ว กินก็ตาย....ไม่กินก็ตาย... ตายเหมือนกัน ไอ้เราเรื่องกินมันไม่สำคัญหรอก กินไปตามหน้าหน้าที่เท่านั้นล่ะ (หัวเราะ)”

Page 105 (1) “ก่อนที่เขาจะไปทำงานกัน...เขาก็ทำไว้ให้...กินเสร็จ....เราก็เก็บใส่ตู้กับข้าวไว้กินต่อตอน กลางวันอีกทีนึง ก็ตอนกลางวันมันอยู่คนเดียว เวลาหิวก็เดินไปกินเอง ไม่มีปัญหา”

Page 105 (2) “บางวันลูกสาวก็ทำให้ บางวันเขากลับมาไม่ได้ มันติดงานที่ไร่ ก็ไม่ได้กินกลางวัน แต่มันก็ ไม่ได้หิวหรอก เพราะมันก็ไม่ได้อยากกินอะไร”

Page 105 (3) “นี่มีอะไรก็ต้องยกเอาไปให้ เพราะเขาอยู่คนเดียว น่าสงสารจะตาย....ก็แล้วแต่ว่าวันนั้น ที่บ้านมีอะไร บางทีก็เอาที่ทำเสร็จแล้วไปแบ่งให้ บางทีมีเนื้อก็เอาเนื้อดิบไปให้ พวกปลา อะไรเนี่ย แล้วก็เอาไปทำเอาเอง แต่ก็ให้ไม่มากหรอก เพราะมันไม่มีตู้เย็น ก็ต้องทำทีเดียว ทำให้สุก แล้วก็เก็บไว้กินหลายๆ วัน 3-4 มื้อ บางทีมันก็บูดก่อนก็มีนะ แต่มันก็ไม่รู้หรอก ก็กินเข้าไป คิดดูซิน่าสงสารขนาดไหน บางทีก็ต้องไปเปลี่ยนอาหารให้มัน ทิ้งอันที่บูดไป แล้วก็เอาไปให้ใหม่”

Page 149 “หญ้ามันเก่า ก็ป้านี่แหละเป็นคนช่วย น่าสงสารมากนะ แค่เมฆตั้งเค้ามา ป้าต้องไปย้ายแกล่ะ ถ้าไม่ย้ายก็เปียกหมด เพราะลูกหลานเขาออกไร่ไง กลับมาดูไม่ทัน”

Page 150 (1) “ร้อน...ร้อนมาก...ที่นี่หน้าร้อนร้อนมาก ก็รู้ว่าอ่ะนะว่าแม่เขาร้อน เพราะหลังคาเป็นสังกะสี ป้าก็ไม่รู้ว่าจะทำไง จะให้เปลี่ยนเป็นหลังคากระเบื้องมันก็แพง ก็ทำได้แบบกลับบ้าน ให้มัน บ่อยไปเก็บถั่วก็กลับบ้านให้มันบ่อยหน่อย มาก็เปลี่ยนท่านอนให้แก เช็ดตัวบ้าง แล้วก็ต้อง กลับไปทำงานต่อ บางทีก็ต้องฝากคนแถวนี้ให้คอยไปดูแทน เนี่ยก็ปัญหาหลักของบ้านนี้ล่ะ”

Page 150 (2) “บ้านนี้ก็ยังต้องปะ ต้องซ่อมตลอดเวลา เขาก็รู้ว่าบันใดนี้มันเก่าแล้ว เขาก็บอกจะมาซ่อมให้ ตั้งแต่สงกรานต์ปีที่แล้ว ยังไม่ได้ทำเลย”

Page 150 (3) “ไม่มีใครมาช่วยแกหรอกหรอกขายเนี่ย ร้อนก็ปล่อยให้ร้อน หนาวก็ปล่อยให้หนาว หิวก็ ปล่อยให้หิวอยู่นั่นแหละ ห้องก็สกปรก ไม่เช็ดไม่ถู เยี่ยวเหม็น ขี้เหม็นละนอนจมกองขี้ กอง เยี่ยว มดแมงมันก็มาอ่ะดิ มันมาก็ปล่อยให้มันกัด บางทีเข้าไปเห็นแก อ้าวทำไม หน้าตาเป็น จ้ำ ๆ อย่างนี้ ที่ไหนได้ มดกันเต็มตัว เต็มหน้า”

Page 150 (4) “มันก็พูดยาก ถ้าเขายังปล่อยให้อยู่ในสภาพที่แย่แบบนี้ อัมพาต ตาบอด เยี่ยว ขี้บนที่นอน กินก็กินบนที่นอน ไม่มีทางเห็นมันสุขภาพดีได้หรอก เหม็นก็เหม็น แค่จะหาอากาศบริสุทธิ์ ไว้หายใจยังจะหาไม่ได้เลย ก็ไม่เข้าใจเหมือนอยู่กันได้ยังไงบ้านไม่ปิดไม่กวาด ลูกหลาน มันก็ไม่สนใจ ไปยุ่งกับเขามากก็ไม่ดี ลูกหลานเขาจะด่าเอาให้อ่ะดิว่าไม่ใช่เรื่อง”

Page 151 (1) “เมื่อก่อนมีอยู่ครั้ง ไอ้เหลือมตัวใหญ่มาก มันมานอนอยู่ใต้ถุนบ้าน แล้ววันนั้นก็ไม่มีใครอยู่ บ้าน พ่อโชคดีมาก ๆ ที่วันนั้นมีชาวบ้านเขาเดินผ่านมาไง เลยช่วยกันจับได้ ไม่งั้นป่านนี้ตา คงตายไปแล้ว ก็มันอยู่อย่างนี้ ของพวกนี้มันก็ธรรมดา”

Page 151 (2) “ช่วยซิ โธ่ทำไมจะไม่ช่วย ก็เห็น ๆ กันอยู่ อยู่บ้านเดียวกัน ไม้เก่า หลังคาเก่าหรืออยาก จะเปลี่ยนก็แค่บอก ไปช่วยกัน ชาวบ้านน่ะ เราช่วยตลอด ผู้ใหญ่ก็มาช่วย ผู้ใหญ่เขาดี เป็นผู้นำเลยล่ะว่าเอ้าไปช่วยแก ไม่เคยนิ่งเฉยกับลูกบ้านหรอก ผู้ใหญ่แกก็เป็นคนดีจริง ๆ”

Page 154 “ตอนนี้เหลือ 4 คน เมื่อก่อนมี 10 คน ตายกันไปหมดแล้ว ห่ากินกันไปหมด บางคนก็เป็นไข้ ก็ไม่รู้ว่าเขาเรียกว่าอะไร แต่ก็ตายไป มีมาลาเลียก็มี ที่รู้อ่ะนะ อีกคนก็เป็นห่า”

Page 155 “สมัยก่อนไข้ป่าพาก่อนตายกันเป็นเบือ เด็ก ๆ อ่ะนะ มันไอ้โห...เอาเรื่องเลยล่ะ ตายกันนัก สมัยก่อนก็ไม่มีหรอกยาที่จะรักษาหรือฆ่ามันน่ะ อีกอย่างจนด้วยสมัยก่อน มุ้งก็ไม่มีเหมือน สมัยนี้ นี่ไม่ใช่แค่เด็ก ๆ นะที่ตายอ่ะ พวกคนหนุ่มยังตายเลย สู้กับมันไม่ไหว หรอกไข้ป่า เนี่ย”

Page 159 (1) “นี่มีลูกชาย 3 คน จบปริญญากันทุกคน (ยิ้มอย่างภูมิใจ) คนโตนี่จบอ่ะไรล่ะ..มหาลัยจุฬา เขาอยู่โน่นกรุงเทพโน่น คนที่สองจบมหาลัยเกษตร สมัยก่อนทำอยู่กรุงเทพ ตอนนี้เกษียณ แล้วอยู่อีกอำเภอนึง คนที่สามนี่จบแม่โจ้..แม่โจ้ ทำงานอยู่เชียงใหม่ เก่งกันทุกคนลูก 3 คนนี้ ทำงานกันหมด ดี ๆ ทุกคน...ภูมิใจซิไม่ได้อยู่ด้วยกันก็ภูมิใจ”

Page 159 (2) “สมัยก่อนที่นี่ไม่มีอะไรหรอก จะมีอะไร แม่ฮ่องสอนไม่มี งานดี ๆ ก็ไม่มี จะมีก็ทหาร ตำรวจ พวกครูเท่านั้นแหละ ถ้าอยากได้ตำแหน่งดี ๆ หรือเจริญก้าวหน้าในหน้าที่ ก็ต้องย้ายไปเอา ตำแหน่งกันที่อื่น กรุงเทพโน่น ไม่ใช่แม่ฮ่องสอน”

Page 160 (1) “ไม่ไป ไม่อยากไปไหนทั้งนั้นถ้าไม่ใช่บ้านนี้ อยู่กับเขาไม่ได้หรอก เรามันแก่เกินที่จะไปอยู่ กับเขา ถึงจะเป็นลูกก็เถอะ คนแก่อย่างนี้ไม่อยากไปสร้างปัญหาหรือทำเรื่องอะไรให้พวก เขาเดือดร้อนหรอก”

Page 160 (2) “นี่ลูกชายเขาก็เคยเอาไปอยู่ด้วยที่กรุงเทพนะ เคยไปได้ 2 – 3 ครั้งมั้ง แต่ที่รู้ได้ข่าวมาก็อยู่ กับเขาไม่ได้ ที่กรุงเทพน่ะ เห็นบอกว่าร้องให้ อยู่ไม่ได้เพราะมันไม่สบายเหมือนบ้านเรา อากาศก็ไม่ดีเหมือนที่นี่ แกร้องให้ทั้งวันทั้งคืน ยิ่งเวลากลางวันที่ลูก ๆ หลาน ๆ ออกไป ทำงานกันหมด แกก็ร้องให้ ตะโกน เพราะว่าไปล็อกแกไว้ในบ้าน ให้แกอยู่คนเดียว แกก็กลัว ก็เครียด จนลูกชายต้องส่งแม่กลับบ้าน ก็ตอนนี้เห็นบอกว่า จะไม่ยอมไปไหน อีกแล้ว ขอตายที่บ้านหลังนี้”

Page 161 “จะให้ไปอยู่กับลูกหลานคนอื่นเขาไม่ได้หรอก ขายเนี่ย เคยไปอยู่กับคนอื่นก็มีแต่เรื่อง แกเหมือนใครชะที่ไหนล่ะ ไปอยู่กับคนอื่นเขาไม่ได้ เข้ากับเขาไม่ได้ ยิ่งพวกหลาน ๆ นะ เวลาเล่นกันเสียงดัง ก็ไปด่าเขา ไปบ่น เรื่องด่านี่ขอให้บอกเถอะ เก่งไม่มีใครสู้ได้ จริง ๆ แล้วเหมือนกับว่าแกก็สดิไม่ค่อยจะดีเท่าไหร่นะ บางทีก็ยิ้มทั้งวัน ร้องเพลงทั้งวัน แล้วก็ด่า คนอื่นเขาได้ทั้งวัน เพราะอย่างงี้ถึงต้องอยู่คนเดียวไง ไม่มีใครอยากจะอยู่ด้วย”

Page 165 (1) “ถ้าตาบ้านโน้น (เพื่อนบ้าน) ไม่มีอะไรทำ ก็จะมานั่งเล่นกันที่บ้านนี้ มาคุยเล่นมาเยี่ยมพ่อ เวลามาเนี่ยนะ โอ้ยพี่ก็ล่อแกทุกอย่างที่มีเอาชาให้กิน มีผลไม้ก็เอามาเสริฟ อะไรก็ให้หมด ขอแค่ให้มานั่งคุยนั่งเล่นกับพ่อพี่เท่านั้น เขาก็ไม่ได้คุยกันมาหรอก แค่นั่งด้วยกัน แค่นี้พี่ ก็ว่าพ่อเขาก็สดชื่นแล้ว พี่คิดไงว่า พ่อเขาน่าจะได้เจอกับคนอื่นบ้าง ไม่ได้เจอแต่หน้าพี่ ตลอดเวลา พี่ก็สังเกตน่ะ เวลามีคนมาเยี่ยมที่บ้านนี่พ่อเขามีความสุข เจอกัน กินอะไรด้วยกั นี่แหละพี่คิดว่ามันดีมากที่ไม่ต้องให้พ่อเขานอนอย่างเดียวบนเตียงทั้งวัน แล้วอีกอย่างรู้ไหม คือ ถ้าพ่อเขามีกิจกรรมตอนกลางวันมาก ตอนกลางคืนก็หลับสนิทมากขึ้นด้วย... อีกอย่าง พ่อเขาก็ชอบเจอเพื่อนฝูงด้วย”

Page 165 (2) “ไม่เหงา..จะไปเหงาได้ไง ไม่เคย ดูดิ จะไปเหงาได้ยังไง ใครผ่านมาทีก็ตะโกนใส่กันแล้ว ว่าอ้าว...เป็นไง.... บางทีไม่ได้คุยอะไรกันมากหรอก แต่ก็โบกมือ อ้าว เป็นไง ผงกหัวใส่กัน ก็มีความสุขแล้ว ลองดูซิ ถ้าไม่เชื่อน่ะ ลองดูเวลาที่ขายไปนั่งหน้าบ้าน ที่ม้าโยกน่ะ ขายแก จะนั่งยิ้มให้ทุกคนเลย แล้วเขาก็จะทักขายกลับมา..คนที่นี่รักกันดี ไม่มีปัญหา ถึงขายจะ ไม่ได้ไปไหนมาไหนก็เถอะ แต่ก็ยังมีเพื่อนบ้าน”

Page 166 (1) “อย่าถามเลยว่าแม่ตื่นเต้นขนาดไหน แกถามอยู่นั่นแหละว่าเมื่อไหร่จะถึง ป้าก็บอกว่าเดี๋ยว ก็ถึง...รอหน่อย อย่างสงกรานต์ปีที่แล้ว ไม่นอนเลยนะ เดินไปเดินมาอยู่นั่นแหละ รอพวก เขาไง แกกังวลเพราะว่าถนนมันไม่ค่อยดี โค้งมันเยอะ แกกลัวอุบัตเหตุ แกก็เดิน เดิน เดิน จนกระทั่งป้าเริ่มโกรธ จนได้ทะเลาะกัน แต่พอพวกลูกชายมาเท่านั่นแหละ อารมณ์เปลี่ยน เลยนะ...ทันทีเลย ยิ้ม มีความสุข จริง ๆ แกมีความสุข แกรักลูกชายคนนี้มากไง”

Page 166 (2) “แกมีความสุขมาก มีอันนี้แหละอันเดียวที่ทำให้แกมีความสุข กินข้าวได้เยอะ อะไรที่เรา เคยบังคับให้แกกิน แล้วแกไม่กิน ถ้าลูก ๆ คนอื่นมาละ โอ้ยย ส่งให้เท่าไหร่ก็กินหมด อย่าง ซุปไก่ ทีเราซื้อให้ละไม่กิน แต่ถ้าลูกคนอื่นซื้อมา ยี่ห้อเหมื่อนกันเปี๊ยบ รสชาติ สีเดียวกัน แกบอกอร่อย .. ก็ดีไปอ่ะนะ แกสุขใจและได้กินของดีๆ ก็ดีอ่ะ”

Page 166 (3) “มันมีความสุขมาก หมอต้องเข้าใจชะก่อน คนแก่อ่ะ ไม่มีอะไรจะสำคัญเท่ากับลูกหลาน มาเยี่ยมหรอก เอ้านี่พูดจริง ๆ นะ ผมแก่แล้ว ผมรู้ดี แค่มาเหอะ ขอให้แค่กลับมา เรื่องอื่น แก้วแหวนเงินทอง ข้าวของเครื่องใช้ ไม่เอาเลย แค่มาเยี่ยม มันมีพลังมากนะ แค่มาเยี่ยมเนี่ย อย่างผมบางทีป่วย มันก็หายไปทันทีแค่ลูกมา ปวดเมื่อยตามตัว บางทีก็ดีขึ้น จริง ๆ ก็มันมีความสุขอ่ะ หมอเข้าใจป่าว พอมันมีความสุขมันก็อิ่มเอม ถึงป่วยก็หาย เชื่อผมเถอะ กลับไปเยี่ยม เขารออยู่”

Page 167 (1) “มีครั้งนึง หลานคนโปรดไม่ได้กลับมาตอนปีใหม่ ปกติเขามาไงทุกปี ไม่เคยพลาด แกร้องให้ เลยนะ แกบอกว่าแกเหมือนคนแก่อนาถา เพราะว่าขนาดหลานยังไม่สนใจ บอกว่าดูดิ บ้านอื่น ลูกหลานเขามากันเต็ม แต่กูไม่มีใครมาเลย โอ้ยตอนนั้นแกเครียด ร้องไห้ตลอดเลย เพราะแกไปมองบ้านอื่นแล้วมาเปรียบกับแกไง แล้วยิ่งตอนลูกหลาน บ้านนั้นมาเยี่ยมแก มาหาแกที่บ้านเนี่ย ยิ่งเครียดไปกันใหญ่ ป้าเศร้ามากเหมือนกัน จนทนไม่ไหว ต้องโทรไป เรียกหลานคนนี้ที่เชียงใหม่ให้มาเลยมาตอนนี้เลย จนหลานต้องมาอ่ะ แล้วก็ดีขึ้น มีความสุข เลยล่ะ”

Page 167 (2) “ไม่มีใครมาหา มาเยี่ยมหรอก 2-3 ปีได้แล้วล่ะ ไม่มีเลย เรามันคนโชคร้าย ไม่โชคดี เหมือนบ้านอื่นเขา ที่ลูกหลานมากันเต็มบ้านเต็มเมือง ดูเขาเราก็เศร้าเอง ก็เรามันไม่มีลูก มีหลานมาปนป่อ”

Page 167 (3) “เวลาแกเศร้าใจ แกก็สวดมนตร์เอา เออไอ้ฉันก็ยังแปลกใจนะ ว่าเออปกติแม่แกลืมอะไร ง๊าย..ง่าย แต่ทำไมแกจำบทสวดได้หมดเลย”

Page 167 (4) “ผมสวดมนตร์ทุกวัน ตื่นมาประมาณตี 5 ก็สวดครั้งนึง ตอนกลางคืนก่อนนอนประมาณ 2 ทุ่มก็อีกครั้งนึง สวดแล้วก็สบายใจ สบายกายและใจมันสงบดี.. ช่วยได้เยอะสวดมนตร์เนี่ย สมองดี จิตใจดี และเราก็มีความสุข นี่ผมไม่ได้เครียดมานานแล้วนะเนี่ย”

Page 168 (1) “ตักบาตรก็ตักตรงเนี่ย เนี่ยหน้าบ้านเนี่ย อย่างบางทีแกฝันร้ายรู้สึกไม่ค่อยสบายใจ แกก็จะ บอกว่าเตรียมให้หน่อยนะ จะทำบุญ ถ้าทันก็ตักหน้าบ้าน ถ้าไม่ทัน ก็จบแล้วก็เอาไปถวาย ที่วัด...ป้าก็เต็มใจทำให้ เพราะรู้ไงว่าแกชอบทำบุญ แต่เงินทองก็ไม่ค่อยมี...แกก็ขอตัก แต่บางวัน แกคงอยากรู้อ่ว่าเราไม่มีเงิน มั้งนะ เลยจะช่วยประหยัด บางวันแกเดินไม่ไหว บ่วยไม่สบายนอนอยู่บนเตียง ก็นิมนตร์พระไปรับบาตรที่เตียง... ไม่ว่า พระจะมาว่าอะไรล่ะ นิมนตร์มาท่านก็มารับบาตรตามจากแม่”

Page 168 (2) “นี่ผมก็ไปวัดบ่อยนะ อยู่บ้านไม่มีอะไรทำ ชีวิตมันก็เบื่อ ไปวัดก็ทำให้มีชีวิตชีวาขึ้น คุยกับ พระ แลกเปลี่ยนความคิด ช่วยพระทำนั่นทำนี่ ก็ดี เป็นงานอดิเรกไปแล้ว ถ้าไม่มีวัด ไม่มี พระ ไม่มีกิจกรรมที่นั่น ผมก็ไม่รู้ว่าชีวิตผมจะเป็นไง บางทีอาจจะน่าเบื่อมาก ๆ ก็ได้”

Page 171 (1) “เราก็ไม่ได้มีเงินมาก บางเดือนตายกัน สองศพ สามศพ ไอ้เราก็จ่ายไปชิ 200 300 ไอ้เรา ก็ไม่รู้ว่าเมื่อไหร่จะตาย เมื่อไหร่จะได้เงินนี้กับเขาบ้าง มีแต่จ่ายกับจ่าย (หัวเราะ) บางครั้ง ไอ้เงิน 300 ที่ได้ ก็แทบไม่ได้ใช้เลยนะ เพราะหมดไปกับเงินตายเนี่ยแหละ (หัวเราะ)”

Page 171 (2) “จริง ๆ แล้ว ไอ้เงินตายเนี่ย มันก็ดี มันก็ช่วยชาวบ้านและครอบครัวเขา แต่บางคนก็บ่น กับป้า พวกสมาชิกก็ว่า ทำไมคนมันตายเยอะจัง บางคนยังเด็กยังหนุ่ม ก็ตายซะแล้ว ตายกันเพิ่มขึ้นทุกวัน รถคว่ำบ้างล่ะ ป่วยบ้างล่ะ เอดส์ มะเร็ง แต่ไอ้คนที่จ่ายเงิน คนแก่ มีเยอะนะ ในตำบลนี้แล้วอายุยืนด้วย ตายก็ยาก (หัวเราะ) บางคนถึงกับอารมณ์เสีย เลยนะว่า เอ้ยไม่ยุติธรรมนะเนี่ยปล่อยให้คนแก่มาจ่ายเงินตายให้กับเด็ก”

Page 172 (1) “ไม่เคยไปหรอก มันไกล และต้องหารถ...หารา โอ้ย ลำบาก ถ้ามาหาที่บ้านเนี่ยก็ดีชิ คนแก่อ่ะ ไปไหนมาไหนก็ลำบาก”

Page 172(2) “มันไม่ใช่สำหรับคนแก่นะ จะไปทำไมล่ะ มันสำหรับเด็กเล็ก ไปตรวจขี้มูก ขี้ตา...ขี้หู... อย่างแม่เนี่ย ไปก็ไม่ได้อะไรหรอก มันได้ไม่คุ้มเสีย ถ้าเกิดอะไร ล้ม อุบัติเหตุ มันยิ่งแย่นะ”

Page 173 (1) “ตอนนี้ พวกโครงการใหม่ ๆ ไม่ค่อยได้ทำ ไม่จำเป็นเท่าไหร่ ชาวบ้านต้องช่วยกัน รู้จัก ใช่ไหม ชุมชนเข้มแข็งน่ะ ชาวบ้านที่อยู่ด้วยกันต้องช่วยเหลือกัน ชาวบ้านต้องวางแผน และก็ดำเนินการไปว่าหมู่บ้านต้องการอะไร ราชการไม่สามารถเข้าไปช่วยได้มาก เหมือน ก่อนแล้ว เพราะว่าถ้าเรายังเข้าไปช่วย ชุมชนก็ไม่ยั่งยืน ใช่ไหมล่ะ ... โอ้ยปัญหาเยอะเลย แต่จะให้เราทำไงล่ะ เขา (รัฐบาล) บอกให้ทำอย่างนี้น่ะ มันเป็นนโยบาย”

Page 173 (2) “ภาพมันสวยชุมชนเข้มแข็งเนี่ย แต่เวลาปฏิบัติมันยากมาก ถ้าทุกอย่างต้องทำโดยชาวบ้าน ไม่ให้มีโครงการอย่างเมื่อก่อน เคยนะประชุมหมู่บ้านเนี่ย แล้วถามพวกเรา ต้องการ อะไร ใครจะทำอะไรได้บ้าง เพื่อใคร แบบเนี่ย แล้วก็ให้พวกเขาวางแผนกัน...แน่นอน...ปัญหา มีเยอะมาก ไม่ค่อยประสบความสำเร็จเท่าไหร่ ก็ชาวบ้านเขาไม่ค่อยมีเวลาที่จะมาร่วม โครงการ หรือกิจกรรม จะให้เขาทำกันยังไง แค่ช่วยตัวเองยังยากเลย แล้วจะคาดหวังอะไร ที่จะให้ชาวบ้าน มาช่วยเหลือคนอื่น”

Page 173 (3) “พวกเราก็ไป (เยี่ยมบ้าน คลินิกเคลื่อนที่) ปีละสองครั้ง แต่ถ้างานประจำมีเยอะ ก็ปีละครั้ง เยี่ยมบ้านแทบจะไม่จำเป็นนะเดี๋ยวนี้ ชาวบ้านควรจะช่วยเหลือกันเอง ไม่จำเป็นแล้วที่ต้อง รอความช่วยเหลือจากเจ้าหน้าที่แต่อย่างเดียว”

Page 178 (1) “ทำไงได้ล่ะ ก็ตามันมองไม่เห็นแล้วนี่ เงินก็เหลือ ของอื่น ๆ มันก็ยังเอา มันมากันที่บ้าน (หลานและเพื่อนๆ) บอกว่าตา จะถูบ้าน จะซักผ้าให้...บอกตลอดล่ะว่า เอาเงินไว้นี่นะ อย่า ขโมยไป แต่มันก็เอา อาหารที่เขามาให้ น้ำ มันยังเอาเลย”

Page 178 (2) “โอ้ย..แกเคยมีเงินมาก่อน เรียกว่าฐานะดีเลยล่ะ แล้วทีนี้ก็ยกบ้านให้ลูกชาย ไม่นานหรอก ลูกชายก็ตาย ทีนี้บ้านก็เลยตกไปเป็นของลูกสะใภ้ชีทีนี้ ใช่ไหม โอ้ยจะไปเอาอีร้าค่าอีรมณ์ อะไรกับลูกสะใภ้ เขาก็ขายชิบ้านหลังนั้น และก็หายไป ความจริงปกติคนทั่วไปก็จะเออ คืนบ้านให้แม่ผัวไป ใช่ไหม แต่คนนี้ไม่ หนีเลย โกงไปเลย ตั้งแต่นั้นมาแกก็ไม่เหลืออะไร จนทุกวันนี้ล่ะ”

Page 178 (3) “สมัยก่อน ลูกชายแกน่ะ จะเป็นคนถอนเงินบำนาญมาให้แกเก็บไว้ใช้ (ประมาณเดือนละ 2,000) จะได้มีเงินไว้ใช้ซื้อโน่นซื้อนี่ได้ แต่พวกหลาน ๆ ญาติๆ ที่อยู่แถว ๆ นี่ ชอบมายืม หรือบางที ก็มาหลอกเอาเงินคนแก่แบบเนี่ยะ พวกนี้ก็จะรู้นะ จะมาตอนที่ไม่มีใครอยู่บ้าน หรือ ตอนที่พี่ไป ตลาด ก็คนแก่น่ะหลงแล้ว คนแก่ก็แบบนี้ใช่ไหมล่ะ ก็ให้ไปแล้วก็ลืม ไม่รู้ เรื่อง ไม่เคยถาม ไม่เคยทวง บางทีก็ไปทั้ง ๆ ที่หลงนั่นแหละ...บ่อยครั้งเข้า ลูกชาย ก็เลย ไม่เอาเงิน ไว้ที่แม่แล้ว ทุกวันนี้ก็ให้ติดกระเป๋าไว้อาทิตย์ละ 100 บางทีคนมันจะเอาอ่ะ 100 ยังมาหลอก เอาไปเลย”

Page 180 “ตาเขาเคยฆ่าตัวตายมา 2 ครั้ง กลิ้งเอาหัวลงมาจากพื้นบ้าน แต่ก็ไม่ได้เป็นอะไร ตาเขา ไม่ป่วยมากไง ตาบอดแล้วยังเป็นอัมพาตด้วย เลยไม่อยากอยู่ เขาบอกชีวิตมันไม่มี ความหมาย ตอนนี้รู้ไหมว่าแกก็ยังตะโกนตลอดว่านะ ว่ากูอยากตาย ฆ่ากูซะ ฆ่ากูทิ้งซะ”

Page 187 “ปัญหาของแกก็แบบว่า มีเงินแล้วไม่ใช่ ถ้าใช้ป้าไม่ว่าเลยนะ แต่แกมีเท่าไหร่ก็ไม่รู้ ไม่มี ใครรู้นะ แกเองก็ไม่รู้ แกชอบเก็บ ซ่อนดีนัก ซ่อนจนจำไม่ได้ว่าไปไว้ที่ไหน มีครั้งนึงเงิน เกือบหมื่น ป้าไปเจอในกล่องเสื้อเก่า ๆ เกือบแล้วนะกำลังจะบริจากให้กะเหรี่ยงอยู่แล้ว โชค ยังดี ที่เอา มาเช็คดู ไม่งั้นหมดไปแล้ว ป้ายังถามแม่แกนะ ว่า แม่นี่เงินแม่หรือเปล่า แกบอกว่า ไม่รู้ ไม่ใช่ของแก ดูซิเพราะมันเป็นอย่างงี้ถึงให้เงินแกไม่ได้ ให้ติด กระเป๋า อาทิตย์ละ 100 บาทเท่านั้น หมดก็เติมให้ ไม่หมดก็เอาของเก่าติดไว้ อย่างนั้นแหละ”

Page 188 (1) “ไม่ได้เลย เพราะว่าแกหลงแล้ว แบงค์ร้อยรุ่นเก่าๆ น่ะ แกว่าของแก ถ้ารุ่นใหม่ แกว่า ไม่ใช่ของแก ยังไงก็ไม่ใช่ แล้วมาด่าป้า ว่าป้าเอาแบงค์ปลอม ไปให้แก...มีอีกแย่กว่านี้ แกไปเดินไปซื้อน้ำ เนี่ยหัวมุมถัดบ้านราเนี่ย ไงไม่รู้สิบบาท แกให้แบงค์พัน แล้วก็เดิน กลับมาเฉย ไม่เอาตังค์ทอน คนขายดีที่รู้จักกันดี วิ่งมาหาแกแล้วก็ให้เงินทอน แกยังบอก ว่า...ไม่เอา...ไม่เอา ฉันอย่างจ่าย ไม่ต้องให้ฉันหรอก เอาไปเหอะ เอาไปเหอะ แกคง คิดว่าคนขายไม่คิดเงินจะให้กินฟรีไง (หัวเราะ) จนแล้วจนรอด พูดกันไม่เข้าใจ คนขาย ต้องเอาเงินทอนมาทอนกับป้า ดีแค่ไหนที่คนขายกับบ้านนี้สนิทกันดี ไม่งั้ก็ต้องเสียเงินค่า โค๊กไปพันนึง (หัวเราะ) ดูดิ แบงค์พันก็บอกว่าแบงค์สิบ ป้าละห่วงจริง ๆ ถึงให้ใช้แต่แบงค์ ย่อยไง แบงค์ใหญ่ไม่ให้ถือเลยตอนนี้”

Page 188 (2) “ไม่ว่าหรอก ใครจะว่าฉันใจร้ายกับพ่อ แต่ถ้ามาเห็นจะรู้ว่าฉันดูแลแกดีที่สุดแล้ว พวกที่ อยู่กรุงเทพ ก็ชอบหาว่าฉันแอบกินเงินพ่อ มันไม่จริง เงินแกก็อยู่ที่ธนาคารดิ ใครจะไปขุ่ง ไปถอนของแกได้ล่ะ นอกจากแกคนเดียว เงินนี้ฉันให้ต่างหากของฉันเอง ให้พ่อ พวกเขา ไม่รู้และก็ไม่เข้าใจ แล้วมีนะ พ่อเองก็ยังไปบอกกับพวกเขาว่า เนี่ย พ่อไม่มีเงินอีน้อยมัน ไม่ให้เงินกูเลย ก็แกหลง แกลืมไปแล้วว่าเนี่ยก็เพิ่งให้ และมันยังอยู่ในกระเป๋าแกเลย แกใกล้..ใกล้ หลงเต็มที่แล้ว นี่ยังดีน่ะ แต่ก็ไม่รู้ว่า จะเกิดอะไรขึ้นถ้าแกแบบหลงเต็มที่ สงสัยจะทะเลาะกันทุกวันแน่ๆ”

Page 189 “แกไม่มีอะไรต้องซื้อ ก็พี่ซื้อให้แกหมดทุกอย่าง ส่วนตัวแกไม่ได้ใช้หรอกเงินน่ะ ที่ติด กระเป๋าก็หมดไปกับเด็ก ๆ พวกนี้ทั้งนั้น รถขายไอติมมา ก็ตะโกนแล้ว มา มา มา เก่งเลยล่ะ เรื่องซื้อของเนี่ย หลานมีกี่คนก็ให้รายคน บางทีลูกหลานบ้านอื่น ก็ยังได้ เดี๋ยว ๆ ชาลาเปา มาก็เรียกน้ำแข็งใสมาก็เรียก เสาร์อาทิตย์ทียายแกก็หมดตัวที ก็ไม่ว่านะ ความสุขของแก”

Page 190 (1) “เขาไม่ได้ให้กันทุกเดือนหรอก ปกติโน่น พอลูก ๆ หลาน ๆ จากกรุงเทพมาเยี่ยมที ตอน ปีใหม่ สงกรานต์ เขาก็ให้กันแบบเป็นของขวัญน่ะ 500 บ้าง 1000 บ้าง แบบนี้ ไม่กำหนด”

Page 190 (2) “มันยากนะถ้าจะให้แม่เขาทุกเดือน ไอ้เราก็ไม่ได้มีเงินเยอะ อย่างลงกะหล่ำที ขายไป ได้เงินบ้างก็ให้แม่เขาบ้าง เรามันไม่ใช่พวกข้าราชการที่จะมีเงินเดือนประจำ ถ้ามี ก็ให้ได้ ไอ้รายเดือนน่ะ”

Page 190 (3) “โอ้ย..ไม่ได้อยากได้หรอกเงินทองน่ะ พวกมันโน่นอยากได้ ไม่ใช่ผม เอาทำมาก็ใช้กันไป กี่เขาหากันนี่ บางทีมันก็ยังให้ แต่ก็คืนไป เพราะไอ้เราก็ไม่ได้อยากได้ และก็ไม่รู้ว่าจะเอา ไปซื้ออะไร แค่ถึงเวลากินซื้อข้าวมาให้กิน นั่งกินด้วยกัน ก็มีความสุขแล้ว เนี่ยต้องการเท่านี้..ปีใหม่บางปีก็มากัน ซื้อโน่น ซื้อนี่พะเนิน แล้วก็ให้เงิน ไอ้เราก็น้ำตาไหล (หัวเราะ)”

Page 191 (1) “ป้าก็ไม่แน่ใจนะ ว่าขายจะรู้หรือเปล่าว่าตัวเองมีเงินเดือน อาจจะไม่รู้ก็ได้ เพราะว่า ลูกชายเขาเป็นคนเก็บ ป้าก็ไม่รู้นะจินตนาการไม่ออกว่าเงินหายไปไหน จ่ายไปค่าอะไร แต่ทีแน่ ๆ ไม่ได้จ่ายให้ขายนี่ รู้ไหมว่าเงินเนี่ยไม่น้อยนะ 300 อาจจะน้อย แต่ที่นี่น่ะ สามารถใช้ได้บางที 2-3 อาทิตย์โน่น แหม คนแก่วัน ๆ จะกินอะไรนักหนา บางทีเงิน 300 อาจทำให้ขายเขาอิ่มและมีความสุขได้ทั้งเดือนเลยนะ”

Page 191 (2) “บอกตรงๆ นะ บางทีเงินแม่เนี่ยมันมาตอนที่เรากำลังมีปัญหาต้องการเงินใช่ไหมล่ะ อย่าง บางทีสิ้นเดือนค่าไฟมา ค่าน้ำมา อะไรอย่างเงี้ย เรากำลังไม่มี ก็เอา..บอกแม่..ยืมหน่อยนะ ขอจ่ายค่าไฟ ค่าแก๊สให้ลูกๆ หลานๆ ก่อน แต่บอกในใจนะ(หัวเราะ) ไม่ได้บอกแม่หรอก บอกไปแกก็ไม่รู้เรื่อง”

Page 191 (3) “บางทีก็ยืมแกเหมือนกัน ค่าเทอมหลาน ค่าหนังสือ ก็บอกแกนะ แกก็ให้ แกไม่ว่า เพราะ แกก็ไม่ได้ลำบากอะไร บอกว่ายืม แต่ก็ไม่ได้คืนแกสักที”

Page 192 (1) “แม่ไม่ได้..ได้ที่ไหนล่ะ ฉันก็ไม่รู้เหมือนกัน ไปหากำนัน ผู้ใหญ่ไม่รู้กี่ครั้ง ทุกวันนี้ ก็ยัง ไม่เห็นได้ กำนันก็บอกว่าส่งเรื่องไปนานแล้ว เขาก็บอกไปเรื่อย ปีนี้ได้ ปีหน้าได้ อีก 2 ปีได้ ไม่รู้เหมือนกันว่าจะตายก่อนได้เงินคนแก่หรือเปล่า ฉันก็ไม่รู้จะพูดยังไงแล้ว เลิกพูด เลิกตาม มานานแล้ว ถ้าเขาไม่ให้ ก็ไม่เป็นไร แม่คนเดียว ฉันดูแลได้ ดูแลอย่างดีด้วย”

Page 192 (2) “ไม่อ่ะ ไม่มีทางที่จะได้เงินนี้หรอก ถ้าไม่ใช่ญาติหรือนามสกุลเดียวกันกับพวกเขา ไปดูได้ ไปเช็ครายหัวได้เลยว่าใครในอำเภอนี้บ้างที่ได้เงินนี้ ส่วนใหญ่ก็พวกนามสกุลเดียวกันกับ กำนัน พวกผู้ใหญ่บ้านทั้งนั้น บางทีนะ พ่อตา แม่ยาย ที่อยู่คนละอำเภอ ยังมาเอาเงิน คนแก่จากที่นี่เลย ก็แค่ย้ายชื่อมาใส่ในทะเบียนบ้านและก็เอาเงินของหมู่บ้านนี้...ไปดูได้ ลองไปตรวจสอบชิ”

Page 192 (3) “ป้าได้ แต่แม่ป้าเขาไม่ได้ (แม่อายุ 93 ปี แต่ป้าที่เป็นลูกสาวอายุ 64 ปี) ก็แม่ไม่ได้ทำอะไร ทุกวันอยู่แต่บ้าน แต่ป้าเป็น อสม. ทำมาตั้งแต่ก่อนจะ 60 ตอนนี้ก็ยังทำ แล้วทำไมป้า จะไม่มีสิทธิ์ได้ล่ะ เพราะป้าทำให้ส่วนรวมนะ...ก็ไม่เห็นมีใครว่าอะไรนี่ ตอนนี้ป้าก็ 64 ก็คน แก่เหมือนกัน ทำไมป้าไม่มีสิทธิ์เหรอ”

Page 193 “ถามแล้ว ไปถามด้วยตัวเองเลย แต่ก็ไม่มีอะไรเกิดขึ้น เมื่อไม่นานเท่าไหร่หรอก เขาก็มา กันมาดูพ่อ แล้วก็บอกว่าต้องรอนะ รอจนกว่าคนเฒ่าอีกคนนึงตายซะก่อน พ่อถึงจะย้าย เงินจากคนนั้นมาให้พ่อ”

Page 194 (1) “แบ่งไปหมดแล้ว ไม่อยากให้มันมีปัญหาเหมือนอย่างในหนัง แบบพอพ่อแม่ตาย ลูก ๆ ก็ทะเลาะกันแย่งสมบัติ ไม่เอาอ่ะ ไม่อยากให้มีเรื่องแบบนี้ในครอบครัว”

Page 194 (2) “ให้พวกเขาไปหมดแล้ว ไม่ได้อยากได้อะไรแล้ว จะเอาไปทำไม ปลงแบบนี้มาตั้งนานแล้ว แก่จะตายแล้ว จะตายวันตายพรุ่งก็ยังไม่รู้ พอแล้ว ไม่อยากได้อะไรแล้ว ตายไปก็เอาไป ไม่ได้”

Page 195 "โอนให้หมดแล้ว ตั้งนานแล้ว 20 กว่าปีได้มั้ง ให้ทุกคน...พอเขาแต่งงานมีลูกก็ต้องให้เขา ไม่งั้นพ่อตาแม่ยายเขาก็จะไม่พอใจ จะมาดูถูกลูกเรา ถ้าเราขังถืออยู่ พวกลูกเขย ลูกสะใภ้ อาจไม่พอใจ จะมาคิดนะสิว่าลูกเราทำงานให้แต่เรา ไม่ได้ให้ครอบครัวเขาเลย เลยตัด ปัญหาไป แบ่งสมบัติให้ลูก ๆ ไปซะจะได้สิ้นเรื่อง ให้เท่ากันทุกคน ตอนนี้เขาก็มีที่ไว้ ทำมาหากินอะไรก็เรื่องของเขา เว้นแต่ (ป้า) บ้านนี้ของเขา ให้มันไป เพราะมันดูแล มาตลอด ไม่ให้มันได้ไง แต่งก็ไม่ได้แต่ง มันได้มากกว่าคนนะ แต่ขออย่างเดียวให้มัน ดูแลเราดี ๆ อย่างนี้จนตายละกัน"

Page 196 (1) "ผมก็มีครบแล้ว พอแล้ว แต่ไม่มากหรอก ไม่เหมือนคนอื่น แต่ก็สบายดีและผมก็มี ความสุข ไม่อยากจะไปหาอะไรอีกแล้ว ไม่อยากแล้ว"

Page 196 (2) "เงินทองก็ของนอกกาย ตายไปก็เอาไปไม่ได้ อย่าคิดมาก จริง ๆ ไม่มีเงินก็อยู่ได้ ลำบาก หน่อย แต่ก็ไม่ถึงกับตาย จริงวันนึง ๆ ก็ไม่ได้ใช้สักบาท นาน ๆ จะใช้สักที... ส่วนใหญ่ ลูกๆ เขาก็ซื้อมาให้กิน นี่ดีนะที่ไม่รวย แต่มีลูกเลี้ยง"

Page 197 "อยู่มาได้ขนาดนี้ก็พอแล้ว ไม่เอาอะไรอีกแล้ว แค่มีบ้านอยู่ มีข้าวกินทุกมื้อ ก็พอแล้ว ก็มี หมดแล้วทุกอย่าง"

APPENDIX C

CURRICULUM VITAE

Kanvee Viwatpanich, was born on 14th of March 1974 in Nakhon Sawan province, in the northern part of Thailand. He received his Bachelor's of Arts degree in Sociology and Anthropology from Faculty of Social Sciences, Kasetsart University, Bangkok in 1994. He also obtained Master's of Arts degree in Medical Anthropology, Institute of Language and Culture for Rural Development, Mahidol University, Nakhon Pathom in 1998.

His working experience started as researcher in The Institute of Thai Traditional Medicine, Ministry of Public Health (1998-1999), lecturer in Department of Sociology and Anthropology, Mahasarakham University, (2000-2001), and moved to work in Department of Community and Family Medicine, Faculty of Medicine, Thammasat University in 2002. By the year 2004, qualifying the Ph.D. scholarship from Faculty of Medicine, Thammasat University for Doctoral study in Department of Anthropology, University of Vienna and received Doctor of Natural Sciences in year 2008.

Currently, he is a lecture in the Department of Community and Family Medicine, Faculty of Medicine, Thammasat University. His research, teaching, community health development activities are emphasizing on how to integrate medical anthropological perspective into medical sciences for health promotion and preventive medicine to medical and dental students, as well as the graduate students.

I know I will die soon…
I'm not afraid to die…
But I'm afraid to die alone…

(Female nonagenarian, 18 September 2006)