COMMUNITY-BASED INTERVENTION TO IMPROVE HYPERTENSION MANAGEMENT IN THAILAND

SAKUNTALA ANURUANG

A thesis in fulfilment of the requirements for the degree of

Doctor of Philosophy

Centre for Cardiovascular and Chronic Care

Faculty of Health

University OF Technology Sydney

July 2015

CERTIFICATE OF ORIGINAL AUTHORSHIP

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged in the text.

I also certify that the thesis has been written by me. Any help I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of student:

Production Note:
Signature removed prior to publication.

Date:

8 July 2015

ACKNOWLEDGEMENTS

This thesis represents not only my PhD work; it is a milestone in more than three years of learning and growing at the University of Technology, Sydney. Foremost, I am deeply thankful to my principal supervisor, Professor Patricia Mary Davidson for continuous support me in every moment during these past three years. In 2011, the first time I met Professor Patricia Mary Davidson, I felt the power encouragement from her. Thank you for all the opportunities that she always gives me. She is an excellent supervisor who coaches, cares, and empowers. I would never have been able to finish my PhD work without her guidance.

I would like to thank my co-supervisors, Dr Louise Hickman and Professor Debra Jackson for all their support. I would also like to thank Dr Michelle DiGiacomo as my last co-supervisor for supporting and helping me along with the qualitative study. My special thanks to Dr Phillip Newton, Dr Sungwon Chang, and all the staff Centre for Cardiovascular and Chronic Care. I would also like to thank Dr Terry Royce, Professor Tony Moon, Priya Nair, Jane Van Balen, Graduate Research School and the UTS library for supporting and conducting the useful sessions to support my PhD journey. Thanks to Dr Chakra Budathoki and Ajarn Thitipong Tankumpuan for their supervision of statistical analysis. In addition, I would like to special thank my master degree's supervisor Associate Professor Siriorn Sindhu for all previous valuable advice.

I am also thankful to the study participants, the Directors, and staffs of Huatale Primary Care Health Centre for their great support and cooperation in conducting the data collection.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

Hypertension is a common and burdensome condition among older people in Thailand. Extrapolating models from Western society is fraught unless they are able to be tailored and targeted to the host society. This thesis has appraised evidence-based strategies for self-management of hypertension and sought to develop and evaluate an intervention appropriate for rural, community dwelling older individuals in Thailand. Findings from appraisal of the evidence and integrative review identified shared decision-making and mutual goal setting as elements of effective interventions for improving health behaviours and outcomes.

In order to ensure a reliable, valid and culturally appropriate measurement for hypertension management in Thailand, the Hill-Bone Compliance to High Blood Pressure Scale, was translated and culturally adapted. The standardized Cronbach's alpha of all items was 0.64, 0.61 for reduced sodium intake subscale, 0.5 for appointment keeping subscale and 0.69 for medication taking subscale. Pearson's correlation coefficient demonstrated inter-item correlation values ranged from -0.14 to 0.58. The Thai Hill-Bone HBP Compliance scores were positively correlated with level of systolic and diastolic blood pressure.

A sequential explanatory mixed method design, embedding a quasi-experimental with longitudinal study followed by focus group interviews was undertaken. A four week, theoretically derived, community-based intervention program was implemented to improve hypertension management. Adherence to high blood pressure therapy was assessed using the Thai Hill-Bone HBP Compliance Scale, and health related quality of life using the Thai SF-36v1. Participants were 156 (68.6% female). The mean age of participants was 70 years (SD 6.3).

The outcomes demonstrated a statistically significant difference between the groups in systolic blood pressure at all 4 time points , and diastolic blood pressure at three time points (post-intervention, 3-month, 6-month follow-up), and waist circumference at 3-month follow-up. Adherence of high blood pressure therapy showed significant differences between groups in 3-month and 6-month follow-up measurement for sum score, salt intake and appointment keeping subscale. The results in health related quality of life demonstrated statistically significant differences between the groups at all 4 time points in the physical functioning domain.

Conclusion: This study has summarised the burden of hypertension in Thailand and systematically developed a tailored and targeted method of promoting self-management of hypertension in a model of intervention appropriate to older Thai individuals living in a rural setting. This model of intervention requires further evaluation in a multi-centred randomised controlled trial to demonstrate efficacy and effectiveness.

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

This introductory chapter provides a background and introduction to the thesis that reports the systematic development of a theoretically derived intervention to meet the needs of older Thai individuals with hypertension. This chapter will provide a description of global aging and the burden of aging with a particular focus on Thailand. An outline of the thesis is also provided.

1.2 BACKGROUND

1.2.1 Older Population

Over the past few decades, the structure of population has been changing to a society of aging, largely through to the decrease of communicable diseases and improved health care services. The number of aging population has rapidly increased in several countries around the world. The United National (UN) organisation reported that the proportion of people aged 60 and over is expected to more than double, which is from 841 million in 2007 to more than 2 billion in 2050 (United Nations 2013). As results of declining fertility rates and mortality, the World Health Organisation (WHO) documents rising life expectancy at aged 60 from 1990 to 2012 in both men and women. Moreover, globally individuals are living longer (World Health Organisation 2014).

In parallel with global trends, life expectancies at birth of the Thai population increased from 69 years old in 1990 to 75 years old in 2012. This is higher than average life expectancies at birth of the population around the world (64 years old in 1990 and 70 years old in 2012). Moreover, population ageing in Thailand is the highest in the South-East Asia Region (59 years old in 1990 and 67 years old in 2012) (World Health Organisation 2014). On the other hand, mortality rate trends is declining (World Health Organization Country Office for Thailand 2011). In addition, a survey of the Thai population the fertility rate has been rapidly and continuously decreasing over the last two decades (National Statistical Office 2005). From 1985-86 to 2005-06, the Thai birth rate decreased from 23.9 to 10.9 per 1000 population respectively. Consequently, the percentage of elderly in the Thailand has projected from 9.2% in 1960 to 16% in 2020 (World Health Organization Country Office for Thailand 2011).

1.2.2 The Magnitude of the Problem

Cardiovascular disease is responsible for high disease burden in older people. The highest cause of death in Thailand is non-communicable diseases including cardiovascular disease and cancer (National Statistical Office 2005).

Hypertension is one of the most significant cardiovascular health problems faced by older people in Thailand. The National Health Examination Survey III (2004) found that more than half of older people (51.1%) were hypertensive (Porapakkham, Pattaraarchachai & Aekplakorn 2008). In addition, the prevalence of pre-hypertension among aged more than 15 years is 32.8 percent (Aekplakorn et al. 2008). Unfortunately, whereas the hypertension and pre-hypertension prevalence rate in Thailand are rapidly increasing but the proportion of unawareness for hypertension is 56.1 percent and understanding undergoing treatment for the control of blood pressure is only 12.4 percent (Porapakkham, Pattaraarchachai &

Aekplakorn 2008). These data lead to increase stroke prevalence in the older people in Thailand.

In addition, Thailand has a higher mortality and morbidity rate from stroke than from coronary heart disease (CHD), which is the opposite to Western countries (Ueshima 2007 cited in Ueshima et al. 2008). A leading cause of stroke is the cause following uncontrolled hypertension. The prevalence of stroke increases exponentially with age. This prevalence becomes one of the risk factors in Thailand. The Thai Epidemiologic Stroke (TES) study found that the prevalence rates of stroke increases steadily with age from 1.10 percent in participants aged 45 to 54 years to 3.14 percent in participants aged 75 to 84 years. Crude prevalence rate among adults aged more than 65 years is 2.70 percent (95% CI, 2.28 to 3.11)(Hanchaiphiboolkul et al. 2011). Also, stroke is the leading cause of death, causing 10.7% of deaths (about 48,000) in 2005 and 14.18% (about 73,429) in 2010 (Porapakkham et al. 2010). Furthermore, stroke was the leading cause of death at ages 50-74, causing 12.3 percent of deaths in both men and women; and at the ages 75 years and over, causing 15.1 percent in men and 19.4 in women in 2005 (Porapakkham et al. 2010).

1.2.3 Responses to Changing Population Structure

Despite long life expectancy, the prevalence of chronic diseases and the need of care for functional disability increases with age. According to the increase in the size of older populations around the world, their cognitive and physical disabilities are important concerns for health organisation and government. The Eleventh Thailand Economic and Social Development Plan covering the period from 2012 to 2016 addresses the impact of the increase in the older population which can increase the cost of caring older people at both the family level and national level (National Economic and Social Development Board: NESDB

2012). Moreover, one cross sectional study to examine the problems and needs of 795 older people who live in remote areas in Northern Thailand revealed that almost a fourth of the older population reported that multiple health problems, limited functional capability, decreased cognitive ability and increased rates of depression. Moreover, elderly in the study reported the need for financial and psychological support (Weiangkham et al. 2014). Similarly, the 2004 National Health Examination survey in Thai older people demonstrated that 1 in 20 older people needed support for their functional activities (Srithamrongsawat et al. 2009).

Furthermore, the Royal Thai Government has sponsored several campaigns for older people, focussing on income security, accommodation security, health service access, health promotion, and other support services (National Economic and Social Development Board: NESDB 2012).

As the economy and social structure in Thailand evolves, there is an increasing need to identify models of care that are appropriate to the social, cultural and funding models of Thailand. Extrapolating models from Western society is fraught unless they are able to be tailored and targeted to the host society. This thesis has appraised evidence-based strategies for self-management of hypertension, sought to develop and evaluate an intervention appropriate for rural, community dwelling older individuals in Thailand.

1.3 SIGNIFICANCE AND INNOVATION OF THE STUDY

Stroke is a common cause of death and disability in older adult worldwide (Feigin & Krishnamurthi 2014). Hypertension causes many complications with high morbidity and increases health care costs such as stroke, chronic heart failure, renal insufficiency and myocardial infarction (AIHW 2005). The most serious consequences of hypertension are

stroke. The 38.4 percent of patients with hypertension have stroke as morbidity (Polpinit et al. 1992). However, hypertension can have an adverse impact on both an older person's life and family such as physical, emotional, psychological, and social generally through end organ disease. Frequently stroke can lead to disability, decrease quality of life, social isolation, and financial burden (Dorsey & Vaca 1998; Larson et al. 2005; Polpinit et al. 1992; Tengs et al. 2001). Importantly, hypertension with adverse events places a burden on the older person's life and family but also impacts on socioeconomic factors at the national level with an impact both on direct costs (health care utilization, professional utilization, home health care and financial support) and indirect costs (labour shortage, lost future productivity) (Mozaffarian et al. 2015). In spite of the discussion and debate on hypertension, there are limited studies particularly within the context of resource poor conditions, such as rural Thailand (Seeberg et al. 2014).

1.3.1 Definition of Terms

This research study uses several terms that are defined as follows:

Community-based intervention

Community-based intervention can be defined as a self-care management promotion program based on Bandura's the Social Cognitive Theory of Self-Regulation. This intervention program aims to empower older people who has hypertension disease to develop their self-regulation, improve the adherence to high blood pressure therapy and improve hypertension control behaviours in terms of 1) reduced salt intake; 2) medical doctor appointment keeping; and 3) medical taking. The program containing three important aspects: 1) Providing culturally sensitive information; 2) Including approaches of shared decision-making and mutual goal setting; and 3) Flexibility within the intervention to adapt to participant needs, is developed by

the researcher, considering cultural appropriateness. The program is the active interaction between the researcher and older people with hypertension. The activities include sharing and discussing experiences of the participations in a group activity in accordance with three components of self-regulation: 1) self-observation; 2) judgement process; and 3) self-reaction; additionally, and also include individual discussing and home visiting. Self-management package including 1 bag, 1 measuring tape, 1 medication box, 1 health status recording diary and 1 pen is provided for all the participants. Consequently, the anticipated outcome of this intervention program is to control and maintain health status (blood pressure level and waist circumference), hypertension control behaviour and quality of life.

Routine Care

Routine care can be defined as the health care services for older people with hypertension who receive services at the Huatale primary health care centre, Nakhonratchasima Province. The services consist of 1) health status check-up (blood pressure level, weight measurement, waist circumference) by registered nurses; 2) medical treatment by medical doctors; 3) health education by registered nurses; and 4) home visit and individual consultation at home by nurse practitioners.

Hypertension

Hypertension can be defined as blood pressure level, classified by the average of two properly measured, readings with a five-minute interval and used the average blood pressure reading recorded. A systolic blood pressure of 140 mmHg and higher or diastolic blood pressure of 90 mmHg and higher is considered hypertension.

Hypertension management

Hypertension management can be defined as the medical treatment to control blood pressure which is below 140/90 mmHg. The treatment also includes the effective therapy to control blood pressure level which reveals in both lifestyle modifications and pharmacologic treatment. The lifestyle modification to control blood pressure level includes medication taking behaviour, reduced sodium intake, medical doctor appointment, and physical activities. Whereas, pharmacologic treatment is given by the doctor to reflect patient's health status.

Older people

Older people can be defined as the chronological age of 60 years and over in Thailand.

Blood pressure level

Blood pressure level refers to the values measured using the OMRON SEM-2 automatic blood pressure monitor which is calibrated with a mercury sphygmomanometer every regular year. The value is determined by two consecutive blood pressure readings with a five-minute interval and uses the average BP reading recorded.

Waist circumference

Waist circumference can be defined as an indirect measure visceral abdominal adipose tissue (abdominal fat) which is related to increased risk of stroke events. The standard value of waist circumference to classify the normal risk of cardiovascular is <94 cm for men and <80 cm for women. This is measured by using the standard measuring tape measure at umbilicus level.

Adherence to high blood pressure therapy

Adherence to high blood pressure therapy can be defined as the patients' capacity to understand and monitor treatment recommendations including reducing salt intake, medication adherence, adhering with appointments for review and monitoring. In this study, adherence to high blood pressure therapy s evaluated using the Hill-Bone Compliance to High Blood Pressure Therapy Scale developed by Kim et al. (2000). The scale consists of 14 items which assess adherence in three important behaviours as followed: 1) medication taking; 2) reduced sodium intake; and 3) appointment keeping. The higher the score represent the less adherence to high blood pressure therapy.

Health related quality of life

Health related quality of life refers to perceive of quality of life related health. The health related quality of life is measured using the Thai version of SF-36 health survey (revise 2005) questionnaire revised by Ekwatthanakun & Intarakamhang (2010). The questionnaire contains 39 items in eight domains including the reported health transition item. The higher score is shown, the higher quality of life will contribute.

1.3.2 Strategies for Promoting Self-Management to Improve Health Status

This study began by clarifying the issues and problems encountered in older people with hypertension in Thailand, and by reviewing the literature on intervention programs in individuals with chronic illness. These two sources were used to determine a conceptual framework for the implementation of a targeted and tailored community based intervention in order to improve self-management for older people with hypertension.

1.3.3 Expected Outcomes to Improve Self-Management in Older People

Several outcome measures were identified as indicators of improved self-management to decrease the burden of hypertension. These included: blood pressure, waist circumference, adherence with treatment recommendations and quality of life.

Blood Pressure Level

In older people and the middle-aged, isolated systolic hypertension is independently associated with an increased risk of stroke by four times of normotensive women and three times of normotensive men (Nielsen et al. 1997). Patients with SBP hypertension have more than 50 percent greater risk of recurrence than one with a normotensive. Systolic pressure higher than 160 mmHg is increasing to be the highest death rate in older people and correlates strongly with pulse pressure (R = 0.82)(Glynn et al. 2000). In addition, systolic blood pressure and pulse pressure are strong predictors of both cardiovascular risk and mortality in older people (Giang et al. 2013; Glynn et al. 2000; Mancia et al. 2013). A meta-analysis study demonstrated that participants allocated to the group based training for self-management strategies reduced 5 mmHg (95% CI 1 to 10; Z = 2.53; P = 0.01) for systolic blood pressure and 3 mmHg (95% CI -6 to 0; Z = 0.38; P = 0.08) for diastolic blood pressure at four to six months measurement (Deakin et al. 2009). Another strength of evidence report study also revealed a significant mean net reduction in SBP (ranging from 3.4 – 8.9 mmHg) or DBP (ranging from 1.9 – 4.4 mmHg) in the intervention group at 12 months follow-up (Uhlig et al. 2012).

Waist Circumference

One previous study investigated the independent association of waist circumference and hypertension among 843 African-American women participants, in South Carolina, United States in 2007-2009. The study found that women who had a waist circumference equal to or

more than 80 cm are at an increased risk of hypertension (odds ratio = 2.93 (80-88 cm) and odds ratio = 7.17 (more than 88 cm), p < .002)(Warren et al. 2012). The standard value of waist circumference to classify the normal risk of cardiovascular for South Asians, including the Thai population, recommends <90 cm for men and <80 cm for women (Consultation WHO Expert 2011). Moreover, the decrease of waist circumference was associated with a lowered level of diastolic blood pressure (r = 0.32; P < 0.01) (Han et al. 1997).

Adherence with High Blood Pressure Therapy

The previous studies revealed the post-test measurement score of the Hill-Bone Compliance to High Blood Pressure Score was lower score than pre-test measurement. In addition, the scores showed no significant difference between pre-test and post-test measurement (Bennett et al. 2012; Dennison et al. 2007; Parker et al. 2014).

Health Related Quality of Life

Quality of life (QOL) is a broad multidimensional concept including the subjective evaluations of both positive and negative aspects of life. A study of older Koreans in community revealed that several factors such as the number of chronic disease, perceive of health status, health promotion behaviours are statistically significant predictor quality of life in older people (Lee, Ko & Lee 2006). The concept of health-related quality of life (HRQOL) encompasses aspects of overall quality of life that can be clearly shown to affect health, either physical or mental health (Stranges & Donahue 2015). This is important to consider in the context of chronic disease where both the condition and treatment recommendations can impact adversely on the individual's physical, social and psychological functioning.

This introduction has demonstrated both the burden of hypertension globally with an emphasis on Thailand, the importance of managing risk factors and adhering with treatment recommendations is important in improving health outcomes. Addressing socio-cultural aspects within the context of managing chronic conditions.

1.4 RESEARCH STUDY AIMS

The aims of this study were to:

Develop a targeted and tailored community based intervention to improve self-management for older people in Thailand with hypertension.

Test the efficacy of a community based intervention to improve self-management of hypertension, specifically de creasing blood pressure; waist circumference; sodium intake; and promoting appointment keeping; and improving medication adherence.

1.5 RESEARCH QUESTIONS

To guide the investigation and subsequent data analysis, two main questions are addressed:

What are the core elements of a community based intervention for hypertension in Thailand?

What is the impact of a community-based intervention improve self-management for hypertension, specifically decrease blood pressure; decrease waist circumference; decrease sodium intake; promote appointment keeping; improve medication adherence and improve quality of life among older people with hypertension?

1.6 HYPOTHESES

The older people with hypertension who involve in the community-based intervention program will have higher self-management score for hypertension, specifically lower blood pressure; more decrease waist circumference; more decrease sodium intake; more improve appointment keeping; more improve medication adherence and higher score of quality of life than before involving in the program and they who do not involve in the program.

1.7 STRUCTURE OF THE THESIS

This thesis is presented as a hybrid model, including both published and unpublished findings. Published and submitted manuscripts are presented. References are provided at the end of each chapter for the ease of the reader.

Chapter one has described the background and rationale of the study. The increased prevalence of hypertension among older people and the cardiovascular consequence events of hypertension are also demonstrated. Importantly, the overall background is provided including the significance of the study, the gap in our knowledge of managing hypertension. In addition, the research objectives and questions are defined. Following this, the structure of the thesis is presented.

Chapter two presents the literature review, published in *Journal of Clinical Nursing*. This provides an integrative review of the literature to promote self-care or self-management for older people with chronic disease in Thailand, and identifies successful elements of culturally appropriate and effective community-based intervention. This integrative review showed three important elements of successful intervention included: providing culturally sensitive

and appropriate information; sharing decision-making and mutual goal setting; and being flexible in developing and implementing intervention programs to adapt to participants' need.

Chapter three presents the conceptual framework underpinning the community-based intervention to improve hypertension management in Thailand study. In addition, this chapter provides a justification for self-regulation to enhance the effectiveness of the community-based program for older people in Thailand.

Chapter four provides the methodological approach; this chapter addresses the key considerations for this study. This chapter also provides a description of the population, research setting, sample, ethical considerations, intervention procedure, focus group discussion process and data analysis. The process of sample recruitment has been accepted for publication in *Nurse Researcher.*

Chapter five presents the process of a translation and validation of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale, which is the instrument to assess compliance to high blood pressure therapy in hypertensive patients. This has been submitted to the *Nurse Researcher.* This instrument, developed in the United States and tested with African-American hypertensive patients, is comprised of 14 items measured in three key behaviours to improved hypertension management: including sodium intake, doctor appointment keeping and medication taking.

Chapter six presents the results of the study including participants' demographics; health status; adherence to high blood pressure therapy; and health related quality of life among 156

older people with hypertension. In addition, the comparative of the outcomes between the intervention group and the control group over the 6-month period study were reported.

Chapter seven reports the findings of focus group discussion using five-dimensions of access to health care as a guide to analyse the information from participants of the intervention group (Levesque, Harris & Russell 2013). This was undertaken to demonstrate the acceptability of the intervention and provide recommendations for future intervention development.

Chapter eight discusses the conclusions from the study findings. Following this, the strengths and limitations are mentioned, and the implications of the study including clinical setting, nursing education, nursing research study and the policy are provided.

1.8 CHAPTER SUMMARY

This chapter has provided the contextual background for this study including the increasing aging of the global population and Thailand. Globally there is an increased concern of the increasing burden of non-communicable diseases and the impact on society. The burden of hypertension is a critical issue in Thailand, requiring both pharmacological and non-pharmacological approaches. The following chapter provides an integrative review of the literature to promote self-care or self-management for older people with chronic disease in Thailand, and identifies successful elements of culturally appropriate and effective community-based interventions.

1.9 REFERENCES

Aekplakorn, W., Abbott-Klafter, J., Khonputsa, P., Tatsanavivat, P., Chongsuvivatwong, V., Chariyalertsak, S., Sangwatanaroj, S., Tiptaradol, S. & Lim, S.S. 2008, 'Prevalence and management of prehypertension and hypertension by geographic regions of Thailand: the Third National Health Examination Survey, 2004', *Journal of Hypertension*, vol. 26, no. 2, pp. 191-8.

AIHW 2005, *Chronic disease*, Australian Institute of Health and Welfare.

Bennett, G.G., Warner, E.T., Glasgow, R.E., Askew, S., Goldman, J., Ritzwoller, D.P., Emmons, K.M., Rosner, B.A. & Colditz, G.A. 2012, 'Obesity treatment for socioeconomically disadvantaged patients in primary care practice', *Archives of Internal Medicine*, vol. 172, no. 7, pp. 565-74.

Consultation WHO Expert 2011, *Waist circumference and waist-hip ratio*, Geneva.

Deakin, T., McShane, C., Cade, J. & Williams, R. 2009, 'Group based training for self-management strategies in people with type 2 diabetes mellitus (Review)', no 1, Wiley.

Dennison, C.R., Peer, N., Steyn, K., Levitt, N.S. & Hill, M.N. 2007, 'Determinants of hypertension care and control among peri-urban Black South Africans: the HiHi study', *Ethnicity & Disease*, vol. 17, no. 3, pp. 484-91.

Dorsey, M.K. & Vaca, K.J. 1998, 'The stroke patient and assessment of caregiver needs', *Journal of Vascular Nursing*, vol. 16, no. 3, pp. 62-7.

Ekwatthanakun, C. & Intarakamhang, P. 2010, 'Reliability of Thai version of SF-36 questionnaire (revised 2005) for evaluation of quality of life in patients with stroke', *Journal of Thai Rehabilitation Medicine*, vol. 19, no. 2, pp. 63-7.

Feigin, V. & Krishnamurthi, R. 2014, 'Epidemiology of stroke', *Oxford Textbook of Stroke and Cerebrovascular Disease*, p. 1.

Giang, K.W., Björck, L., Novak, M., Lappas, G., Wilhelmsen, L., Torén, K. & Rosengren, A. 2013, 'Stroke and coronary heart disease: predictive power of standard risk factors into old age long-term cumulative risk study among men in Gothenburg, Sweden', *European Heart Journal*.

Glynn, R.J., Chae, C.U., Guralnik, J.M., Taylor, J.O. & Hennekens, C.H. 2000, 'Pulse pressure and mortality in older people', *Archives of Internal Medicine*, vol. 160, no. 18, p. 2765.

Han, T., Richmond, P., Avenell, A. & Lean, M. 1997, 'Waist circumference reduction and cardiovascular benefits during weight loss in women', *International journal of obesity and related metabolic disorders: journal of the International Association for the Study of Obesity*, vol. 21, no. 2, pp. 127-34.

Hanchaiphiboolkul, S., Poungvarin, N., Nidhinandana, S., Suwanwela, N.C., Puthkhao, P., Towanabut, S., Tantirittisak, T., Suwantamee, J. & Samsen, M. 2011, 'Prevalence of Stroke and Stroke Risk Factors in Thailand: Thai Epidemiologic Stroke (TES) Study', *Journal of the Medical Association of Thailand*, vol. 94, no. 4.

Kim, M.T., Hill, M.N., Bone, L.R. & Levine, D.M. 2000, 'Development and Testing of the Hill-Bone Compliance to High Blood Pressure Therapy Scale', *Progress in Cardiovascular Nursing*, vol. 15, no. 3, pp. 90-6.

Larson, J., Franzén-Dahlin, Å., Billing, E., Murray, V. & Wredling, R. 2005, 'Spouse's life situation after partner's stroke event: psychometric testing of a questionnaire', *Journal of Advanced Nursing*, vol. 52, no. 3, pp. 300-6.

Lee, T.W., Ko, I.S. & Lee, K.J. 2006, 'Health promotion behaviors and quality of life among community-dwelling elderly in Korea: A cross-sectional survey', *International Journal of Nursing Studies*, vol. 43, no. 3, pp. 293-300.

Levesque, J.-F., Harris, M.F. & Russell, G. 2013, 'Patient-centred access to health care: conceptualising access at the interface of health systems and populations', *International Journal for Equity in Health*, vol. 12, no. 1, p. 18.

Mancia, G., Fagard, R., Narkiewicz, K., Redon, J., Zanchetti, A., Böhm, M., Christiaens, T., Cifkova, R., De Backer, G., Dominiczak, A., Galderisi, M., Grobbee, D.E., Jaarsma, T., Kirchhof, P., Kjeldsen, S.E., Laurent, S., Manolis, A.J., Nilsson, P.M., Ruilope, L.M. & Schmieder, R.E. 2013, '2013 ESH/ESC Guidelines for the management of arterial hypertension', *Blood Pressure*, vol. 22, no. 4, pp. 193-278.

Mozaffarian, D., Benjamin, E.J., Go, A.S., Arnett, D.K., Blaha, M.J., Cushman, M., de Ferranti, S., Després, J.-P., Fullerton, H.J. & Howard, V.J. 2015, 'Executive Summary: Heart Disease and Stroke Statistics—2015 Update A Report From the American Heart Association', *Circulation*, vol. 131, no. 4, pp. 434-41.

National Economic and Social Development Board: NESDB 2012, *The Eleventh National Economic and Social Development Plan (2012-2016)*, Bangkok, Thailand.

National Statistical Office 2005, *Executive summary, survey of population change project, 2005-2006*, viewed 17/03/2015, <http://web.nso.go.th/en/survey/popchan/data/Executive%20Summary.pdf>.

Nielsen, W.B., Lindenstrøm, E., Vestbo, J. & Jensen, G.B. 1997, 'Is diastolic hypertension an independent risk factor for stroke in the presence of normal systolic blood pressure in the middle-aged and elderly?', *American Journal of Hypertension*, vol. 10, no. 6, pp. 634-9.

Parker, C.P., Cunningham, C.L., Carter, B.L., Vander Weg, M.W., Richardson, K.K. & Rosenthal, G.E. 2014, 'A Mixed-Method Approach to Evaluate a Pharmacist Intervention for Veterans With Hypertension', *The Journal of Clinical Hypertension*, vol. 16, no. 2, pp. 133-40.

Polpinit, A., Ungsununtawiwat, M., Bhuripanyo, K., Bhuripanyo, P., Tatsanavivat, P. & Thrasana, A. 1992, 'The prevalence and risk factors of hypertension in population aged 30-65 years in rural area, amphoe Phon, Khon Kaen', *J Med Assoc Thai*, vol. 75, no. 5, pp. 259-66.

Porapakkham, Y., Pattaraarchachai, J. & Aekplakorn, W. 2008, 'Prevalence, awareness, treatment and control of hypertension and diabetes mellitus among the elderly: the 2004 National Health Examination Survey III, Thailand'.

Porapakkham, Y., Rao, C., Pattaraarchachai, J., Polprasert, W., Vos, T., Adair, T. & Lopez, A.D. 2010, 'Research estimated causes of death in Thailand, 2005: implications for health policy'.

Seeberg, J., Pannarunothai, S., Padmawati, R.S., Trisnantoro, L., Barua, N. & Pandav, C.S. 2014, 'Treatment seeking and health financing in selected poor urban neighbourhoods in India, Indonesia and Thailand', *Social Science & Medicine*, vol. 102, pp. 49-57.

Srithamrongsawat, S., Bundhamcharoen, K., Sasat, S., Odton, P. & Ratkjaroenkhajorn, S. 2009, 'Projection of demand and expenditure for institutional long term care in Thailand', *Nonthaburi Health Insurance System Research Office*.

Stranges, S. & Donahue, R.P. 2015, 'Health-related quality of life and risk of hypertension in the community: prospective results from the Western New York health study', *Journal of Hypertension*, vol. 33, no. 4, pp. 720-6.

Tengs, T.O., Yu, M., Luistro, E. & Bosworth, H.B. 2001, 'Health-Related Quality of Life After Stroke A Comprehensive Review• Editorial Comment: Health-Related Quality Of Life After Stroke: A Comprehensive Review', *Stroke*, vol. 32, no. 4, pp. 964-72.

Ueshima, H., Sekikawa, A., Miura, K., Turin, T.C., Takashima, N., Kita, Y., Watanabe, M., Kadota, A., Okuda, N. & Kadowaki, T. 2008, 'Cardiovascular disease and risk factors in Asia', *Circulation*, vol. 118, no. 25, pp. 2702-9.

Uhlig, K., Balk, E.M., Patel, K., Ip, S., Kitsios, G.D., Obadan, N.O., Haynes, S.M., Stefan, M., Rao, M. & Chang, L.K.W. 2012, 'Self-Measured Blood Pressure Monitoring: Comparative Effectiveness'.

United Nations 2013, 'World Population Ageing 2013', New York, viewed 17/03/2015, <http://www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeing2013.pdf>.

Warren, T.Y., Wilcox, S., Dowda, M. & Baruth, M. 2012, 'Peer Reviewed: Independent Association of Waist Circumference With Hypertension and Diabetes in African American Women, South Carolina, 2007–2009', *Preventing Chronic Disease*, vol. 9.

Weiangkham, D., Kerdmongkol, P., Amnatsatsue, K., Sasat, S. & Steckler, A.B. 2014, 'Problems and Needs of the Elderly in Northern Thailand Remote Area', *Kasetsart Journal (Social Science)*, vol. 35, pp. 516-23.

World Health Organisation 2014, 'World Health Statistics 2014', <http://apps.who.int/iris/bitstream/10665/112738/1/9789240692671_eng.pdf?ua=1>.

World Health Organization Country Office for Thailand 2011, 'WHO country cooperation strategy Thailand 2012-2016', personal communication, New Delhi.

CHAPTER 2: LITERATURE REVIEW (PUBLICATION)

Publication Title: Community-based Interventions to Promote Management for Older People: an Integrative Review

This chapter provides an integrative review in order to identify successful elements of culturally appropriate and effective community-based intervention for older people with hypertension in Thailand. This chapter presents as reproduced the context in *Journal of Clinical Nursing (2013) vol. 23, no. 15-16, pp. 2110-20 and provides* the permission letter to reproduce in the thesis as showed in **Appendix L.**

2.1 INTRODUCTION

In line with global trends, the population of Thailand is ageing rapidly. The ageing of the population challenges models of care for older people and those with chronic illnesses. The percentage of older people has increased from 5 percent in 1960 to 9 percent in 2000, and is projected to reach 18 percent by 2020 (Knodel & Chayovan 2008b). This population shift is placing increasing demands on the health care systems internationally. In emerging economies, such as Thailand this is most pronounced. Common problems among older Thai people include non-communicable diseases such as hypertension, diabetes mellitus, dyslipidaemia, osteoarthritis, cardio-cerebrovascular diseases and tumours (Kespichayawattana & Jitapunkul 2008). Chronic conditions impact adversely on individuals as a consequence of poor mobility; high morbidity and increased health care costs related to stroke, chronic heart failure, renal insufficiency and myocardial infarction and are also the

main factors determining a poor quality of life in older people in Thailand (Assantachai & Maranetra 2003).

A common problem in Thailand is hypertension, and the most serious consequence of hypertension is stroke (Chinwatanakul et al. 2012). Hypertension that does not lead to stroke can also have a detrimental impact both on an older person's life and their family in physical, emotional, psychological and social ways (Khiaocharoen et al. 2012; Panpakdee et al. 2003). However, stroke can lead to disability, decreased quality of life, social isolation and financial burden (Dorsey & Vaca 1998; Khiaocharoen et al. 2012; Larson et al. 2005; Polpinit et al. 1992; Tengs et al. 2001). For the past two decades, self-care or self-management interventions have played a key role in improving the quality of life and quality of care for older people in Thailand, particularly in managing stroke. Developments in interventions for older people require an understanding of effective self-care and self-management programs. The purpose of this review is to describe and evaluate methods and/or models of care for chronic disease self-management in older people living in a community setting in Thailand.

Chronic conditions are the leading cause of death in Thailand (Jitapunkul & Wivatvanit 2008) and cardiovascular disease is an important issue for the older person (Kespichayawattana & Jitapunkul 2008). Hypertension is one of the most significant health problems associated with cardiovascular disease faced by the older person in Thailand. According to the National Health Examination Survey III (2004) of 19,374 individuals aged 60 years and older in Thailand, the prevalence of hypertension (blood pressure higher than 140/90 mmHg.) amongst the older people was 51.1 percent (Porapakkham, Pattaraarchachai & Aekplakorn 2008). In addition, the prevalence of pre-hypertension among people aged more than 15 years was 32.8 percent (Aekplakorn et al. 2008). Hypertension induced stroke was related to health behaviours such as exercise, sodium consumption, stress, and smoking. Unfortunately, although the hypertension and pre-hypertension prevalence rates in Thailand has been rapidly increasing,

just over half (56.1 percent) of the population were unaware of the impact of hypertension, and only 12.4 percent were undergoing treatment for the control of blood pressure (Porapakkham, Pattaraarchachai & Aekplakorn 2008). These data has led to increased stroke prevalence in the older population in Thailand. Moreover, in Thailand in 2005, stroke was the leading cause of death for people aged 50-74 years (Porapakkham et al. 2010).

Thailand has a higher mortality and morbidity from stroke than from coronary heart disease (CHD), whereas the opposite is true in Western countries (Ueshima 2007 cited in Ueshima et al. 2008). Stroke is a common consequence of hypertension, emphasising the need for adequate control. The prevalence of stroke and associated risk factors in Thailand increased steadily with age from 1.10 percent in participants aged 45 to 54 years, to 3.14 percent in participants aged 75 to 84 years. Crude prevalence rates among adults aged more than 65 years was 2.70 percent (95% CI, 2.28 to 3.11) (Hanchaiphiboolkul et al. 2011).

Most Thai people are Buddhist, and therefore believe in the concept of repayment for their parents' benevolence (Choowattanapakorn 1999; Knodel & Chayovan 2008a). Overall, the ratio of the older population being dependent is increasing. In 2005, of every 100 persons of working age, there were sixteen older people requiring assistance with daily living. This ratio is likely to increase to approximately 31.32 persons in 2025 and to approximately 50 persons in 2050 (Opas Pimolvitayakit 2007).

 As chronic illness is common amongst older people (Knodel & Chayovan 2008b), self-care practices of older people are needed to control health status, to prevent possible complications, and to ensure optimal quality of life. This review identifies the key elements of

developing self-care and self- management interventions in older, community dwelling, Thai individuals with chronic conditions.

2.2 METHOD

2.2.1 Research Questions

What are the self-care/management intervention models for older people in community based settings in Thailand?

2.2.2 Design

This study used an integrative review methodology to analyse and synthesize varied primary sources both of experimental and non-experimental research as diverse methodologies and the broadest type of research review methods (Whittemore & Knafl 2005). An integrative review provides a more complex understanding of a phenomenon or problem of concern. This method was used in order to search a broad perspective on self-care and management in older people. An integrative review may also to construct new knowledge and to become a best evidence-based practice.

2.2.3 Search Strategy

Computerized and manual searches were conducted of articles in the English language literature from 1946 to 2012 and supervised by a health librarian. Computerized searches of Academic Search Complete - Combined search with CINAHL, Medline, Health Source Nursing Academic databases were conducted using the following search terms: (SH) Self Care AND (SH) Aged AND (KW) Thailand Limit to 65+, ((KW) Self-Management OR (SH) Self Care) AND (KW) Thailand and Limit to 65+, ((KW) Self-Management OR (SH) Self Care) AND (KW)Thailand and

Limit to 65+, ((KW) self-care OR self manage*) AND ((KW) elder* OR aged* OR geriatric) AND ((KW) Thai*)(with selected Research related limiters).

Primary inclusion criteria for identified articles that describe or evaluate methods of chronic disease self-management in Thailand include (a) intervention study (b) older, elderly, aged; defined as more than 65 years (c) community; (d) Thailand; (e) self-care; (f) self-management; and (g) chronic disease. Exclusion criteria included (a) cancer; (b) mental health; and (c) paediatric (d) acute care (e) non-intervention studies **(Figure 2.1)**.

2.2.4 Classification and Review Process

The included intervention articles were classified and reviewed using a coding frame. The coding frame was developed to record the following critical elements of the studies reviewed: (a) author's last name(s) and year published; (b) the design of study; (c) theoretical framework guiding the study; (d) number of control and intervention participants (no. completed); (e) age of participants, year; (f) setting; (g) duration of intervention; (h) intervention description; (i) control; (j) outcomes measures; and (k) comments/notes.
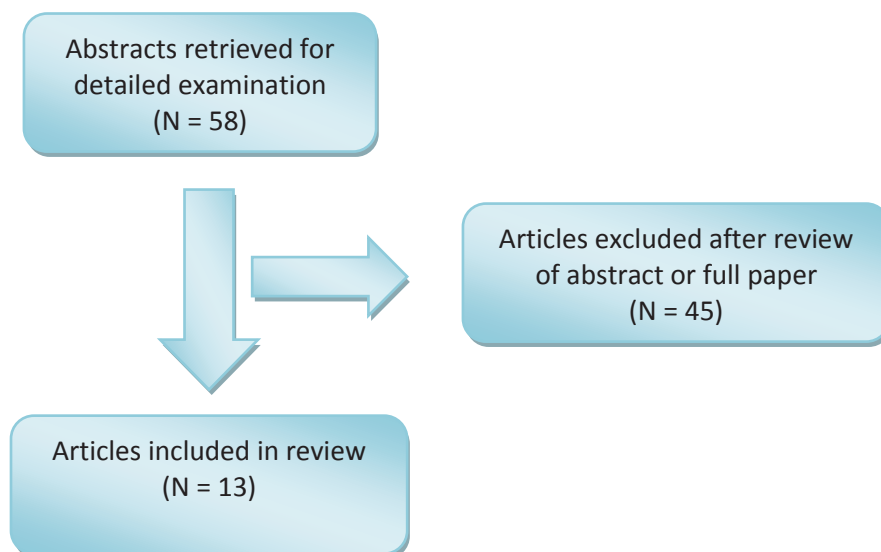
Figure 2.1 Flowchart of trial selection process

2.3 RESULTS

2.3.1 Study Characteristics

Of the 58 articles reviewed, 13 self-care and self-management program intervention studies were identified. Level I and II of research evidence rating scheme used in the Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) were acceptable in this review (Newhouse et al. 2007). Of these, 5 of the reviewed studies were randomized controlled trials (Chanruengvanich et al. 2006; Kulnawan et al. 2011; Rujiwatthanakorn et al. 2011; Wattana et al. 2007; Wongpiriyayothar et al. 2010), 6 were uncontrolled trials using a pre-intervention/post-intervention design (Aree-Ue et al. 2006; Fisher et al. 2012; Kangchai et al. 2002; Kanogsunthornrat et al. 2006; Kittinouvarat, Charoenlar & Aeksiriwaranon 2011; Sindhu, Pholpet & Puttapitukpol 2010), one study a participatory action design (Sukwatjanee et al. 2011), and one was a mixed method design (Partiprajak et al. 2011).

2.3.2 Sample and Setting

Of the 13 selected studies, details and findings are presented in **Table 2.1**. Participants included men and women ranging in age from 28 years to 88 years. Three of the 13 studies reviewed limited aged to 60 years or older (Aree-Ue et al. 2006; Kangchai et al. 2002; Sukwatjanee et al. 2011); five studies did not identify the age of the sample (Fisher et al. 2012; Kanogsunthornrat et al. 2006; Partiprajak et al. 2011; Rujiwatthanakorn et al. 2011; Sindhu, Pholpet & Puttapitukpol 2010); four studies identified age as 15 years or older (Kittinouvarat, Charoenlar & Aeksiriwaranon 2011), aged 35 years or older (Wattana et al. 2007), aged 40 years or older (Wongpiriyayothar et al. 2010), and aged 45 years or older (Chanruengvanich et al. 2006), respectively. Sample sizes in the selected studies ranged from 15 (Kittinouvarat, Charoenlar & Aeksiriwaranon 2011) to 147 (Wattana et al. 2007) patients with a chronic care condition. Most participants were recruited from the community health care centre or primary care hospital

(Aree-Ue et al. 2006; Fisher et al. 2012; Rujiwatthanakorn et al. 2011; Sindhu, Pholpet & Puttapitukpol 2010; Sukwatjanee et al. 2011; Wattana et al. 2007; Wongpiriyayothar et al. 2010); four studies recruited from the tertiary care hospital (Chanruengvanich et al. 2006; Kanogsunthornrat et al. 2006; Kittinouvarat, Charoenlar & Aeksiriwaranon 2011; Partiprajak et al. 2011); one studies from government homes for older (Kangchai et al. 2002) and one did not identified the setting (Kulnawan et al. 2011).

Table 2. 1 Summary of the studies that met inclusion criteria

Author, year	Design study	Theoretical	Number of control and intervention participants (no. completed)	Age of participants, year	Setting	Duration of intervention	Intervention description	Control	Outcomes measures, statistical significance
Fisher, E.B. et al, 2012	one group pre/ post test	NR	In Thailand 400 adults with type 2 diabetes (52)	32 – 75	Home	6 months	Peer support by non-professional are assistance of DM patients in daily management; social and emotional support to encourage the management behaviours.	NR	Intervention had no effect on dietary behaviour and BP level. It was effective in decreasing Body Mass Index and HbA1C level by multivariate analysis.
Kulnawan, N. et al, 2011	RCT	-Health belief -trans- theoretical model (TTM)	112 (97)	> 20	2 out- patient diabetes clinics	5 weeks	Patients received the automated telephone system with diabetes knowledge interactive voice response (IVR) subsystem as the telephone-linked care (TLC).	NR	Most of responders reported satisfaction with TLC and increased perception of helpfulness of TLC. Bivariate analysis indicated significant correlation (p<0.01) between time use and total helpfulness scores (r=0.38) and total emotion scores (r=0.31).
Partiprajak, S. et al, 2011	Mixed Methods	The Nursing Role Effectivenes s Model	100 type-2 diabetics 44/56 (NR)	44– 80 -81% over 60years	OPD of tertiary care hospital	18 months	Participants received the APN-led diabetes self-management education support group and participated in group activities to achieve better self-care abilities, health status and quality of life.		Statistical analyses revealed that there was a statistically significant difference between the means of SBP (p<.05), self-care ability score (p<.01), satisfaction with care score (p<.01), QOL (p<.01) of the participants the APN-Led group and the control group.
Sukwatjanee, A. et al, 2011	PAR	-critical social theory -self-help group	20 Thai elders with type-2 diabetes	60 - 75	The community health care centre	6 months	Older with diabetes and investigator were collaborated within community setting, to help identify and explore constraints affecting participants' lives, and also to brainstorm about ways to self-manage.	NR	After 6 months with PAR, participants decrease in FBS level (p = 0.004); improve the older's self-efficacy score (p < 0.000) and enhance QOL score (p < 0.000). The factors including knowledge/ information; social support; sense of empowerment; and sense of self-efficacy shown to affect the participants' QOL.
Wattana, C. et al, 2007	RCT	-self-efficacy -self- management	157(147) 72/75	>35	The community hospital	24 weeks	Patients received the self-management program and individual home visit from researcher to gain the information and	Usual nursin g care	The program effectively not only decrease HbA1C (p = 0.014) and CHD risk (p =

Author, year	Design study	Theoretical	Number of control and intervention participants (no. completed)	Age of participants, year	Setting	Duration of intervention	Intervention description	Control	Outcomes measures, statistical significance
							knowledge about diabetes.		0.014) but also improve QOL (p < 0.000).
Chanruengvanich, W. et al, 2006	RCT	-Pender's Health Promotion Model -Bandura's Self-regulation concept	72(62) 31/31	≥45	The Prasart Neurological Institute	12-week exercise program	The Self-regulated exercise program intervention provided the techniques that affect the patients on continuous exercise throughout the program.	the same training course after finished the program	The program had no significant effects on total cholesterol, HDL-cholesterol and fibrinogen. It was effective in satisfaction score, 6MWT, heart rate, systolic blood pressure and diastolic blood pressure
Rujiwatthanakorn, D. et al, 2011	RCT	-SCDNT -CBT	96 Hypertension patients 46/50	39 - 78	a primary care hospital	10 weeks	Patients received usual care plus cognitive restructuring related to knowledge about HT and self-care action and motivation to engage in self-care action from researcher.	routine care	Intervention had no effect overall self-care ability such as stress management and risk behaviours avoidance. It was effective in health status, knowledge of self-care demand and some self-care abilities.
Wongpiriyayothar, A. et al, 2010	RCT	-symptom management model -coaching strategies	96(93) 45/48	40 - 82	Home	12 weeks	The program used teaching and training on the perception of symptom experience, identifying symptom management strategies, and enhancing self-management skills as the method and conducted at home after discharge.	Usual care	The participant significantly decrease severity scores of overall symptom and severity of symptom of CHF except edema, weight gain and nausea.
Aree-Ue, S. et al, 2006	One group pre-post-test design	-Pender's Health Promotion Model -self-efficacy from social learning theory	57(48)	60 - 80	Health promotion centre	6 months	The intervention aimed to promote and understand osteoporosis preventive behaviours.	none	The results showed significantly different osteoporosis knowledge, perceived susceptibility, perceived benefits and barriers to exercise, perceived barriers to calcium intake and self-efficacy score.
Kangchai, W. et al, 2002	A quasi-experimental pre-post-test design	-the self-management concept -the self-regulation model	60 older women who were afflicted with urge or mixed urinary incontinence. 30/30	≥60	homes for the older	8 weeks for each case	Three strategies were used in this intervention including self-monitoring, self—evaluation, and self-reinforcement plus achieving knowledge and perception of symptoms, the motivation, and social support through self-management promotion program.	NR	Significant Higher self-management practice, lower frequency of UI and lower negative psychosocial impact were found in the experimental group.

Author, year	Design study	Theoretical	Number of control and intervention participants (no. completed)	Age of participants, year	Setting	Duration of intervention	Intervention description	Control	Outcomes measures, statistical significance
Kanogsunthornrat, N. et al, 2006	One group pre-post test	Orem's general Theory of Nursing	42 (30) patients with open wounds	28 - 86	Tertiary hospital	NR	The participants received topical wound care and patient education for self-care regarding maintaining dressing vacuum, nutrition, and avoidance of wound trauma.	none	The results had shown significantly shorter time for healing (13.6 days vs 20.8 day) and also decrease cost to heal.
Kittinouvarat, S. et al, 2011	Quasi-experimental, one group	Orem's self-care Theory of Nursing	15	35 - 74	Tertiary hospital	NR	A self-care empowerment program consisted of 2 phase: before and after surgery -before focused on preparation for stoma care using a psycho-educative programme (30-50 min) -after focused on stoma care consisted 4 visits: 2 visits during stay in the hospital and 2 at the clinic of out-patient department on the second and the sixth week after discharge.	none	The intervention had effect on knowledge but no significantly enhance on self-care behaviours and satisfaction.
Sindhu, S. et al, 2010	Quasi-experimental, two group		70(47)/57(44) patients with chronic illness	26 - 88	community	NR	Nurse-led community care program, including promoting coordination and continuity of care for patient with chronic illness plus the network collaborative action plan (N-CAP) were used in the participants group.	Environmental scan needs assessment	The patient satisfaction increased significantly (p $\leq$ 0.001) and reduced disease severity (p < 0.05).

2.3.3 Theoretical Perspective for Self-care of Self-management Interventions

Of the 13 articles reviewed, six studies used social theory in intervention development, including critical social theory, self-efficacy and self-regulation (Aree-Ue et al. 2006; Chanruengvanich et al. 2006; Kangchai et al. 2002; Rujiwatthanakorn et al. 2011; Sukwatjanee et al. 2011; Wattana et al. 2007); three articles used Orem's Self-care Theory of Nursing (Kanogsunthornrat et al. 2006; Kittinouvarat, Charoenlar & Aeksiriwaranon 2011; Rujiwatthanakorn et al. 2011); two used Pender's Health Promotion Model as a framework (Aree-Ue et al. 2006; Chanruengvanich et al. 2006); one used a symptom management model (Wongpiriyayothar et al. 2010); and another used the nursing role effectiveness model (Partiprajak et al. 2011).

2.3.4 Conceptualization of Self-care and Self-management

In the reviewed literature, self-management has been conceptualized as a framework for understanding the processes that patients undertake manage their living activities with chronic illness including active participation in controlling their life (Rujiwatthanakorn et al. 2011), to enhance the belief and increase self-efficacy to perform effective self-management behaviours (Wattana et al. 2007), provided disease information that focuses on individuals' abilities and behaviour (Kulnawan et al. 2011), to be able to continuously and efficiently follow a medical plan, and to remain healthy or decrease risk of chronic illness (Fisher et al. 2012; Kangchai et al. 2002). Frequently, sharing information and experiences between health care provider, lay and/or peer support were used to enhance self-management ability (Chanruengvanich et al. 2006; Fisher et al. 2012; Kangchai et al. 2002; Kittinouvarat, Charoenlar & Aeksiriwaranon 2011; Partiprajak et al. 2011; Rujiwatthanakorn et al. 2011; Sindhu, Pholpet & Puttapitukpol 2010; Sukwatjanee et al. 2011; Wongpiriyayothar et al. 2010). Two studies of self-management programs used persuasion, consideration, and reinforcement to reduce and overcome barriers

(Aree-Ue et al. 2006; Wattana et al. 2007). In summary, self-care/management concept in this study means that individual perception and strategies to maintain their health behaviours related chronic conditions in order to enhance quality of life.

2.3.5 Self-care/management Intervention Strategies in Community-based Settings

The studies used a variety of self-care and self-management strategies. The most common intervention strategy providing information to promote knowledge about their illness and signs and symptoms (Aree-Ue et al. 2006; Chanruengvanich et al. 2006; Kangchai et al. 2002; Kanogsunthornrat et al. 2006; Kittinouvarat, Charoenlar & Aeksiriwaranon 2011; Kulnawan et al. 2011; Partiprajak et al. 2011; Rujiwatthanakorn et al. 2011; Wattana et al. 2007; Wongpiriyayothar et al. 2010). The participants in seven of the 13 studies reviewed involved a group activity format, including: group education for self-care or training (Chanruengvanich et al. 2006; Kangchai et al. 2002; Partiprajak et al. 2011; Rujiwatthanakorn et al. 2011; Wattana et al. 2007); self-help groups empower and emotional support through mutual sharing of illness-related information and experiences (Sukwatjanee et al. 2011); and both group and individual counselling (Aree-Ue et al. 2006). Each of the five studies that took an individualised approach illustrated positive results (Kangchai et al. 2002; Kanogsunthornrat et al. 2006; Kittinouvarat, Charoenlar & Aeksiriwaranon 2011; Sindhu, Pholpet & Puttapitukpol 2010; Wongpiriyayothar et al. 2010). Four studies used a patient education manual or booklet to promote self-management and to be used as a recording form (Kangchai et al. 2002; Kanogsunthornrat et al. 2006; Wattana et al. 2007; Wongpiriyayothar et al. 2010). In addition to education, two studies used family membership or peer support to effectively improve management and reduce the risks associated (Chanruengvanich et al. 2006; Fisher et al. 2012). These multi-strategy

demonstrated statistically significant outcomes for older people in community based settings in Thailand, as increasing in self-care/management behaviours related their chronic conditions.

2.3.6 Self-care/management Intervention Approach Attributes

Three of thirteen studies that delivered self-care or self-management interventions in participants' homes showed that the participants in the intervention group had statistically significant higher self-management practice scores, higher satisfaction scores, and better health status than before being enrolled (Kangchai et al. 2002; Sindhu, Pholpet & Puttapitukpol 2010; Wongpiriyayothar et al. 2010). Four studies used mediated delivery (e.g., mail, phone-delivered materials) as one part of their interventions and reported effective results especially enhancing satisfaction with care. For example, one study used 6 letters for cognitive restructuring among essential hypertension patients. The finding found that effective in health status, knowledge of self-care demand and some self-care abilities of the experimental group (Rujiwatthanakorn et al. 2011). Three studies using phone delivery to provide health information, to motivate and/or to monitor the results reported better health status (Chanruengvanich et al. 2006; Wongpiriyayothar et al. 2010) and higher satisfaction score (Chanruengvanich et al. 2006; Kulnawan et al. 2011) of experiment participants than control participants. The most of interventionist are graduate students (Chanruengvanich et al. 2006; Kangchai et al. 2002; Rujiwatthanakorn et al. 2011; Sukwatjanee et al. 2011; Wattana et al. 2007; Wongpiriyayothar et al. 2010) and also found the effective outcomes. Advance Practice Nurse (APN) led support and APN-led community were found as strong strategies to promote continuity of care for patients with chronic illness and demonstrated positive finding (Partiprajak et al. 2011; Sindhu, Pholpet & Puttapitukpol 2010). Across the studies reviewed, the duration of the self-care or self-management varied. The program was ranging from 5 weeks to 18 months. An education session ranged from 30 minutes to 120 minutes in duration. The relating factors illustrated the important part that has an impact on the effectiveness of

the intervention. Further intervention studies should consider these factors when developing the effective intervention model of older care.

2.3.7 Outcome Measures of Self-care/management Interventions

The results of self-care or self-management interventions from thirteen studies found that nine studies (Chanruengvanich et al. 2006; Fisher et al. 2012; Kangchai et al. 2002; Partiprajak et al. 2011; Rujiwatthanakorn et al. 2011; Sindhu, Pholpet & Puttapitukpol 2010; Sukwatjanee et al. 2011; Wattana et al. 2007; Wongpiriyayothar et al. 2010) measured severity of symptoms and took health status such as blood pressure, heart rate, BMI, HbA1c, lipid profile, FBS level and 6–minute walk distance. Health behaviours and self-care ability was measured in five self-care or self-management studies (Aree-Ue et al. 2006; Fisher et al. 2012; Kittinouvarat, Charoenlar & Aeksiriwaranon 2011; Partiprajak et al. 2011; Rujiwatthanakorn et al. 2011). Five studies adopted patient satisfaction of care questionnaires to assess the impact of the intervention (Chanruengvanich et al. 2006; Kittinouvarat, Charoenlar & Aeksiriwaranon 2011; Kulnawan et al. 2011; Partiprajak et al. 2011; Sindhu, Pholpet & Puttapitukpol 2010). Three studies measured knowledge of self-care demands as well as disease knowledge (Aree-Ue et al. 2006; Kittinouvarat, Charoenlar & Aeksiriwaranon 2011; Rujiwatthanakorn et al. 2011). Three studies demonstrated that the participants who have positive outcomes of health status, as well as found higher quality of life score (Partiprajak et al. 2011; Sukwatjanee et al. 2011; Wattana et al. 2007). Two studies used a self-efficacy questionnaire to measure the effectiveness of the intervention (Aree-Ue et al. 2006; Sukwatjanee et al. 2011). Three of thirteen studies examined the effect of the intervention on a variety of measurements for instance, the impact of the intervention through self-management questionnaire; negative psychosocial impact scores (Kangchai et al. 2002); time and cost to healing (Kanogsunthornrat et al. 2006); and well-being by SF-36 version 2 (Wongpiriyayothar et al. 2010). The reviewed

studies revealed that statistically significantly improved in six parts from baseline or the control group as following: 1) physiological measures such as health status, symptoms and physical fitness; 2) psychological measures such as negative psychosocial impact, well-being, quality of life, satisfaction of care; 3) cost-effectiveness such as cost and time; 4) knowledge measures; 5) attitude measures such as self-efficacy; and 6) practice measures such as health behaviours, self-care ability, self-management confirm that self-care/management intervention is able to reach positive outcomes in Thais older who had chronic conditions.

2.4 DISCUSSION

This integrative review aimed to describe the self-care and self- management strategies for older people in community based settings in Thailand in order to identify effective elements of successful interventions. Thirteen studies were included in this review. Factors such as the characteristics of leaders or staff, characteristics of participants, and the budget have been revealed to impact on the success of the program (Intarakamhang 2011). The majority of the strategies from the reviews suggest that sharing information between health care provider and patients, and flexible/suitable program for patients' context such as a group discussion enhanced the positive outcomes of health and improved quality of life. Mutual aid processes through the sharing of information in an online self-help group built a caring community. Also, the support provided by self-help groups were effective in two ways including socio-emotional support or empathy and task oriented support which provides information and problem solving strategies (Finn 1999). In addition, this review highlights the importance of the multiple components of the intervention namely educational sessions, training to promote self-care behaviours, monitoring self-care practice, facilitation for patient, and counselling or empowering sessions for patients. Multiple sessions of interventions were required to demonstrate benefits. The previous studies had also shown positive outcomes through

interventions using multiple strategies or components. For example, the integrative review study on physical activity interventions with aging adults in the United States noted that no single intervention component contributed to successful outcomes (Conn et al. 2003).

A previous integrative review of the concept of self-care in elders study stated that self-care was defined as a capability and a process for health and health development in order to maintain, promote or enhance functional ability, control disease, and/or prevent dysfunction and disability on daily life (Høy, Wagner & Hall 2007). Positive health outcomes lead to improved quality of life (Partiprajak et al. 2011; Sukwatjanee et al. 2011; Wattana et al. 2007). Furthermore, the study of the relationship between health status and quality of life in diabetes patients in Thailand found that health status had a significant association with quality of life (r = 0.35, $p < 0.05$) (Navicharern 2012).

Therefore, several reviewed studies used health status, health behaviours, or knowledge as an outcome measurement. One qualitative study about self-care processes in Thai people with hypertension illustrated the participants' knowledge gained through personal relationships with other hypertensive persons and health care professionals (Panpakdee et al. 2003). None of the studies that were reviewed solely measured knowledge of the chronic condition they also measured quality of life, health behaviours or self-care ability, health status or severity of symptoms to confirm an effective self-care/management outcomes.

2.5 LIMITATIONS OF THE REVIEW

This review was limited to focusing on self-care and self-management interventions impacting on health status and quality of life in older Thai people with chronic illnesses. Only three studies included participants aged 60 years or older. Overall, the age of participants ranged

from 28 to 88 years of old. It is important to acknowledge that the range in age may have affected the results.

This integrative review highlights the model of self-care and self -management for older people living with chronic conditions in Thailand. This review has determined that elements of successful interventions require multiple strategies and a combination of group support to enhance effective outcomes and improve quality of life for older people in community based settings in Thailand. Findings of this review have identified that older people chronic illness commonly negotiate decisions to solve problems with their health care provider and filter information through their peers. Thus, it should be possible to help the older person to be better able to effectively take charge of their self-care and adjust health behaviours to maintain their health status through providing support and tailored and targeted interventions. When older people are able to care for their own health, they will be improving their quality of daily living in the long run.

Therefore, future studies on self-care and self-management interventions should focus on improving communication between patients and health care providers firstly and then enacting a negotiated care plan in a group activity to promote peer support and self-efficacy (Fisher et al. 2012; Ngamvitroj & Kang 2007).

2.6 CHAPTER SUMMARY

This chapter has provided a summary of the literature to promote self-care or self-management for older people with chronic disease in Thailand, and identifies successful elements of culturally appropriate and effective community-based intervention. The following chapter provides a discussion of conceptual issues.

2.7 REFERENCES

Aekplakorn, W., Abbott-Klafter, J., Khonputsa, P., Tatsanavivat, P., Chongsuvivatwong, V., Chariyalertsak, S., Sangwatanaroj, S., Tiptaradol, S. & Lim, S.S. 2008, 'Prevalence and management of prehypertension and hypertension by geographic regions of Thailand: the Third National Health Examination Survey, 2004', *Journal of Hypertension*, vol. 26, no. 2, pp. 191-8.

Aree-Ue, S., Pothiban, L., Belza, B., Sucamvang, K. & Panuthai, S. 2006, 'Osteoporosis preventive behavior in Thai older adults: feasibility and acceptability', *Journal of Gerontological Nursing*, vol. 32, no. 7, pp. 23-30.

Assantachai, P. & Maranetra, N. 2003, 'Nationwide survey of the health status and quality of life of elderly Thais attending clubs for the elderly', *Chot Mai Het Thang Phaet*, vol. 86, no. 10, pp. 938-46.

Chanruengvanich, W., Kasemkitwattana, S., Charoenyooth, C., Towanabut, S. & Pongurgsorn, C. 2006, 'RCT: self-regulated exercise program in transient ischemic attack and minor stroke patients', *Thai Journal of Nursing Research*, vol. 10, no. 3, pp. 165-79.

Chinwatanakul, S., Boonyapisit, K., Pornsriniyom, D., Proyoonwiwat, N., Senanarong, V., Chaisevikul, R., Danchaivijitr, C., Chotinaiwatarakul, W., Sathornsumetee, S. & Poungvarin, N. 2012, 'Siriraj Acute Stroke Unit: 10 years experience', *Journal of the Medical Association of Thailand= Chotmaihet thangphaet*, vol. 95, p. S235.

Choowattanapakorn, T. 1999, 'The social situation in Thailand: The impact on elderly people', *International Journal of Nursing Practice*, vol. 5, no. 2, pp. 95-9.

Conn, V.S., Minor, M.A., Burks, K.J., Rantz, M.J. & Pomeroy, S.H. 2003, 'Integrative review of physical activity intervention research with aging adults', *Journal of the American Geriatrics Society*, vol. 51, no. 8, pp. 1159-68.

Dorsey, M.K. & Vaca, K.J. 1998, 'The stroke patient and assessment of caregiver needs', *Journal of Vascular Nursing*, vol. 16, no. 3, pp. 62-7.

Finn, J. 1999, 'An exploration of helping processes in an online self-help group focusing on issues of disability', *Health & Social Work*, vol. 24, no. 3, pp. 220-31.

Fisher, E.B., Boothroyd, R.I., Coufal, M.M., Baumann, L.C., Mbanya, J.C., Rotheram-Borus, M.J., Sanguanprasit, B. & Tanasugarn, C. 2012, 'Peer support for self-management of diabetes improved outcomes in international settings', *Health Affairs*, vol. 31, no. 1, pp. 130-9.

Hanchaiphiboolkul, S., Poungvarin, N., Nidhinandana, S., Suwanwela, N.C., Puthkhao, P., Towanabut, S., Tantirittisak, T., Suwantamee, J. & Samsen, M. 2011, 'Prevalence of Stroke and Stroke Risk Factors in Thailand: Thai Epidemiologic Stroke (TES) Study', *Journal of the Medical Association of Thailand*, vol. 94, no. 4.

Høy, B., Wagner, L. & Hall, E.O.C. 2007, 'Self-care as a health resource of elders: an integrative review of the concept', *Scandinavian Journal of Caring Sciences*, vol. 21, no. 4, pp. 456-66.

Intarakamhang, U. 2011, 'Effects of Health Behavioral Modification Program on Metabolic Diseases in Non-Government Organizations', *Journal of US-China Medical Science*, vol. 8, no. 9, pp. 540-5.

Jitapunkul, S. & Wivatvanit, S. 2008, 'National policies and programs for the aging population in Thailand', *Ageing International*, vol. 33, no. 1, pp. 62-74.

Kangchai, W., Srisuphun, W., Kompayak, J., Charoenyooth, C. & Jitapunkul, S. 2002, 'Efficacy of self-management promotion program for elderly women with urinary incontinence', *Thai Journal of Nursing Research*, vol. 6, no. 3, pp. 101-14.

Kanogsunthornrat, N., Srisuphan, W., Pothiban, L., Srimuninnimit, V. & Wonghongkul, T. 2006, 'Feasibility and acceptability of a wound care program using a portable vacuum bottle dressing for open wound healing', *Thai Journal of Nursing Research*, vol. 10, no. 1, pp. 29-45.

Kespichayawattana, J. & Jitapunkul, S. 2008, 'Health and Health Care System for Older Persons', *Ageing International*, vol. 33, no. 1, pp. 28-49.

Khiaocharoen, O., Pannarunothai, S., Riewpaiboon, W., Ingsrisawang, L. & Teerawattananon, Y. 2012, 'Economic Evaluation of Rehabilitation Services for Inpatients with Stroke in Thailand: A Prospective Cohort Study', *Value in Health Regional Issues*, vol. 1, no. 1, pp. 29-35.

Kittinouvarat, S., Charoenlar, S. & Aeksiriwaranon, W. 2011, 'Development of a self-care empowerment model for patients with faecal diversion', *World Council of Enterostomal Therapists Journal*, vol. 31, no. 2, pp. 9-14.

Knodel, J. & Chayovan, N. 2008a, 'Intergenerational Relationships and Family Care and Support for Thai Elderly', *Ageing International*, vol. 33, no. 1, pp. 15-27.

Knodel, J. & Chayovan, N. 2008b, 'Older Persons in Thailand: A Demographic, Social and Economic Profile', *Ageing International*, vol. 33, no. 1, pp. 3-14.

Kulnawan, N., Jiamjarasrangsi, W., Suwanwalaikorn, S., Kittisopee, T., Meksawan, K., Thadpitakkul, N. & Mongkung, K. 2011, 'Development of diabetes telephone-linked care system for self-management support and acceptability test among type 2 diabetic patients', *Journal of the Medical Association of Thailand*, vol. 94, no. 10, pp. 1189-97.

Larson, J., Franzén-Dahlin, Å., Billing, E., Murray, V. & Wredling, R. 2005, 'Spouse's life situation after partner's stroke event: psychometric testing of a questionnaire', *Journal of Advanced Nursing*, vol. 52, no. 3, pp. 300-6.

Navicharern, R. 2012, 'Diabetes self-management, fasting blood sugar and quality of life among type 2 diabetic patients with foot ulcers', *Journal of the Medical Association of Thailand= Chotmaihet thangphaet*, vol. 95, no. 2, p. 156.

Newhouse, R.P., Dearholt, S.L., Poe, S.S., Pugh, L.C. & White, K.M. 2007, *Johns Hopkins nursing evidence-based practice model and guidelines*, Sigma Theta Tau International Honor Society of Nursing.

Ngamvitroj, A. & Kang, D.-H. 2007, 'Effects of self-efficacy, social support and knowledge on adherence to PEFR self-monitoring among adults with asthma: A prospective repeated measures study', *International Journal of Nursing Studies*, vol. 44, no. 6, pp. 882-92.

Opas Pimolvitayakit, S.A. 2007, *The elderly policy development of Thailand*, Bureau of Empowerment for Older Persons, Bangkok.

Panpakdee, O., Hanucharurnkul, S., Sritanyarat, W., Kompayak, J. & Tanomsup, S. 2003, 'Self-care process in Thai people with hypertension: an emerging model', *Thai Journal of Nursing Research*, vol. 7, no. 2, pp. 121-36.

Partiprajak, S., Hanucharurnkul, S., Piaseu, N., Brooten, D. & Nityasuddhi, D. 2011, 'Outcomes of an advanced practice nurse-led type-2 diabetes support group', *Pacific Rim International Journal of Nursing Research*, vol. 15, no. 4, pp. 288-304.

Polpinit, A., Ungsununtawiwat, M., Bhuripanyo, K., Bhuripanyo, P., Tatsanavivat, P. & Thrasana, A. 1992, 'The prevalence and risk factors of hypertension in population aged 30-65 years in rural area, amphoe Phon, Khon Kaen', *J Med Assoc Thai*, vol. 75, no. 5, pp. 259-66.

Porapakkham, Y., Pattaraarchachai, J. & Aekplakorn, W. 2008, 'Prevalence, awareness, treatment and control of hypertension and diabetes mellitus among the elderly: the 2004 National Health Examination Survey III, Thailand'.

Porapakkham, Y., Rao, C., Pattaraarchachai, J., Polprasert, W., Vos, T., Adair, T. & Lopez, A.D. 2010, 'Research Estimated causes of death in Thailand, 2005: implications for health policy'.

Rujiwatthanakorn, D., Panpakdee, O., Malathum, P. & Tanomsup, S. 2011, 'Effectiveness of a self-management program for Thais with essential hypertension', *Pacific Rim International Journal of Nursing Research*, vol. 15, no. 2, pp. 97-109.

Sindhu, S., Pholpet, C. & Puttapitukpol, S. 2010, 'Meeting the challenges of chronic illness: a nurse-led collaborative community care program in Thailand', *Collegian: Journal of the Royal College of Nursing, Australia*, vol. 17, no. 2, pp. 93-9.

Sukwatjanee, A., Pongthavornkamol, K., Low, G., Suwonnaroop, N., Pinyopasakul, W. & Chokkhanchitchai, S. 2011, 'Benefits of a self-help group for rural Thai elders with type-2 diabetes', *Pacific Rim International Journal of Nursing Research*, vol. 15, no. 3, pp. 220-32.

Tengs, T.O., Yu, M., Luistro, E. & Bosworth, H.B. 2001, 'Health-Related Quality of Life After Stroke A Comprehensive Review• Editorial Comment: Health-Related Quality Of Life After Stroke: A Comprehensive Review', *Stroke*, vol. 32, no. 4, pp. 964-72.

Ueshima, H., Sekikawa, A., Miura, K., Turin, T.C., Takashima, N., Kita, Y., Watanabe, M., Kadota, A., Okuda, N. & Kadowaki, T. 2008, 'Cardiovascular disease and risk factors in Asia', *Circulation*, vol. 118, no. 25, pp. 2702-9.

Wattana, C., Srisuphan, W., Pothiban, L. & Upchurch, S.L. 2007, 'Effects of a diabetes self-management program on glycemic control, coronary heart disease risk, and quality of life among Thai patients with type 2 diabetes', *Nursing & Health Sciences*, vol. 9, no. 2, pp. 135-41.

Whittemore, R. & Knafl, K. 2005, 'The integrative review: updated methodology', *Journal of Advanced Nursing*, vol. 52, no. 5, pp. 546-53.

Wongpiriyayothar, A., Pothiban, L., Liehr, P., Senaratana, W. & Sucumvang, K. 2010, 'Effects of home-based care program on symptom alleviation and well-being among persons with chronic heart failure'.

CHAPTER 3: CONCEPTUAL FRAMEWORK

3.1 INTRODUCTION

This chapter presents the conceptual underpinnings and framework of the community-based intervention to improve hypertension management in older people study. This chapter establishes the conceptual framework for the study and provides a justification of the process to develop a community-based intervention program to improve hypertension management among older people in Thailand. The chapter can be divided into three parts consisting of situation of hypertension in Thailand; an overview of the concept of self-regulation; and the effects of self-regulation will be explained. Lastly, the conceptual framework of the study is presented.

3.2 HYPERTENTION

In Thailand, hypertension is a leading cause of death and disability. In particularly, the prevalence rate of hypertension showed a high rate in older population (Aekplakorn et al. 2008; Tiptaradol & Aekplakorn 2012). The national level pretended to promote health and control the severe complications from uncontrolled high blood pressure by organising several strategies such as "healthy people healthy Thailand" and "โครงสร้างไทยไร้พุง: Anti-Belly campaign" .

Part from the issues mentioned above, one of the significant challenges that health care professionals today is to address this issue in order to motivate patients' self-management, to decrease the burden of hypertension. The researcher also intends to improve self-

management among older people with hypertension in order to decrease the complications following the ineffective high blood pressure level control and promote quality of life among rural dwelling older people with hypertension in Thailand.

There are unique challenges to engaging individuals to engage in behaviour change for hypertension. As it is not a visible condition, engaging individuals can be challenging. This can be made even more challenging when individuals have impaired health literacy and socio-cultural factors inhibit behaviour change.

Therefore, this study developed a community-based program for older people with hypertension in Thailand. The first phase of the study, the researcher reviewed the literature of community programs promoting self-care or self-management for older people with chronic disease in Thailand to improve the hypertension management and improve outcomes. The effective elements in the integrative reviews earlier demonstrated as following (1) providing culturally sensitive and appropriate information, (2) including approaches of shared decision-making and mutual goal setting and (3) flexibility within the intervention to adapt to participant needs (Anuruang et al. 2013).

In addition to identifying elements of effective interventions, aspects of behaviour change theory were considered. Several theories, concepts and models affected to the behaviours change such as the Transtheoretical model (Prochaska & DiClemente 1982), the Health Belief Model (Rosenstock, Strecher & Becker 1988) and Social Cognitive Theory (Bandura 1991) were considered in order to develop the intervention program and enhance the effectiveness of the program for older people with hypertension in Thailand.

The Transtheoretical Model focuses on the person's particular history, present environment and personality to be changed behaviours through four stages of change: contemplation, determination, action, and maintenance (Prochaska & DiClemente 1982). The original model stated four variables that related to behaviour change regarding 1) preconditions for therapy; 2) processes of change; 3) content to be changed; and 4) therapeutic relationship. A meta-analysis of the Transtheoretical Model applications stated good effect on behaviours change and demonstrated the dynamic phenomenon of behaviour change is the strength of the model (Marshall & Biddle 2001).

The Health Belief Model is a psychological model identifying conceptual elements to explain and predict health behaviours, by focusing on the attitudes and beliefs of individuals (Jones, Smith & Llewellyn 2014). The model was first developed in the 1950s by social psychologists Hochbaum, Rosenstock and Kegels (Hochbaum, Rosenstock & Kegels 1952). Four key constructs representing the perceived threat and net benefits of behaviour are identified: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. The Health Belief Model is widely used in nursing research focussing on individuals' perceived susceptibility, severity, benefits, and barriers to their health conditions. These variables influence health-related behaviours. Locus of control was also identified in explaining outcome expectations than to efficacy expectations (Rosenstock, Strecher & Becker 1988). However, a weakness of this model is that it has a limited focus on efficacy expectations and thus this model might be effective in the longer term with chronic conditions (Rosenstock, Strecher & Becker 1988).

The premises of social cognitive theory state that we learn behaviours through observation, modelling, and motivation such as positive reinforcement. Social Cognitive Theory is also widely used in research in particular in individuals with chronic conditions (Young et al. 2014).

These aspects have been identified to promote effective self-management of health habits (Bandura 2005). The intersection of concepts between Social Cognitive Theory and the Health Belief Model, found that Social Cognitive Theory extended the Health Belief Model in two contributions. The first contribution is emphasising on the informative and motivational role on the health-related behaviours. Self-efficacy is noted as the second contribution that extended The Health Belief Model and influenced successfully personal determination to action (Rosenstock, Strecher & Becker 1988).

Therefore, Social Cognitive Theory was chosen because of the discrete elements of this model that were considered appropriate to a community-based intervention, particularly in the Thai setting and culture where collectivity and community are integral to the social fabric. Moreover, these elements were identified as successful elements of interventions demonstrated in the integrative review reported in Chapter Two. Specific elements of self-regulation in Social Cognitive Theory (Bandura 1989) are conducive to hypertension management. These are summarized below.

- Demonstration and modelling

- The role of social support

- Goal setting and monitoring; and

- Facilitation and motivation

From this theoretical perspective, behaviour is the product of an iterative interface between personal, behavioural, and environmental influences.

3.3 AN OVERVIEW OF THE CONCEPT OF SELF-REGULATION

Self-regulation, a dimension of a Social Cognitive Theory is widely used in nursing research studies. This describes the factors influencing the thought, affect, motivation, and action of an individual (Bandura 1991). Social Cognitive Theory of Self-Regulation can be described in term of a mechanism:

> In social cognitive theory, human behaviour is extensively motivated and regulated by the ongoing exercise of self-influence. The major self-regulative mechanism operates through three principal subfunctions. These include self-monitoring of one's behaviour, its determinants, and its effects; judgement of one's behaviour in relation to personal standards and environmental circumstances; and affective self-reaction (Bandura 1991, p. 248).

The self-efficacy mechanism plays a key role of self-regulation to decide to do something. People make decisions based on their perceived consequences of actions. Therefore, people who assess themselves as highly efficacious tend to decide and perform to manage by themselves. Self-Regulatory theory has three systems, as following:

1) Self-observation refers to the planning mechanism of people in order to understand their behaviours, ability, facilities, and obstacles to do things in the next step. This mechanism can lead them to behave in certain way.

2) Judgement process describes as the first step toward to perform. People evaluate their behaviour based on their standard, culture, norm, and environmental conditions.

3) Self-reactions define as another step that people judge the quality of their performance and impose their own consequences for success or failure.

In the Thai context, social and friendship networks have a strong influence on older people's health concerns and behaviour. This is supported by Rattanamongkolgul, Sritanyarat & Manderson (2012) who stated that social and cultural context are influenced on aging

preparation among older people. This study also found that older people are most likely to involve and connect with their neighbour and community for various reasons for example gathering health activities, supporting in the future from community and receiving extra money as a volunteer worker in community.

In addition, the importance of connection between older people and community in Thai context is also mentioned in the previous study by Thanakwang & Soonthorndhada (2011) identifying mechanisms by which social support networks influence healthy aging among Thai community-dwelling elderly. The findings revealed that friendship network have a stronger impact on health-promoting behaviours in Thai older people than family networks.

Therefore, the self-regulation theory of Bandura, considering social and cultural aspects, was considered suitable to promote self-management related to hypertension disease in rural Thailand. Following this, the expectation outcomes are discussed.

3.4 EFFECTS OF SELF-REGULATION ON THE OUTCOMES

The premises of the program evaluated in this study using the elements of self-regulation has been demonstrated in previous studies (Anderson, Winett & Wojcik 2007; Bandura 2004; Clark et al. 1997; Dodge, Janz & Clark 2002; Kreausukon et al. 2012; Miller et al. 2002). These results demonstrated the utility of self-regulation on patients' self-management and their outcomes in terms of increasing knowledge and skills; improving favourable behaviours; and enhancing quality of life. As mentioned, health behaviours and health status outcomes can be impacted by not just individual characteristics but social and cultural influences. Hence, people may evaluate their behaviours through information from health care professionals, friends and neighbours as stated in the first mechanism of self-regulation, comparing themselves to others

as stated in the second mechanism, and decide to perform and change as stated in the third mechanism. Therefore, this study will examine the effect of the intervention program based on self-regulation models on the outcomes of systolic and diastolic blood pressure level, waist circumference, adherence to high blood pressure therapy and health related quality of life.

3.5 CONCEPTUAL FRAMEWORK

The conceptual framework for this research was based on Bandura's Social Cognitive Theory of Self-Regulation (Bandura 1977) to promote self-management. Self-management needs the exercise of motivational and self-regulatory skill (Bandura 2005). The conceptual framework of this study is shown in **Figure 3.1**. The researcher applied the three mechanisms of self-regulation models as a guide to conduct the activities in the intervention program and also adopted the key elements from literature reviews as a guide to interact with participants in each activity. The intervention program aimed to motivate self-management among older people in Thailand with hypertension. All activities in the program were intended to encourage the participants in order to observe, judge, and perform behaviours to control their high blood pressure. With these benefits, the researcher anticipated that health status such as systolic, diastolic blood pressure and waist circumference would improve after being involved in the intervention program. Moreover, the adherence to high blood pressure therapy and quality of life would enhance scores to confirm health status outcomes. After the intervention program, focus group discussion were undertaken to extract the opinion of participants who involved in the program in regarded to assist in the evaluation process and confirm theoretical assumptions.
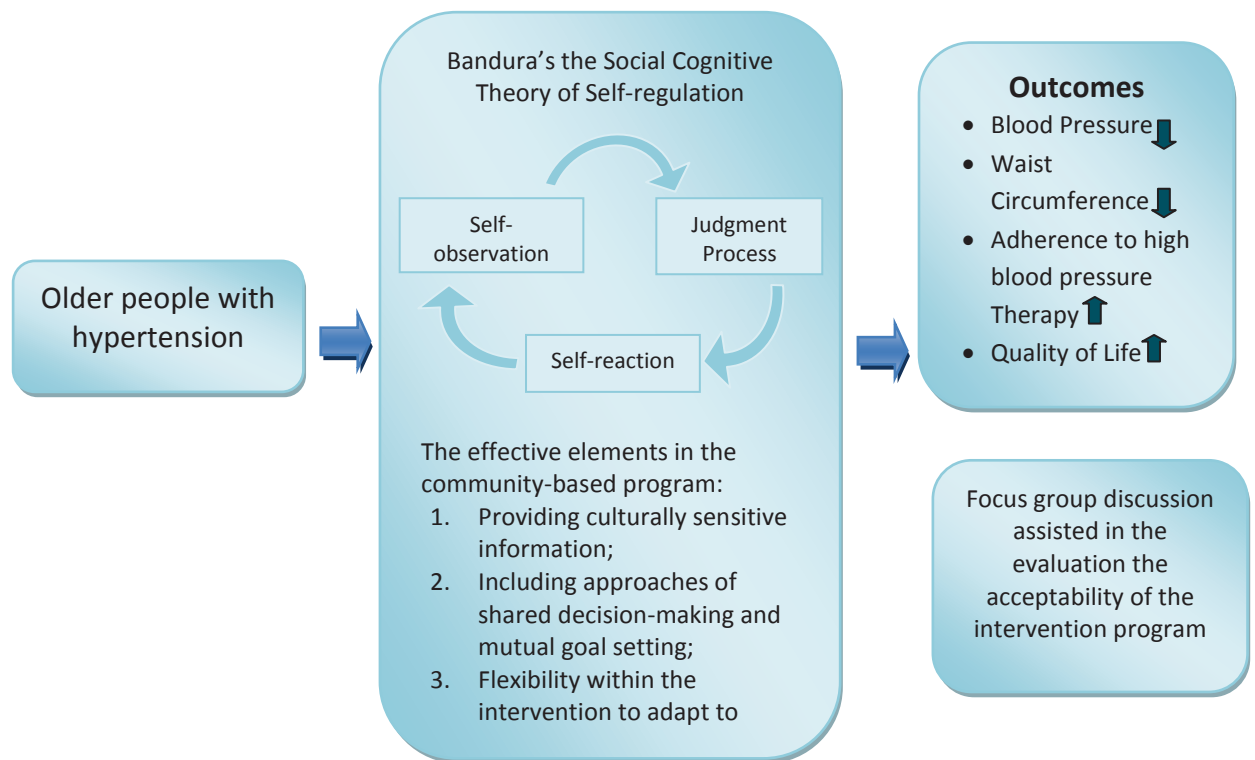
Figure 3. 1 Conceptual Framework of the Study (Bandura 1991)

3.6 CHAPTER SUMMARY

This chapter has provided an outline of theoretical principles and provided a justification for the conceptual framework informing intervention development. This framework was used as a guide to determine the research hypotheses and assist in the research-planning phase and interpretation of study data. The researcher also used the conceptual framework as the guideline to develop, conduct and evaluate an intervention program to improve health status, adherence to high blood pressure therapy and quality of life among older people in Thailand. The following chapter provides a discussion of the research methodology and includes a description of the population, research setting, sample and recruitment process, ethical considerations, intervention procedure, focus group discussion process and data analysis.

3.7 REFERENCES

Aekplakorn, W., Abbott-Klafter, J., Khonputsa, P., Tatsanavivat, P., Chongsuvivatwong, V., Chariyalertsak, S., Sangwatanaroj, S., Tiptaradol, S. & Lim, S.S. 2008, 'Prevalence and management of prehypertension and hypertension by geographic regions of Thailand: the Third National Health Examination Survey, 2004', *Journal of Hypertension*, vol. 26, no. 2, pp. 191-8.

Anderson, E.S., Winett, R.A. & Wojcik, J.R. 2007, 'Self-regulation, self-efficacy, outcome expectations, and social support: social cognitive theory and nutrition behavior', *Annals Of Behavioral Medicine: A Publication of The Society of Behavioral Medicine*, vol. 34, no. 3, pp. 304-12.

Anuruang, S., Hickman, L.D., Jackson, D., Dharmendra, T., Balen, J. & Davidson, P.M. 2013, 'Community-based interventions to promote management for older people: an integrative review', *Journal of Clinical Nursing*, vol. 23, no. 15-16, pp. 2110-20.

Bandura, A. 1977, 'Self-efficacy: toward a unifying theory of behavioral change', *Psychological Review*, vol. 84, no. 2, p. 191.

Bandura, A. 1989, 'Self-regulation of motivation and action through internal standards and goal systems'.

Bandura, A. 1991, 'Social cognitive theory of self-regulation', *Organizational behavior and Human Decision Processes*, vol. 50, no. 2, pp. 248-87.

Bandura, A. 2004, 'Health promotion by social cognitive means', *Health Education & Behavior*, vol. 31, no. 2, pp. 143-64.

Bandura, A. 2005, 'The Primacy of Self-Regulation in Health Promotion', *Applied Psychology: An International Review*, vol. 54, no. 2, pp. 245-54.

Clark, N.M., Janz, N.K., Dodge, J.A., Schork, M.A., Wheeler, J.R., Liang, J., Keteylan, S.J. & Santinga, J.T. 1997, 'Self-management of heart disease by older adults assessment of an intervention based on social cognitive theory', *Research on Aging*, vol. 19, no. 3, pp. 362-82.

Dodge, J.A., Janz, N.K. & Clark, N.M. 2002, 'The evolution of an innovative heart disease management program for older women: integrating quantitative and qualitative methods in practice', *Health Promotion Practice*, vol. 3, no. 1, pp. 30-42.

Hochbaum, G., Rosenstock, I. & Kegels, S. 1952, 'Health belief model', *United States Public Health Service*.

Jones, C.J., Smith, H. & Llewellyn, C. 2014, 'Evaluating the effectiveness of health belief model interventions in improving adherence: a systematic review', *Health Psychology Review*, vol. 8, no. 3, pp. 253-69.

Kreausukon, P., Gellert, P., Lippke, S. & Schwarzer, R. 2012, 'Planning and self-efficacy can increase fruit and vegetable consumption: a randomized controlled trial', *Journal of Behavioral Medicine*, vol. 35, no. 4, pp. 443-51.

Marshall, S.J. & Biddle, S.J. 2001, 'The transtheoretical model of behavior change: a meta-analysis of applications to physical activity and exercise', *Annals of Behavioral Medicine*, vol. 23, no. 4, pp. 229-46.

Miller, C.K., Edwards, L., Kissling, G. & Sanville, L. 2002, 'Evaluation of a Theory-based Nutrition Intervention for Older Adults With Diabetes Mellitus', *Journal of the American Dietetic Association*, vol. 102, no. 8, pp. 1069-81.

Prochaska, J.O. & DiClemente, C.C. 1982, 'Transtheoretical therapy: Toward a more integrative model of change', *Psychotherapy: Theory, Research & Practice*, vol. 19, no. 3, p. 276.

Rattanamongkolgul, D., Sritanyarat, W. & Manderson, L. 2012, 'Preparing for aging among older villagers in northeastern Thailand', *Nursing & Health Sciences*, vol. 14, no. 4, pp. 446-51.

Rosenstock, I.M., Strecher, V.J. & Becker, M.H. 1988, 'Social learning theory and the health belief model', *Health Education & Behavior*, vol. 15, no. 2, pp. 175-83.

Thanakwang, K. & Soonthorndhada, K. 2011, 'Mechanisms by which social support networks influence healthy aging among Thai community-dwelling elderly', *Journal of Aging and Health*, vol. 23, no. 8, pp. 1352-78.

Tiptaradol, S. & Aekplakorn, W. 2012, 'Prevalence, Awareness, Treatment and Control of Coexistence of Diabetes and Hypertension in Thai Population', *International Journal of Hypertension*, vol. 2012.

Young, M., Plotnikoff, R., Collins, C., Callister, R. & Morgan, P. 2014, 'Social cognitive theory and physical activity: a systematic review and meta-analysis', *Obesity Reviews*, vol. 15, no. 12, pp. 983-95.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter describes the methodological considerations of this study. A mixed method study design was considered to test and evaluate the community-based intervention program to improve hypertension management among older people with hypertension in Thailand. A quasi-experimental trial design was used to evaluate the intervention program and a focus group discussion was used to describe the participants' perspective of the intervention.

4.2 METHODS

4.2.1 Study Design

Study design can be described as the direction of research study. Creswell (2003) classified the approach of research design in three categories in term of quantitative, qualitative, and mixed method. To justify an appropriate research design, the researchers need to consider in accordance with research problem, theoretical perspective, strategies of inquiry and methods of data collection (Creswell 2003) to develop framework of the study.

In term of nursing research, mixed method design is increasingly applied in a past few decades (Creswell 2003). Mixed method design provides methodology wider methodological tool kit to answer research questions and condense the results of the single design (Cameron 2009; Mays & Pope 1995; Murtagh et al. 2007; Palinkas et al. 2011; Parker et al. 2014). Moreover, O'Cathain, Murphy & Nicholl (2007) explored the use of mixed method design in health services research (HSR). Interestingly, the findings of O'Cathain, Murphy & Nicholl (2007) have

extended the literature that researchers used a mixed method design to have more opportunity for research funding. However, Johnson & Onwuegbuzie (2004) stated the weakness that mixed method design are more difficulty, complicated, expensive, time consuming than single method design.

Creswell, Fetters & Ivankova (2004) reviewed the literature of five mixed methods studies in primary care; and found the reasons of using mixed design are to develop quantitative instrument from the findings of qualitative data and to enhance understanding of research problem.

This study is a sequential explanatory mixed method design because considering the aims of the study that to evaluate a community-based program to improve hypertension management of older people in Thailand. The designs are consisted of quantitative quasi-experimental with longitudinal study over 6 month study period to evaluate the impact of the program; qualitative focus group discussion were conducted after final measurement to explore the opinions from participants of the intervention group to assist in the intervention program evaluation process. Therefore, a mixed method design has been applied in this study as showed in **Figure 4.1**.

A quasi-experimental study design is an empirical experiment design to estimate the causal impact of an intervention on a target population. Quasi-experimental research shares similarities with a randomised controlled trial design but they specifically lack the element of random assignment to treatment or control. Instead, quasi-experimental designs allow the researcher to control the assignment to the treatment condition, but using some criterion other than random assignment. In this case it was the community of the participant.

In this quasi-experimental design, the setting was the basis of study selection to minimise contamination between the intervention, and the control group. The intervention group patients were received routine care from health care service centre plus participated in the non-blinded 4 weeks of the self-management program whereas the control group were received routine care from health care service centre. The outcomes were measured in both groups at 4 point times (pre-intervention, post-intervention, 3 and 6 months follow-up). Following this, the participants of the intervention group were invited by the researcher to focus group discussion interviewing using semi-structure to explain the outcomes from randomised controlled trial study. The researcher conducted and facilitated the interview for focus group discussion. This design was thought to increase an understanding of the effectiveness of a community-based intervention to improve hypertension management in older people with hypertension in Thailand.
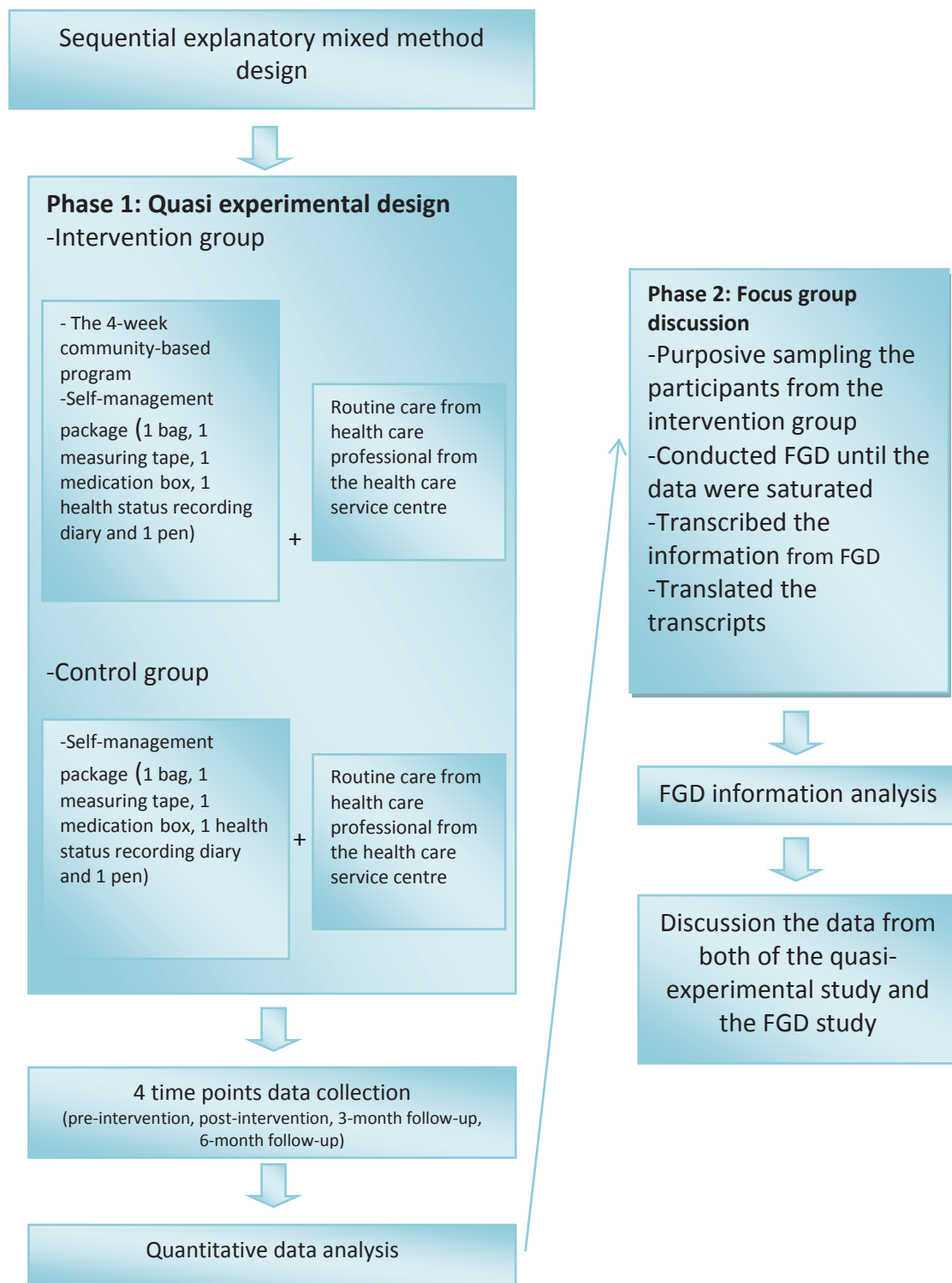
Figure 4. 1 Sequential explanatory mixed method design

Figure 4.1 illustrates of the mixed method study: priority, implementation, and integration. These three models are suggested by Creswell, Fetters & Ivankova (2004) who designed a mixed method study in primary care. In this study, these three models are represented as follows:

1. Priority as quantitative: quasi-experimental priority form

2. Implementation as quantitative followed by qualitative study

3. Integration as sequential data gathering.

4.3 ETHICAL CONSIDERATIONS

The study was approved by the Human Research Ethics Committee of Maharaj Nakhon Ratchasima Hospital Ethics Committee (MNRH IRB) in Thailand (Number 053/2013) and University of Technology, Sydney Australia (2013000310). Participants in both groups were provided the information sheets and were asked to sign a consent form initial stage. Ethical approval and information sheets in an **Appendix A, B, C.**

4.4 POPULATION AND RESEARCH SETTING

The population of this study was rural dwelling older people with hypertension. There were 786 older people with hypertension who registered with Huatale primary health care centre and received health care service from Huatale primary health care centre, Muang district, Nakhon Ratchasima province, Northeast Thailand. The Huatale primary health care centre is an outpatient service located in a community and responsible for 17 communities in Huatale sub-district. The health care professional consisted of three medical doctors, one dentist, one pharmacist, one physiotherapist, and six registered nurses. The health care professional team members were responsible for 17 communities in four dimensions of health care service regarding treatment provided, promotion health, prevention, recovery health.

4.5 STUDY SAMPLE AND ALLOCATION

The sample size of this study was calculated using the G power analysis computer program (Erdfelder, Faul & Buchner 1996) indicated that a total sample of 140 participants (70 in the intervention and 70 in the control group). From previous study illustrated that they lost 35 percentage of older participants at the second time follow-up (Scogin et al. 2014) therefore researcher recruited 35 percentage additional to account for potential attrition. Hence, 156 participants were recruited who received health care service from the primary health care centre in Nakhon Ratchasima province, the northeast Thailand.

Table 4.1 shows the full eligibility criteria. The recruitment was conducted in August to October 2013. Consequently, 156 participants were recruited and assigned to the intervention group and the control group by community location for preventing contamination between the intervention group and the control group.

The treatment assignment steps are provided as follows:

1. Ask for the database information of hypertension patients from the primary health care centre staff to get the number of hypertension population.

2. Assessed the inclusion criteria within the database program to get the number of potential participants and the communities setting.

3. Researcher met the leader of communities and potential participants for introducing the intervention program, inviting to participate in the program, and providing the information sheets.

4. Asked health care volunteer workers to help in the process of recruitment.

5. Asked the potential participants to sign in the consent form.

6. Asked the health care professional staff to group the communities.

7. Treatment assignment considering the community based was performed to assign potential participants into the intervention group and the control group.

The intervention participants (n=77) received routine care from the primary health care centre plus the 4-week community-based intervention and self-management package from the researcher. The control participants (n=79) received the routine care from the primary health care centre plus self-management package from the researcher.

Table 4. 1 Inclusion and exclusion criteria

Inclusion criteria		Exclusion criteria	
1.	Written informed consent	1.	Systolic higher than 200 mmHg and
2.	Age 60 years or above	2.	Diastolic blood pressure equal or higher than 120 mmHg
3.	Verified clinical diagnosis of hypertension	3.	Documented history of cognitive impairment precluding consent or willing to participate
4.	Adequate Thai Language literacy to enable participation	4.	Unstable to participate

4.6 SAMPLE RECRUITMENT PROCESS

Older people are well-known that they are the most challenges to recruit into research study (Bunn et al. 2008; Dibartolo & McCrone 2003). As mentioned in several previous studies, there are various factors related to refuse or unwillingness to involve in research program. These factors are time constraints, transportation, physical limitations, health status, literacy rate, self-efficacy, under-estimation of risk, personal characteristics, and previous experiences about research (Bunn et al. 2008; Dibartolo & McCrone 2003; Dodge et al. 1993).

Recruitment process is one of the challenge tasks for researchers. A review of the literature suggests effective strategies to enhance recruitment older people into research study such as considering older people needs, contact potential participants through a personalised letter of

endorsement, engagement of staff in the research (Forster et al. 2010; Reed et al. 2013; Ridda et al. 2010; Witham & McMurdo 2007). To extended and supported the literature, the researcher reviewed the literature in both facilitator and barrier factors to deeply understand in recruitment in older people. In addition, researcher shared the experiences in recruitment process for discussing in 'Strategies to enhance recruitment of rural dwelling older people with hypertension into community-based randomised controlled trials study' published in *Nurse Researcher* as provided in **Appendix N**.

4.7 INSTRUMENTS AND MEASURE

The outcomes measures included systolic blood pressure, diastolic blood pressure, waist circumference, adherence to high blood pressure therapy and health related quality of life. SBP and DBP were measured using the OMRON SEM-2 automatic blood pressure monitor which is calibrated with a mercury sphygmomanometer every year regularly. The value were determined by two consecutive blood pressure readings with a five-minute interval and used the average BP reading recorded by the research assistants, who are health care volunteer worker with at least 2 years experiences trained by health care profession. Waist circumference was measured locating the tape measure though umbilical line or midway between the top of a hip bone and the bottom of ribs. The value were identified using sex-specific WC cut-offs points including men at 90 cm and women at 80 cm (Alberti, Zimmet & Shaw 2006).

Adherence to high blood pressure therapy was assessed using the Thai Hill-Bone scale translated by Sakuntala et al (2015 submitted) as showed in **Appendix F**. This study is the first time adopting the Hill-Bone Compliance to High Blood Pressure Therapy Scale with Thai people. To considered cross-cultural adaptation, this instrument has been translated from

English language as an original version to Thai language as a cross-cultural version. Translation and validation of the Thai Hill-Bone Compliance to high Blood Pressure Therapy Scale article is provided the process of translation, the psychometrics properties testing, and the outcomes. The Thai Hill-Bone Compliance to high Blood Pressure Therapy Scale has been demonstrated to be a valid instrument to measure adherence to high blood pressure therapy and measure blood pressure level. The details are provided in **Chapter 5**, submitted in *Nurse Researcher*. The instrument contains 14 items assessed adherence to high blood pressure therapy in three important hypertension control behaviours domains as following: 1) medication taking, 2) reduced sodium intake, and 3) appointment keeping. There were arranged in four-point rating scale of all of the time (4 point), most of the time (3 point), some of the time (2 point) and none of the time (1 point). Cronbach's alpha correlation coefficient was 0.64.

Health related quality of life was measured using the Thai version of SF-36 (revised 2005) developed by Ekwatthanakun & Intarakamhang (2010). This Thai SF-36 version (revised 2005) consists of eight domains plus one item the reported health transition item which was revised from the SF-36 original version by extending two items in the Social Functioning domain to five items. The 39-items of physical and mental component include 1) the Physical Functioning 10 items; 2) the Role-Physical 4 items; 3) the Bodily Pain 2 items; 4) the General Health 5 items; 5) the Vitality 4 items; 6) the Social Functioning 5 items; 7) the Role-Emotional 3 items; 8) the Mental Health 5 items; and the Reported Health Transition 1 item. Two summarize components of all items included 21 items of physical component summary (PCS) score and 17 items of mental component summary (MCS) score. To evaluate the data, the SF-36 scores from eight domains are ranging from zero (worst health state) to hundred (best possible health state). Cronbach's alpha correlation coefficient of all aspects was more than 0.7.

4.8 INTERVENTION

The community-based intervention was developed by SA (researcher) based on a tailored, targeted and culturally consideration and underpinned by the conceptual considerations of Bandura's theory of Social Cognitive Theory of Self-Regulation (Bandura 1977).

The outcome of self-regulation can be the response of self-reaction such as behaviours changes, improvement of health status. Therefore, the hypothesis of this study is that a community-based intervention, based on Bandura's theory of Social Cognitive Theory of Self-Regulation, will improve hypertension outcomes. Adherence to high blood pressure therapy, included reducing sodium intake, keeping doctors' appointments and medication adherence assessed by using the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale. In terms of improving health status, a decrease in systolic and diastolic blood pressure level and a reduction in waist circumference were considered. Lastly, the impact of the intervention in enhancing health related quality of life among Thai older people was assessed.

The community-based intervention has adopted the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VII) (Chobanian et al. 2003) for sharing and discussing experiences of participants. In order to promote self-management related to hypertension disease, the community-based intervention also conducted components of Bandura's Social Cognitive Theory of self-regulation. The activities of this program was based on three components of self-regulation system composes of 1) self-observation, 2) judgement process, and 3) self-reactions proposed to promote good outcomes including health status, adherence to high blood pressure therapy and health related quality of life. By facilitating, the intervention program were to support participants gain self-regulation and utilized sources from community to make sustained behaviours

changes, improve health status, and improve health related quality of life. The self-management program was delivered by SA three hours biweekly, over one month period. Usually the researcher carried out the intervention program in the community of the participants.

The first session on the first day aimed to make a relationship between researcher and participants and focused on the self-observation and judgement component of self-regulation. Self-observation is related to success in one's desired behaviour and is said to produce lasting changes in activities (Bandura 1991). All participants in the intervention groups (77 participants) were divided into ten sub-groups (approximately 7-8 participants in each group). The researcher facilitated all subgroups to enable sharing of the experiences of self-management to control high blood pressure. These activities aimed to enable expression of self-observation, reflection and self-diagnostic information related to hypertension disease both of self-management strategies and health status. Following this process, the researcher summarized self-management strategies, facilitator factors, barrier factors and self-report of health status from ten sub-groups and also provided more the essential information for example interpretation health status from health measurement. The researcher also facilitated group activity for setting the personal goal to control high blood level and waist circumference and matching with close friend(s). These strategies implementation aimed to support the referential performances, a sub-aspect in the judgement process (Bandura 1991) and aimed to increase the individual's understanding of emotional states, level of motivation, and performance about hypertension health behaviour control. In this session, the researcher provided a self-management package (1 bag, 1 measuring tape, 1 medication box, 1 health status recording diary and 1 pen); and also explained and demonstrated how to use the diary for facilitating self-management at home related to quality of monitoring in self-observation.

During participation intervention, participants were received lunch box, fruit, and herbal drink during participation the self-management program.

The second part-judgement process was a supportive process and guided a process to improve self-directed reactions in the further stage. The second session on the second week focused on this component of self-regulation mechanism. Three principal sources enhancing appraisals of participant performance including: 1) development of personal standards; 2) social referential comparisons; and 3) evaluation of activities (Bandura 1991) were discussed. In this stage, the researcher conducted the group activities and social support strategies as a sharing environment to improve participant decision to perform self-management. Self-management of chronic illness requires such a peer support to improve better outcomes (Fisher et al. 2012; Lorig, Sobel & Laurent 2000). Moreover, one strategy of this stage that the researcher conducted the setting realistic goals for evaluation stage and used a structured protocol in the self-observation of health-related behaviours activities to perform the participation goal. After that, the researcher revealed the outcomes of first time and second time measurement outcomes and facilitated participants to express these reactions on these outcomes. These activities aimed to support the evaluation and tangible self-reactions in the self-reaction component.

The final dimension of this model is that self-reactive influences of self-regulatory systems may become from performance judgment of participants. To evaluate self-reactions and make tangible self-reactions process, the researcher discussed the direction to perform of personals with participant at their residence. Because evaluation self-incentives level reflects on personal competence to perform. The value of self-evaluative reactions can be a predictor for the outcomes of performance. In addition, self-motivation also is an important part to enhance needed to attain the performances. The researcher visited participant's home and also

provided tailored counselling based on individual situation and needs in particular to achieve their goal and to increase their adherence to high blood pressure therapy both of lifestyle modification and medication recommends. The individual tailored counselling session took approximately 1 hour **(Table 4.2)**.

Table 4. 2 Summary of the 4-week community-based intervention and data collection

Time	Intervention Group activities	Place	Control Group activities	Place
Week 1	**Baseline;**- The researcher meets, introduce herself and inform the participants of the research objective, detail of the research project, ethic consideration and invite for cooperation to participate in the study.	Health care service centre	**Baseline;** - The researcher meet, introduce herself and inform the participants of the research objective, detail of the research project, ethic consideration and invite for cooperation to participate in the study.	Health care service centre
	Before participation data collection		**Before participation data collection**	
	Part 1 Self-observation 1. one day group educational 2. Self-management manual booklet for older people with hypertension	community place	Usual care	Health care service centre
Week 2	**Part 2 Judgment Process** 1. 3-hour group activities 2. Peer support (Buddy strategies)	community place	Usual care	Health care service centre
Week 3-4	**Part 3 Self-reactions** 1.Home visiting to report health status and empower 2.Individual consultation	Participant home	Usual care	Health care service centre
Week 5	**After participation data collection**	community place	**After participation data collection**	community place
Month 3	**After participation data collection**	community place	**After participation data collection**	community place
Month 6	**After participation data collection**	community place	**After participation data collection**	community place

4.9 CONTROL GROUP

The participants in the control group received a self-management package without any demonstration from researcher (1 bag, 1 measuring tape, 1 medication box, 1 health status recording diary and 1 pen) and routine care from health care professional from the health care service centre. As part of the process of routine care, the nurses measured the patients' body weight and blood pressure before sending them to meet the physicians. After meeting the physician, the patients met the nurse or the pharmacist to pick up medicine and elicited information included a date of next appointment usually every one or two months according to the physician's treatment plan. In some severe case, the nurse practitioner would be visited their house and give more some information for patient and family. Participants of the control group received the self-management package same as the intervention group.

4.10 DATA COLLECTION PROCEDURE

Data regarding blood pressure level (SBP and DBP); waist circumference (WC); adherence to high blood pressure therapy and health related quality of life were collected four times points (pre-intervention: T0, post-intervention: T1, 3-month follow-up: T2, and 6-month follow-up: T3) by trained health care volunteer workers with at least 2 years experiences.

4.11 FOCUS GROUP DISCUSSION PROCEDURE

The purpose of the study, focus group discussion methodology was used to assist in the process evaluation and acceptability, particularly considering 1) approachability, 2) acceptability, 3) availability and accommodation, 4) affordability, and 5) appropriateness (Levesque, Harris & Russell 2013). These five-dimensions of access health care service framework has been used for guiding focus group discussion and analysing the information from focus group discussion. Focus group were also used to explain the outcomes from RCT

study for better understanding about phenomenon of participants (Andrew & Halcomb 2009; Morse & Niehaus 2009). Focus group interview is a commonly method to draw experiences, attitudes, feelings, beliefs, and reactions of group subjects (Gibbs 1997). In addition, the focus group discussion is recommended to use for conducting cultural diversity studies (Calderon, Baker & Wolf 2000). In this study, a qualitative phase was undertaken among Thai older rural dwelling with hypertension by using a focus group discussion in order to perceive more information and explain the findings from the quantitative data collection.

These focus groups helped understand the phenomenon of intervention group participants (Andrew & Halcomb 2009; Morse & Niehaus 2009; Tashakkori & Teddlie 2002). A semi-structured set of questions were developed as a guideline for a group discussion. After finalizing the questions, the focus groups were conducted after the final measurement at 6 month follow-up session by SA (researcher) and were continued until data saturation occurs or similar answer (Andrew & Halcomb 2009). The focus group discussed approximately 60-90 minutes with 6-8 persons in each group. All focus group discussions were recorded, transcribed, translated from Thai to English language and analysed the information in English.

The researcher (SA) who implemented the intervention program and conducted focus group discussion graduated Bachelor degree and Master degree in Nursing Science. She has more than 10-year experiences as a registered nurse in community and a nurse lecturer in collage of nursing and in university.

4.12 DATA ANALYSIS

4.12.1 Quantitative Analysis

To test the effect of the community-based intervention to promote self-management for rural dwelling older people with hypertension, all data were analysed using the Statistical Package for the Social Sciences, version 22. Normally distribution was tested using Shapiro-Wilk test that is the most powerful normality test (Razali & Wah 2011) for choosing an appropriate statistical method. If data were normally distributed thus parametric statistical method was used with the significance level set at 0.05 to accept or reject the research hypotheses. Normally distributed data are presented as frequency, percentage, range, mean and standard deviation. On the other hand, if data were not normally distributed consequently non-parametric statistical method was used and reported in term of a range, median and interquartile range.

4.12.2 Qualitative Analysis

In terms of reliability and validity of qualitative inquiry as a value of research study, trustworthiness or rigor is required (Guba 1981; Morse et al. 2008). Credibility, transferability, dependability, and confirmability must be considered to develop the research framework, and continually to report the research findings. Tobin & Begley (2004) mentioned the four aspects of trustworthiness or rigor are discussed, as follows:

1. Credibility refers to the appropriateness between informant's perspectives and the researcher's representation of the findings. A research member checking, peer debriefing, prolong engagement, persistent observation and audit trails are demonstrated credibility (Lincoln 1995; Schwandt 2001 cited in Tobin & Begley 2004).

2. Transferability refers to the generalizability of inquiry. Recognition of case-to-case transfer is represented transferability as similar as external validity in quantitative inquiry (Tobin & Begley 2004).

3. Dependability represents through a process of auditing. Authenticate confirmability is needed to illustrated auditing.

4. Confirmability refers to concerning with establishing the findings and interpretations. Triangulation can represent the conformability (Tobin & Begley 2004).

In this study, the qualitative data were collected using audio recording and field notes from the participants. Data from the focus group discussion were used to enhance interpretative rigor. Real time audio file were used for data collection and analysis. The investigator transcribed each of the audio files verbatim in Thai and subsequently the transcripts were translated into English to establish rigor in qualitative data analysing as mentioned above (Poland 1995). Essentially, an independent coding was by SA and the researcher's supervision team as a member check or a commonly used the concept of inter-rater reliability in the qualitative study in order to enhance credibility of trustworthiness (Elo & Kyngäs 2007; Kitto, Chesters & Grbich 2008; Shenton 2004).

The data were analysed using manually coding. The investigator undertook a content analysis of the data by listening audio files, reading transcripts and fielding note on several occasions. The raw information was grouped and sorted into themes based on the topic. The next step was to synthesise the data from focus group discussion in the themes into an appropriate category. Lastly, the categories were summarized combined with the interpretive step with the results from quasi-experimental study that aimed to assist in the evaluation process of the study and to enhance understanding of the results occurs from quasi-experimental study.

<div style="border:1px solid #000; padding:10px;">

Focus Group discussion were conducted after the final measurement in 6-month follow-up session by SA (researcher) and consisted of 5 parts of evaluation and acceptability the intervention questions:

1) Approachability (Ability to perceive)
   a. Could you tell me about the activities in the program that you participated in?
   b. Could you tell me about your behaviour or your health that has changed after participating in the program?
      i. How is the program affect to you?
      ii. How did you feel before participating in the program?
      iii. Could you describe any barriers while participating in the program?
2) Acceptability (Ability to seek)
   a. Do you think this program is suitable for your everyday life? If yes, please explain?
   b. How do you feel about the researcher who conducted the program?
   c. How did you seek for a health care service?
3) Availability and accommodation (Ability to reach)
   a. What kinds of transportation did you use to get to a rural community health care service centre while participating in the program?
   b. Was the time suitable for you?
4) Affordability (Ability to pay)
   a. How much money did you spend during participating in the program?
   b. How long did you participate in the program?
   c. How many times did you participate in the program? Was it suitable for you?
5) Appropriateness (Ability to engage)
   a. Could you tell me about how hard the program is?
   b. How about the language that used in this program?
   c. How did you feel before participating in the program?
   d. What do you think about the activities in the program are appropriate to the needs for care?

</div>

Figure 4. 2 Question route for Focus group discussion developed by using five-dimensions of access to health care (Levesque, Harris & Russell 2013)

Figure 4.2 presents the structure of guideline questions to conduct the focus group discussion and this framework was used as a guide to analyze information from participants. The five-dimensions of access to health care (Levesque, Harris & Russell 2013) are used in this study because this conceptualization concerned both of characteristics such as personal, economic and social characteristics. The resource allocation is related to social and health needs. These could be represented the accessibility of the intervention program and also help the researcher to 1) identify the key issues raised by the samples; 2) identify key concepts/themes; and 3) manage and synthesize the concepts. These five-dimensions of access to health care were described by Levesque, Harris & Russell (2013) as following:

1. Approachability refers to ability to perceive. Health literacy, health beliefs, trust, and expectations are key elements to represent this dimension.

2. Acceptability refers to ability to seek. Personal and social values, culture, gender, and autonomy are key elements to represent this dimension.

3. Availability and accommodation refers to ability to reach. Living, environments, transport, mobility, and social support are key elements to represent this dimension.

4. Affordability refers to ability to pay. Income, assists, social capital, and health insurance are key elements to represent this dimension.

Appropriateness refers to ability to engage. Empowerment, information, adherence, caregiver, and support are key elements to represent this dimension.

4.13 CHAPTER SUMMARY

This chapter has provided a description of the methodological considerations and justification of the study method. A mixed method design in which a quantitative, quasi-experimental study with an embedded qualitative study was applied in this study. The following chapter provides the methodological considerations of cross-cultural translation of the Hill-Bone Compliance to High Blood Pressure Therapy Scale into Thai context. The outcomes of psychometric properties also described in the chapter.

4.14 REFERENCES

Alberti, K., Zimmet, P. & Shaw, J. 2006, 'Metabolic syndrome—a new world-wide definition. A consensus statement from the international diabetes federation', *Diabetic Medicine*, vol. 23, no. 5, pp. 469-80.

Andrew, S. & Halcomb, E. 2009, *Mixed methods research for nursing and the health sciences*, Wiley Online Library.

Bandura, A. 1977, 'Self-efficacy: toward a unifying theory of behavioral change', *Psychological Review*, vol. 84, no. 2, p. 191.

Bandura, A. 1991, 'Social cognitive theory of self-regulation', *Organizational behavior and human decision processes*, vol. 50, no. 2, pp. 248-87.

Bunn, F., Dickinson, A., Barnett-Page, E., Mcinnes, E. & Horton, K. 2008, 'A systematic review of older people's perceptions of facilitators and barriers to participation in falls-prevention interventions', *Ageing and Society*, vol. 28, no. 4, pp. 449-72.

Calderon, J.L., Baker, R.S. & Wolf, K.E. 2000, 'Focus Groups: A Qualitative Method Complementing Quantitative Research for Studying Culturally Diverse Groups', *Education for Health: Change in Learning & Practice (Taylor & Francis Ltd)*, vol. 13, no. 1, pp. 91-5.

Cameron, R. 2009, 'A sequential mixed model research design: design, analytical and display issues', *International Journal of Multiple Research Approaches*, vol. 3, no. 2, pp. 140-52.

Chobanian, A.V., Bakris, G.L., Black, H.R., Cushman, W.C., Green, L.A., Izzo Jr, J.L., Jones, D.W., Materson, B.J., Oparil, S. & Wright Jr, J.T. 2003, 'Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure', *Hypertension*, vol. 42, no. 6, pp. 1206-52.

Creswell, J.W. 2003, *Research design: Qualitative, quantitative, and mixed methods approaches*, Sage publications.

Creswell, J.W., Fetters, M.D. & Ivankova, N.V. 2004, 'Designing a mixed methods study in primary care', *Annals of Family Medicine*, vol. 2, no. 1, pp. 7-12.

Dibartolo, M.C. & McCrone, S. 2003, 'Recruitment of rural community-dwelling older adults: barriers, challenges, and strategies', *Aging & Mental Health*, vol. 7, no. 2, p. 75.

Dodge, J.A., Clark, N.M., Janz, N.K., Lhang, J. & Schork, M.A. 1993, 'Nonparticipation of older adults in a heart disease self-management project factors influencing involvement', *Research on Aging*, vol. 15, no. 2, pp. 220-37.

Ekwatthanakun, C. & Intarakamhang, P. 2010, 'Reliability of Thai version of SF-36 questionnaire (revised 2005) for evaluation of quality of life in patients with stroke', *Journal of Thai Rehabilitation Medicine*, vol. 19, no. 2, pp. 63-7.

Elo, S. & Kyngäs, H. 2007, 'The qualitative content analysis process', *Journal of Advanced Nursing*, vol. 62, no. 1, pp. 107-15.

Erdfelder, E., Faul, F. & Buchner, A. 1996, 'GPOWER: A general power analysis program', *Behavior Research Methods, Instruments, & Computers*, vol. 28, no. 1, pp. 1-11.

Fisher, E.B., Boothroyd, R.I., Coufal, M.M., Baumann, L.C., Mbanya, J.C., Rotheram-Borus, M.J., Sanguanprasit, B. & Tanasugarn, C. 2012, 'Peer support for self-management of diabetes improved outcomes in international settings', *Health Affairs*, vol. 31, no. 1, pp. 130-9.

Forster, S.E., Jones, L., Saxton, J.M., Flower, D.J., Foulds, G., Powers, H.J., Parker, S.G., Pockley, A.G. & Williams, E.A. 2010, 'Recruiting older people to a randomised controlled dietary intervention trial - how hard can it be?', *BMC Medical Research Methodology*, vol. 10, pp. 17-23.

Gibbs, A. 1997, 'Focus groups', *Social Research Update*, vol. 19, no. 8.

Guba, E.G. 1981, 'Criteria for assessing the trustworthiness of naturalistic inquiries', *ECTJ*, vol. 29, no. 2, pp. 75-91.

Johnson, R.B. & Onwuegbuzie, A.J. 2004, 'Mixed methods research: A research paradigm whose time has come', *Educational Researcher*, vol. 33, no. 7, pp. 14-26.

Kitto, S.C., Chesters, J. & Grbich, C. 2008, 'Quality in qualitative research', *Medical Journal of Australia*, vol. 188, no. 4, p. 243.

Levesque, J.F., Harris, M.F. & Russell, G. 2013, 'Patient-centred access to health care: conceptualising access at the interface of health systems and populations', *International Journal for Equity in Health*, vol. 12, no. 1, p. 18.

Lorig, K., Sobel, D. & Laurent, D. 2000, *Living a healthy life with chronic conditions: self-management of heart disease, arthritis, diabetes, asthma, bronchitis, emphysema & others*, Bull Pub Co.

Mays, N. & Pope, C. 1995, 'Qualitative research: rigour and qualitative research', *BMJ*, vol. 311, no. 6997, pp. 109-12.

Morse, J.M., Barrett, M., Mayan, M., Olson, K. & Spiers, J. 2008, 'Verification strategies for establishing reliability and validity in qualitative research', *International journal of qualitative methods*, vol. 1, no. 2, pp. 13-22.

Morse, J.M. & Niehaus, L. 2009, *Mixed method design: Principles and procedures*, vol. 4, Left Coast Pr.

Murtagh, M., Thomson, R., May, C., Rapley, T., Heaven, B., Graham, R., Kaner, E., Stobbart, L. & Eccles, M. 2007, 'Qualitative methods in a randomised controlled trial: the role of an integrated qualitative process evaluation in providing evidence to discontinue the intervention in one arm of a trial of a decision support tool', *Quality and Safety in Health Care*, vol. 16, no. 3, pp. 224-9.

O'Cathain, A., Murphy, E. & Nicholl, J. 2007, 'Why, and how, mixed methods research is undertaken in health services research in England: a mixed methods study', *BMC Health Services Research*, vol. 7, no. 1, pp. 1-11.

Palinkas, L.A., Aarons, G.A., Horwitz, S., Chamberlain, P., Hurlburt, M. & Landsverk, J. 2011, 'Mixed method designs in implementation research', *Administration and Policy in Mental Health and Mental Health Services Research*, vol. 38, no. 1, pp. 44-53.

Parker, C.P., Cunningham, C.L., Carter, B.L., Vander Weg, M.W., Richardson, K.K. & Rosenthal, G.E. 2014, 'A Mixed-Method Approach to Evaluate a Pharmacist Intervention for Veterans With Hypertension', *The Journal of Clinical Hypertension*, vol. 16, no. 2, pp. 133-40.

Poland, B.D. 1995, 'Transcription quality as an aspect of rigor in qualitative research', *Qualitative Inquiry*, vol. 1, no. 3, pp. 290-310.

Razali, N.M. & Wah, Y.B. 2011, 'Power comparisons of shapiro-wilk, kolmogorov-smirnov, lilliefors and anderson-darling tests', *Journal of Statistical Modeling and Analytics*, vol. 2, no. 1, pp. 21-33.

Reed, R.L., Barton, C.A., Isherwood, L.M., Oliver Baxter, J.M. & Roeger, L. 2013, 'Recruitment for a clinical trial of chronic disease self-management for older adults with multimorbidity: a successful approach within general practice', *BMC Family Practice*, vol. 14, no. 1, pp. 125-31.

Ridda, I., MacIntyre, C., Lindley, R. & Tan, T. 2010, 'Difficulties in recruiting older people in clinical trials: an examination of barriers and solutions', *Vaccine*, vol. 28, no. 4, pp. 901-6.

Scogin, F., Fairchild, J.K., Yon, A., Welsh, D.L. & Presnell, A. 2014, 'Cognitive bibliotherapy and memory training for older adults with depressive symptoms', *Aging & Mental health*, vol. 18, no. 5, pp. 554-60.

Shenton, A.K. 2004, 'Strategies for ensuring trustworthiness in qualitative research projects', *Education for information*, vol. 22, no. 2, pp. 63-75.

Tashakkori, A. & Teddlie, C. 2002, *Handbook of mixed methods in social & behavioral research*, Sage Publications, Incorporated.

Tobin, G.A. & Begley, C.M. 2004, 'Methodological rigour within a qualitative framework', *Journal of Advanced Nursing*, vol. 48, no. 4, pp. 388-96.

Witham, M.D. & McMurdo, M.E.T. 2007, 'How to get older people included in clinical studies', *Drugs & Aging*, vol. 24, no. 3, pp. 187-96.

CHAPTER 5: TRANSLATION AND VALIDATION OF INSTRUMENT (PUBLICATION)

Publication Title: The Thai Hill-Bone HBP Compliance Scale: a Translation and Validation Study

This chapter reports the translation and testing of the psychometric properties of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale. The context in this chapter has been submitted to *Nurse Researcher*.

5.1 ABSTRACT

Aims and objectives. This study reports the translation and testing of the psychometric properties of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale.

Background. The Hill-Bone Compliance to High Blood Pressure Therapy Scale (the Hill-Bone HBP Compliance Scale) was developed to assess strategies to manage behaviours to control hypertension, including reduced sodium intake, appointment keeping and antihypertensive medication taking. To enable the use of the instrument, not only should the instrument be translated to the target language, but also adapted to address socio-cultural issues of the target population.

Design. Cross-sectional study. Community dwelling individuals with diagnosed hypertension were recruited from a primary health care centre in North-east Thailand.

Methods. The cross-cultural adaptation of the Hill-Bone HBP Compliance Scale was conducted using the Beaton guideline for the process of cross-cultural adaptation of self-report measures.

Results. The mean age of participants was 70 (SD 6.34; range 60-88) and 68.6% (107 of 156) of participants were female. The median duration of diagnosed hypertension was 9 years (IQR 5-13). Standardized Cronbach's alpha of all items was 0.64, 0.61 for reduced sodium intake subscale, 0.5 for appointment keeping subscale and 0.69 for medication taking subscale. Pearson's correlation coefficient demonstrated inter-item correlation values ranged from -0.14 to 0.58. The Thai Hill-Bone HBP Compliance scores were positively correlated with level of systolic and diastolic blood pressure.

Conclusion. The Thai Hill-Bone HBP Compliance Scale has been shown to be a valid instrument to measure adherence to high blood pressure therapy and measure blood pressure level. Ongoing assessment of psychometric properties is warranted. Developing and evaluating programs to promote self-management are contingent on valid and reliable instruments. The Thai Hill-Bone HBP Compliance Scale is likely an important tool for hypertension management programs in Thailand.

Keywords. cross-cultural adaptation, high blood pressure, Hill-Bone HBP Compliance Scale, psychometric

5.2 INTRODUCTION

Hypertension is an important cause of cardiovascular disease morbidity, disability and mortality in adult and older people globally, including Thailand (Chinwatanakul et al. 2012; World Health Organisation 2009). Heart disease, cerebrovascular disease, kidney disease and vascular dementia are adverse effects from uncontrolled high blood pressure. Over recent decades, the perspective of disease management has evolved to include promoting self-management (Elzen et al. 2007). Due to the asymptomatic nature of hypertension, promoting self-management and monitoring are required.

The common intermediate outcomes of self-management studies are to change patients'
behaviours so that health outcomes can improve includes the quality of life as well as
treatment adherence (Foster et al. 2007). Adherence to lifestyle modification and
antihypertensive medication recommendations among people with hypertension is one of the
most important measurements to investigate an effective outcome of self-management.

5.3 BACKGROUND

Hill-Bone Compliance to High Blood Pressure Therapy Scale (the Hill-Bone HBP Compliance
Scale) was developed to evaluate important behaviours including reduced sodium intake,
appointment keeping and antihypertensive medication taking (Kim et al. 2000). It consists of
14 items that assesses patients' self-reported adherence to high blood pressure
recommendations. This original measuring instrument has been shown suitable for use among
hypertensive patients in both clinical and community setting (Dennison et al. 2007; Kim et al.
2000; Lambert et al. 2006). Moreover, the Hill-Bone HBP Compliance Scale has higher internal
consistency reliability compared to other measuring instruments (Voils et al. 2011).

The Hill-Bone HBP Compliance Scale has been used in various cultures, populations and in
several countries such as United States of America, South Africa, United Kingdom, Turkey,
Germany, Zambia, Saudi Arabia, Korea and Malaysia (Alsolami et al. 2013; Gohar et al. 2008;
Karademir et al. 2009; Kim et al. 2000; Koschack et al. 2010; Lambert et al. 2006; Mweene
2012; Ramli, Ahmad & Paraidathathu 2012; Song et al. 2011). With the use in diverse cultures
and population backgrounds, not only does the instrument have to be translated to the target
language, but also it must be adapted to address socio-cultural issues of the target population
(Beaton et al. 2000; Davidson et al. 2004).

5.4 AIM

This study reports the translation, adaptation and psychometric testing of the Thai Hill-Bone HBP Compliance Scale.

5.5 METHODS

5.5.1 Design and Participants

This cross-sectional study was carried out in a primary health care centre in North-east Thailand. Community dwelling individuals with diagnosed hypertension were recruited.

5.5.2 Ethical Issues

This study approved by the UTS Human Research Ethics Committee (HREC) of University of Technology, Sydney Australia and the Institutional Review Board (2013000310), Maharat Nakhon Ratchasima Hospital Ethics Committee (MNRH IRB) in Thailand (Number053/2013).

5.5.3 Instrument

The Hill-Bone Compliance to High Blood Pressure Therapy Scale (the Hill-Bone HBP Compliance Scale)

The Hill-Bone HBP Compliance Scale, emphasising cultural sensitivity, was developed and tested among African-American adults with hypertension, US in 2000 (Kim et al. 2000). The Hill-Bone HBP Compliance Scale is composed of 14 items that assess adherence to high blood pressure therapy in three important hypertension control behaviours: medication taking; reduced sodium intake; and appointment keeping. Firstly, the medication taking subscale contains eight items assessing antihypertensive medication taking behaviour. Secondly, the

reduced sodium subscale contains three items assessing dietary behaviour related to sodium intake. Lastly, the appointment keeping subscale contains three items assessing appointments for doctor visits. Therefore, the measurement contains 14 questions with a four-level Likert rating scale for each question. The rating scales consisting of 4 indicating all of the time, 3 indicating most of the time, 2 indicating some of the time and 1 indicating none of the time. One item needs to be inversely coded before analysing (item no.6). The total score is a range of 14 to 56. A higher score reflects a lower level of compliance. The measurement can be used both as a self-reported and interviewer conducted questionnaire, and takes approximately 5 minutes.

The reliability and validity of the original version of the Hill-Bone HBP Compliance Scale was tested with two groups of hypertensive patients who enrolled in clinical trials to improve hypertension care without age restriction and a control group. The reliability was assessed using standardized Cronbach's alpha. The results showed the internal consistency reliability of 0.74 and 0.84, and the inter-item correlations of 0.18 and 0.28, respectively. The results indicated that high adherence scores predicted a significant lower level of blood pressure and a higher level of blood pressure control.

Clinical and socio-demographic questionnaire

In this study, the participants' demographic and clinical characteristics included age, gender, marital status, independent living situation, occupation, and educational status. The second part focused on participants' clinical status consisting of duration of diagnosed hypertension, number of comorbid diseases, number of medicines, systolic and diastolic blood pressure level.

Cross-cultural adaptation procedures

Linguistic translation of items is insufficient for the rigorous cross-cultural adaptation of instruments. Psychometric integrity needs to be concerned with cultural adaptation through different target cultures. The process of translation and adaptation from the original source for use in other languages, cultures and countries requires careful planning and implementation of instrument. Researchers must consider the sensitivity and uniqueness of cultural meaning in cross-cultural adaptation in order to reach similarity of the content validity between the original and the target versions of the instrument. Previous studies have suggested important factors to consider during cross-cultural adaptation and generalisation of instruments included languages, cultural context, social context, countries, demographic data, social class differences and health status (Anderson, Aaronson & Wilkin 1993; Beaton et al. 2002; Eyton & Neuwirth 1984; Guillemin, Bombardier & Beaton 1993; Hunt et al. 1991). In the Beaton model (Beaton et al. 2002), the researchers approached the cross-cultural adaptation process in six different stages: 1) Initial translation, 2) Synthesis of the translation, 3) Back translation, 4) Expert committee evaluation, 5) Test of the pre-final version, and 6) Submission of documentation to the developers or coordination committee for appraisal of the adaptation process. The details are as described below:

Stage I: Initial Translation

SA who has 15 years of clinical experience, and another translator, who is a bilingual (English and Thai) without any clinical experience, translated the instrument. This stage aims to detect different meaning and to reflect the ambiguous wording in the original version (Beaton et al. 2000).

Stage II: Synthesis of the Translation

In this stage, the first translator and the second translator worked together to synthesize the results of the target language translation, and to produce the consensus target version. Two translators considered in the evidence of the equivalences of the items in four aspects consisting of sematic equivalence, idiomatic equivalence, experiential equivalence and conceptual equivalence between the source and the target versions (Borsa, Damásio & Bandeira 2012; Guillemin, Bombardier & Beaton 1993).

The first issue was the phrase of 'How often'. The first translator put it at the beginning of the sentence for Thai language, but the second translator put it at the end of sentence to make more easily understood.

The second issue related to a sematic equivalence was the words of 'miss' in the items (7, 11, 12 and 14), and 'run out' in the items 9. To overcome these issues, the two translators discussed words based on the Thai culture and decided to use the words that were appropriate to the Thai context.

The third issue related to an experiential equivalence. Both translators discussed the meaning of "How often do you shake salt on your food before you eat it?" in item 4, which refers to a reduced sodium intake behaviour. In the Thai context, most Thai restaurants and food stand shops provide only fish sauce rather than salt as in western countries. The consensus translation was substituted for "How often do you add fish sauce into the food that you are going to eat?". In addition, item 5 of the original version mentioned the words 'fast food', both translators discussed this word based on the Thai context. Thais seldom have had fast foods but a la carte from food stands such as Kao Kang, Kuay Tiew, Pad Thai, or Rad Na is chosen.

The consensus version changed from fast food to a la cartes from food stands in the Thai version. The last issue related to conceptual equivalence was the words of 'salty food' in item 3. In the consensus version, the first translator defined 'salty food' in accordance with a context of hypertension management perspective to maintain the conceptual equivalence as 'salty food or food that contains high levels of sodium'.

Stage III: Back Translation

In this stage, another translator translated back from Thai to English language with blinding from the original version. In this study, back translation was executed by a bilingual translator who is a specialist in language translation from the Translation Services Unit, Faculty of Arts, Chulalongkorn University. **Table 5.1** shows The Hill-Bone HBP Compliance Scale as the source version and the Thai Hill-Bone HBP Compliance Scale as the cross-cultural adaptation version.

Table 5. 1 the Hill-Bone HBP Compliance Scale of the Original version and the Back-translation version

Item	The source version	Back-translation version	Factor
1	How often do you forget to take your HBP medicine?	*How often do you forget to take the HBP medicine?*	Medication taking
2	How often do you decide not to take your HBP medicine?	*How often do you decide not to take the HBP medicine?*	Medication taking
3	How often do you eat salty food?	*How often do you consume salty food or food that contains high levels of sodium?*	Reduced sodium intake
4	How often do you shake salt on your food before you eat it?	*How often do you add fish sauce into the food that you are going to eat?*	Reduced sodium intake
5	How often do you eat fast food?	*How often do you eat a la cartes from food stands?*	Reduced sodium intake
6	How often do you make the next appointment before you leave the doctor's office?*	*How often do you take an appointment card from the hospital or the clinic when you leave?*	Appointment keeping
7	How often do you miss scheduled appointments?	*How often do you miss a doctor's appointment?*	Appointment keeping
8	How often do you forget to get prescriptions filled?	*How often do you forget to pick up or deliberately decide not to pick up the prescribed medicine?*	Medication taking
9	How often do you run out of HBP pills?	*How often do you run out of your HBP medicine?*	Medication taking
10	How often do you skip your HBP medicine before you go to the doctor?	*How often do you decide to stop taking your HBP medicine a few days before seeing your doctor?*	Medication taking
11	How often do you miss taking your HBP pills when you feel better?	*When you think that your condition has improved, how often do you stop taking the medicine?*	Medication taking
12	How often do you miss taking your HBP pills when you feel sick?	*When you think that your condition is bad, how often do you stop taking the medicine?*	Medication taking
13	How often do you take someone else's HBP pills?	*How often do you take somebody else's HBP medicine?*	Medication taking
14	How often do you miss taking your HBP pills when you are careless?	*When you feel less bothered about your condition, how often do you skip taking the HBP medicine?*	Medication taking

HBP = High Blood Pressure; *Reverse coding

Stage IV: Expert Committee Evaluation

Face validity and Content validity

To improve the quality of the Thai Hill-Bone HBP Compliance Scale, the cross-cultural adaptation version, the items of the instrument should check for face validity through readers who have no clinical experience. Basically, face validity needs an outside reader to assess whether the items actually measure its objective outcomes (Streiner, Norman & Cairney 2014). Three readers without clinical experiences were invited to make comments, and to certify all items that measured adherence behaviours to high blood pressure therapy among Thai people.

However, face validity only is insufficient for verifying the quality of the items and quality of the instrument. Content validity also must be checked in order to measure what it is desired to measure and serve its objectives (Cronbach & Meehl 1955). The Thai Hill-Bone HBP Compliance Scale was examined in terms of language appropriateness and cultural sensitivity by the panel of three experts, consisting of three academic nurses with expertise in chronic condition self-management, aged care, and public health. The measuring instrument was revised in accordance with the three experts' comments and suggestions.

Stage V: Test of the Pre-final Version

To finalize the measuring instrument, a convenience sample of 156 older people with hypertension who utilized the primary care unit centre in a community in Northeast Thailand was recruited to test the Thai Hill-Bone HBP Compliance Scale.

The Thai Hill-Bone HBP Compliance Scale

The Thai Hill-Bone HBP Compliance Scale containing 14 items covering reduced sodium intake subscale, medications taking subscale and appointment keeping subscale was administrated to 156 participants. Scoring of the Thai Hill-Bone HBP Compliance Scale is congruent with the original version guideline.

Blood pressure

The researcher used a non-mercury sphygmomanometer using the OMRON SEM-2 automatic blood pressure monitor instead of a mercury sphygmomanometer to assess the blood pressure level. This machine was calibrated for accuracy with a mercury sphygmomanometer annually.

The guidelines to measure blood pressure level of the JNC VII (Chobanian et al. 2003) recommend that there should be two consecutive blood pressures reading with a five-minute interval. People should sit quietly for at least five minutes in a chair, with feet on the floor, and arm supported at heart level. Moreover, people should not have exercised, smoked a cigarette, drunk alcohol, ingested caffeine or been exposed to exertion or cold for at least 30 minutes prior the measurement (Lenfant et al. 2003).

Psychometric Quality Analysis

Psychometric evaluation of the translated instrument is an important stage of the cross-cultural adaptation process in order to ensure the instrument is valid and reliable. As the use of a reliability test is insufficient to represent a high quality of the instrument and reliability is only a prerequisite to validity (Brink, Louw & Grimmer-Somers 2011), test validation also was checked to assess the Thai Hill-Bone HBP Compliance Scale. Validity refers to the degree that

the phenomenon that the researcher proposes to measure is the aspect of the phenomenon of interest and is measured truly (Brink, Louw & Grimmer-Somers 2011). Types of test validation comprises face validity, content validity, construct validity, and criterion validity (concurrent validity). This study aimed to assess the sensitivity and specificity of the Thai Hill-Bone HBP Compliance Scale and to compare the equivalence to the original of Hill-Bone HBP Compliance Scale. Therefore, face validity, content validity, construct validity and criterion validity were tested. Face validity and content validity mentioned before in '*Stage IV: Expert Committee Evaluation'.*

Reliability and accuracy

The internal consistency of an instrument measurement refers to the objectives that it is intend to test or the implication criteria of the reliability test. This study proposed the comparison of the reliability of the Thai Hill-Bone HBP Compliance Scale and the original version of the Hill-Bone HBP Compliance Scale. However, the reliability for instrument among new sample should demonstrate the value of standardized Cronbach α coefficients more than 0.8 (Nunnally, Bernstein & Berge 1967).

The estimates of internal consistency based on the average interrelation of the items including inter-item correlation and inter-scale correlation were checked using the Pearson's correlation coefficients. Correlation coefficient is a measure of linear relationship using a value of *r* that ranges from -1 to 1 and provides information on direction and strength of relationship. A value of 1 indicates the perfect linear relationship between two variables in the positive direction and a value of −1 implies the perfect relationship between two variables in the inverse direction. Whereas, a value of 0 implies that there is no linear correlation between the variables.

Construct Validity

For construct validity, the exploratory factor analysis (EFA) was used to assess the structures of a scale in nature through clustering items by common variance using Eigenvalue test. Generally, the sample size is important to analyse factors. Hence, Kaiser-Meyer-Olkin (KMO) was used to test the sufficiency of sample to perform a satisfactory factor analysis. The KMO index with greater than 0.50 is considered as a suitable criterion for factor analysis (Williams, Brown & Onsman 2012). In addition, the Bartlett's test of sphericity, which is often done prior to factor analysis was also used to determine the relationships among items of the instrument (Tahmasebi & Noroozi 2012).

Criterion Validity

Criterion validity is a type of concurrent validity to examine the operationalization's ability to discriminate the outcomes measurement. If this instrument comes up with a way of assessing adherence to high blood pressure therapy, the outcome of measurement should show positive correlation between the total score and blood pressure level.

5.5.4 Data Analysis

The SPSS (Statistical Package for the Social Science version 22) was used for statistical analysis with the alpha significance level of 0.05. Data regarding demographic characteristics, clinical status of the participants as well as individual items on the Thai Hill-Bone HBP Compliance Scale were analysed using descriptive statistics.

Stage VI: Submission of Documentation to the Developers or Coordination Committee for Appraisal of the Adaptation Process

The researcher discussed the back translated items with one of the original developers (Dr Martha Hill) about the comparison between the original versions comparing to the target versions, especially item 14. Dr Martha Hill agreed with all items of the back translation. Additionally, she recommended the researcher elicit suggestions at the end of the measuring instrument in order to receive other useful comments from the participants.

5.6 RESULTS

5.6.1 Characteristics of the Sample

Table 5.2 shows the summary of demographic and clinical status of the participants. The participants included 156 older people with hypertension, of whom 107 (68.6%) were female, while 49 of them (31.4%) were male. Half of the participants (53.2%) were married, while 30.1% were widows. Most of them (80.1%) lived with a spouse, a caregiver or relatives. Most (79.5%) gave their occupation as home duties, while 71.2% completed school or intermediate certificate.

Table 5.2 illustrates results on clinical status and includes duration of diagnosed hypertension, comorbid disease, number of medicine, systolic blood pressure level (SBP), and diastolic blood pressure level (DBP). The mean of duration of diagnosed hypertension was 10.27 years (SD = 7.22; range 1-40). Mean of systolic blood pressure was 145.83 mmHg. (SD = 13.18; range 110-200) and mean of diastolic blood pressure was 80.27 mmHg (SD = 10.39; range 55-116). According to the JNC VII guideline for hypertension management, the definition of blood pressure control that the SBP is lower than 140 mmHg. and the DBP is lower than 90 mmHg (Chobanian et al. 2003). In the pre-test measurement, over 60% of the participants (104 of

156) had uncontrolled SBP. In contrast, 84% of the participants (131 of 156) had controlled DBP. In addition, the mode number of medicine was four agents (range 0-11) and the mode number of comorbidity disease excluding hypertension was one disease (range 0-4).

The Thai Hill-Bone HBP Compliance Scale measures three adherence behaviours for high blood pressure therapy: reduced sodium intake, appointment keeping and medication taking. **Table 5.3** shows the comparison of the Thai Hill-Bone HBP Compliance Scale and blood pressure control status of participants with and without controlled blood pressures. Of the 156 participants, 110 participants (70.51%) had uncontrolled systolic blood pressures (SBP $\geq$ 140 mmHg) and 126 participants (80.77%) had controlled diastolic blood pressure status (DBP $\leq$ 90 mmHg). The mean total Thai Hill-Bone HBP Compliance score in the SBP control group was 17.87 (SD = 3.10) whereas the mean SBP uncontrolled group was 17.59 (SD = 3.09). For DBP, the mean total Thai Hill-Bone HBP Compliance score of control group was 17.59 (SD = 3.10) and the mean total Thai Hill-Bone HBP Compliance score of uncontrolled group was 18.03 (SD = 3.03).

Table 5. 2 Demographic and Clinical status of the participants (N = 156)

Characteristics	N	(%)	Range	Mean (SD)	Median (IQR)
Demographic data					
Age			60-88	70 (6.3)	
Gender					
Female	107	68.6			
Male	49	31.4			
Marital status					
Single	17	10.9			
Married	83	53.2			
Separated	4	2.6			
Divorced	5	3.2			
Widow	47	30.1			
Independent living situation					
Living Alone	25	16.0			
Living with spouse, carer or relative(s)	125	80.1			
Living with others	6	3.8			
Occupation					
Paid employment	11	7.1			
Home duties	124	79.5			
Retired/pensioner	21	13.5			
Educational					
No school certificate or other qualifications	10	6.4			
School or intermediate certificate	111	71.2			
Higher school or leaving certificate	25	16.0			
Trade/apprenticeship (e.g. hairdresser, chef)	2	1.3			
University degree or higher	8	5.1			
Clinical status					
Duration of diagnosed hypertension			1-40		9.0 (5-13)
Number of Comorbidity disease			0-4		1.0 (1-2)
Number of Medicines			0-11		4.0 (3-6)
Blood pressure					
Systolic Blood Pressure Level[a]			110-200	145.8 (13.2)	
Controlled (<140 mmHg)	52	33.3			
Uncontrolled ($\geq$140 mmHg)	104	66.7			
Diastolic Blood Pressure Level[a]			55-116	80.3 (10.4)	
Controlled (<90 mmHg)	131	84.0			
Uncontrolled ($\geq$90 mmHg)	25	16.0			

Note. [a]According to the Report of the JNC VII's guideline

Table 5. 3 Comparison of the Thai Hill-Bone HBP Compliance Scale and blood pressure control status (N = 156)

Factors	N	%	Total HB		Reduced sodium intake		Appointment keeping		Medication taking	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
SBP										
Control	46	29.5	17.9	3.1	5.0	1.7	2.4	0.8	10.5	2.3
Uncontrolled	110	70.5	17.6	3.1	4.7	1.6	2.4	0.9	10.5	2.0
DBP										
Control	126	80.8	17.6	3.1	4.8	1.7	2.4	0.9	10.4	2.1
Uncontrolled	30	19.2	18.0	3.0	4.8	1.4	2.4	0.8	10.8	2.0
Total	156	100	17.7	3.1	4.8	1.6	2.4	0.8	10.5	2.1

Highest total score = 56 mean non-compliant to high blood pressure therapy
Lowest total score =14 mean good-compliant to high blood pressure therapy

5.6.2 The Psychometric Evaluation

To approve the sampling adequacy for exploratory factor analysing, two statistical methods were used. The Kaiser-Meyer-Olkin showed 0.64 indicating a 'mediocre' level which ranges from 0.61 to 0.69 (Kaiser & Rice 1974). In addition, Bartlett's test of sphericity approximate chi-square was 422.91, p<0.001 demonstrating significant correlation between the items to perform factor analysis **(Table 5.4)**. The communalities extraction value of 14 items ranged between 0.45 and 0.75 and deleted the sixth item and the fourteenth item ranged between 0.55 and 0.79 **(Table 5.5)**.

Table 5. 4 KMO measure of Sampling Adequacy and Bartlett's test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (14-items)		.64
Bartlett's Test of Sphericity (14-items)	Approx. Chi-Square	422.91
	df	91
	Sig. (p-value)	<.0001
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (7-items)		.71
Bartlett's Test of Sphericity (7-items)	Approx. Chi-Square	254.49
	df	21
	Sig. (p-value)	<.0001

Table 5. 5 Factor analysis and corrected item to total correlation (N = 156)

Item	Factor	Model 1 Communalities Extraction (14 items)	Model 2 Communalities Extraction (7 items)
	Factor 1: Reduced sodium intake		
3*	*How often do you consume salty food or food that contains high levels of sodium?*	0.51	-
4*	*How often do you add fish sauce into the food that you are going to eat?*	0.64	-
5*	*How often do you eat a la cartes from food stands?*	0.62	-
	Factor 2: Appointment keeping		-
6*	*How often do you take an appointment card from the hospital or the clinic when you leave?*	0.45	-
7	*How often do you miss a doctor's appointment?*	0.64	0.73
	Factor 3: Medication taking		-
1*	*How often do you forget to take the HBP medicine?*	0.62	-
2	*How often do you decide not to take the HBP medicine?*	0.60	0.41
8	*How often do you forget to pick up or deliberately decide not to pick up the prescribed medicine?*	0.75	0.75
9	*How often do you run out of your HBP medicine?*	0.71	0.24
10	*How often do you decide to stop taking your HBP medicine a few days before seeing your doctor?*	0.66	0.63
11	*When you think that your condition has improved, how often do you stop taking the medicine?*	0.64	0.64
12	*When you think that your condition is bad, how often do you stop taking the medicine?*	0.73	0.71
13*	*How often do you take somebody else's HBP medicine?*	0.73	-
14*	*When you feel less bothered about your condition, how often do you skip taking the HBP medicine?*	0.46	-
	Eigenvalues	2.85	2.66
	Percentage of variance	20.32	37.96
	Standardized Cronbach's Alpha	0.64	0.71
	Range of inter-item correlation	-0.14-0.58	0.03-0.58
	Range of corrected item to total correlation	-0.03-0.42	0.29-0.58

* corrected item to total correlation less than 0.25

5.6.3 Reliability and Construct Validity

The number of factors of the fourteen items of the Thai Hill-Bone HBP Compliance Scale was loaded to exploratory factor analysis. Firstly, all items were loaded but seven items showed a relatively weak loading of less than 0.3. Secondly, the factor loading on seven of the 14-items were all above 0.3. Therefore, using these 7-items of the Thai Hill-Bone HBP Compliance Scale, the percentage of variance improved from 20.3 to 38.0 **(Table 5.5)**.

Standardized Cronbach's alpha of the Thai Hill-Bone HBP Compliance Scale with 14-items was 0.64, compared to that the 7-items that was 0.71. The inter-item correlation with 14-items ranged from -0.14 to 0.58 and with 7-items ranged from 0.03 to 0.58. Range of corrected item to total correlation with 14-items ranged from -0.03 to 0.42 and with 7-items ranged from 0.29 to 0.58 **(Table 5.5)**.

5.6.4 Criterion Validity

The mean systolic blood pressure level and diastolic blood pressure level were correlated with the mean of the Thai Hill-Bone HBP Compliance Scale to assess concurrent validity **(Table 5.6)**. Systolic and diastolic blood pressure level were positively correlated with the Thai Hill-Bone Scale ($r = 0.07$ and $r = 0.11$ respectively).

Table 5. 6 Correlation between the Thai Hill-Bone HBP Compliance Scale total score and blood pressure level

Variables	Systolic BP	Diastolic BP
Mean (SD)	145.83 (13.19)	80.27(10.40)
Thai Hill-Bone total score	r = .07	r = .11

Note. BP = Blood pressure; Thai Hill-Bone = the Thai Hill-Bone HBP Compliance Scale

5.7 DISCUSSION

Generally, to conduct cross-cultural studies, not only language but also cultural differences must be considered. Culture and normative values need to be considered as well as psychometric quality should be tested before adapting new versions of cross-cultural studies. This study aimed to test psychometric properties of the Thai Hill-Bone HBP Compliance Scale and also compared it to the original Hill-Bone HBP Compliance Scale. As expected, the reliability of overall items of the Thai Hill-Bone HBP Compliance Scale shows 0.64 with standardized Cronbach's alpha, which is slightly lower than one in the original version of the Hill-Bone HBP Compliance Scale (Cronbach's alpha = 0.74 and 0.84)(Kim et al. 2000). As the Hill-Bone HBP Compliance Scale has been tested in several studies and their Cronbach's alpha for all 14 items ranges from 0.43 to 0.82 (Kripalani et al. 2009; Krousel-Wood et al. 2005; Lambert et al. 2006), the 0.64 of the Thai Hill-Bone HBP Compliance Scale can be regarded as acceptable for internal consistency although not optimal for a new instrument (Nunnally, Bernstein & Berge 1967).

The findings of the item analysis in this study indicates the inter-item correlations of 14-item ranges from -0.14 to 0.58 (average = 0.11), which is slightly lower than one in the original version of the Hill-Bone HBP Compliance Scale (average of study 1 = 0.18, average of study 2 = 0.28). As a result, the low average inter-item correlation may decrease the Cronbach's alpha value (or the reliability) (Nunnally, Bernstein & Berge 1967). Therefore, the researcher deleted 7 items including the item of 1, 3, 4, 5, 6, 13 and 14 that showed a relatively weak loading and remodel led to improve the value of variance, inter-item correlation and reliability. After remodelling, all percentage of the variance, reliability and the inter-item correlations were slightly improved as mentioned above. The internal consistency of each factor found that the reliability was not different in the medication taking subscale, reduced sodium intake

subscales, and the appointment keeping subscale (0.69, 0.61 and 0.50 respectively). On the other hand, many previous studies have deleted items of appointment keeping factor and keep only items of reduced sodium intake factor and medication taking factor and the reliability showed more than 0.7 (Alsolami et al. 2013; Mweene 2012; Ramli, Ahmad & Paraidathathu 2012; Song et al. 2011). According to the literature, not only inadequacies of the sampling of items but also inadequacies of the sampling of people can lower the alpha internal consistency reliability and the average of inter-item correlations near zero (McCoach, Gable & Madura 2013). So, further studies should be considered to recruit larger samples.

The Thai Hill-Bone HBP Compliance Scale can be claimed as a valid instrument that measures adherence to high blood pressure therapy and correlate with blood pressure level. This can be seen from the finding that demonstrated a good concurrent validity of the Thai Hill-Bone HBP Compliance Scale. The results show that the Thai Hill-Bone HBP Compliance Scale is able to discriminate both of systolic blood pressure level and diastolic blood pressure level as outcomes. The results of this studies support the original version of the Hill-Bone HBP Compliance Scale.

5.8 LIMITATIONS

There are some limitations in this study including the sample size, area setting and translation. Firstly, although the sample size of this study was less than one used in the original study, it was larger than some of the samples in other translation studies to assess variance, inter-item correlation and reliability will be more creditable. Secondly, as the area setting of this study focused on the North-east Thailand, the diversity of participants was narrow. If participants in a future study are recruited from all regions of Thailand, the diversity will be more generalizable. Thirdly, there was only one expert translator to process of back translation from

Thai language to English language in this study. If more expert translators were used, the more accurate the Thai Hill-Bone HBP Compliance Scale will be. Therefore, these are opportunities tasks for the further study.

5.9 CONCLUSION

In summary, this study aimed to measure the reliability and the validity of the Thai Hill-Bone HBP Compliance Scale. The findings of the item analysis showed that the inter-item correlations of was slightly lower of than one in the original version of the Hill-Bone HBP Compliance Scale. Although, the internal consistency value of the Thai Hill-Bone HBP Compliance Scale was 0.64 it is regarded as acceptable instrument. Therefore, the Thai Hill-Bone HBP Compliance Scale can be used as a valid instrument to measure adherence to high blood pressure therapy and measure blood pressure level. The further study should be tested in other setting to compare the values with this study and decide to refine the items later.

5.10 RELEVANCE TO CLINICAL PRACTICE

The Thai Hill-Bone HBP Compliance Scale is appears to be an acceptable and valid tool to evaluate adherence to high blood pressure therapy. In addition, this instrument can be used as a tool to measure the effect of the program to enhance adherence to high blood pressure therapy among hypertensive patients in both clinical and community settings.

5.11 ACKNOWLEDGEMENTS

Professor Laddawan Wangphanich, Dr Chanick Wangphanich, Dr Khreshna Syuhada and Wen Po Peng. We also wish like to thank all participants in this study.

5.12 CONTRIBUTIONS

SA, PMD, LH, DJ were responsible for project management. SA, CD, and CB were responsible for data acquisition and analysis. SA was responsible for drafting the manuscript. PMD, LH, DJ, CD, CB reviewed the paper.

5.13 CHAPTER SUMMARY

This chapter has provided the translation process of the Thai Hill-Bone HBP Compliance Scale using Beaton's guideline. In addition, the psychometric properties after testing the Thai version of the Hill-Bone Compliance to High Blood Pressure Therapy Scale with 156 rural dwelling Thai older people with hypertension are reported. The following chapter provides findings of quantitative study part using a quasi-experimental study design.

5.14 REFERENCES

Alsolami, F.J., Hou, X.-Y., Correa-Velez, I. & Bahlas, S.M. 2013, 'An Arabic instrument to measure medication adherence in Saudi hypertensive patients', *Middle Eastern Journal of Family Medicine*, vol. 11, no. 7, pp. 17-23.

Anderson, R., Aaronson, N. & Wilkin, D. 1993, 'Critical review of the international assessments of health-related quality of life', *Quality of Life Research*, vol. 2, no. 6, pp. 369-95.

Beaton, D.E., Bombardier, C., Guillemin, F. & Ferraz, M.B. 2000, 'Guidelines for the process of cross-cultural adaptation of self-report measures', *Spine*, vol. 25, no. 24, pp. 3186-91.

Beaton, D.E., Bombardier, C., Guillemin, F. & Ferraz, M.B. 2002, 'Recommendations for the cross-cultural adaptation of health status measures', *New York: American Academy of Orthopaedic Surgeons*, pp. 1-9.

Borsa, J.C., Damásio, B.F. & Bandeira, D.R. 2012, 'Cross-cultural adaptation and validation of psychological instruments: some considerations', *Paidéia (Ribeirão Preto)*, vol. 22, no. 53, pp. 423-32.

Brink, Y., Louw, Q. & Grimmer-Somers, K. 2011, 'The quality of evidence of psychometric properties of three-dimensional spinal posture-measuring instruments', *BMC Musculoskeletal Disorders*, vol. 12, no. 1, p. 93.

Chinwatanakul, S., Boonyapisit, K., Pornsriniyom, D., Proyoonwiwat, N., Senanarong, V., Chaisevikul, R., Danchaivijitr, C., Chotinaiwatarakul, W., Sathornsumetee, S. & Poungvarin, N. 2012, 'Siriraj Acute Stroke Unit: 10 years experience', *Journal of the Medical Association of Thailand= Chotmaihet thangphaet*, vol. 95, p. S235.

Chobanian, A.V., Bakris, G.L., Black, H.R., Cushman, W.C., Green, L.A., Izzo Jr, J.L., Jones, D.W., Materson, B.J., Oparil, S. & Wright Jr, J.T. 2003, 'Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure', *Hypertension*, vol. 42, no. 6, pp. 1206-52.

Cronbach, L.J. & Meehl, P.E. 1955, 'Construct validity in psychological tests', *Psychological Bulletin*, vol. 52, no. 4, p. 281.

Davidson, P.M., Macdonald, P., Ang, E., Paull, G., Choucair, S., Daly, J., Moser, D.K. & Dracup, K. 2004, 'A case for consideration of cultural diversity in heart failure management: Part 1: Rationale for the DISCOVER Study', *Contemporary Nurse*, vol. 17, no. 3, pp. 204-10.

Dennison, C.R., Peer, N., Steyn, K., Levitt, N.S. & Hill, M.N. 2007, 'Determinants of hypertension care and control among peri-urban Black South Africans: the HiHi study', *Ethnicity & Disease*, vol. 17, no. 3, pp. 484-91.

Elzen, H., Slaets, J.P.J., Snijders, T.A.B. & Steverink, N. 2007, 'Evaluation of the chronic disease self-management program (CDSMP) among chronically ill older people in the Netherlands', *Social Science & Medicine*, vol. 64, no. 9, pp. 1832-41.

Eyton, J. & Neuwirth, G. 1984, 'Cross-cultural validity: ethnocentrism in health studies with special reference to the Vietnamese', *Social Science & Medicine*, vol. 18, no. 5, pp. 447-53.

Foster, G., Taylor, S., Eldridge, S., Ramsay, J. & Griffiths, C. 2007, 'Self-management education programmes by lay leaders for people with chronic conditions', *Cochrane Database Syst Rev*, vol. 4, no. 4.

Gohar, F., Greenfield, S.M., Beevers, D.G., Lip, G.Y. & Jolly, K. 2008, 'Self-care and adherence to medication: a survey in the hypertension outpatient clinic', *BMC Complementary and Alternative Medicine*, vol. 8, no. 1, p. 4.

Guillemin, F., Bombardier, C. & Beaton, D. 1993, 'Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines', *Journal of Clinical Epidemiology*, vol. 46, no. 12, pp. 1417-32.

Hunt, S.M., Alonso, J., Bucquet, D., Niero, M., Wiklund, I. & McKenna, S. 1991, 'Cross-cultural adaptation of health measures', *Health Policy*, vol. 19, no. 1, pp. 33-44.

Kaiser, H.F. & Rice, J. 1974, 'Little Jiffy, Mark IV', *Educational and psychological measurement*.

Karademir, M., Koseoglu, I.H., Vatansever, K. & Van Den Akker, M. 2009, 'Validity and reliability of the Turkish version of the Hill-Bone compliance to high blood pressure therapy scale for use in primary health care settings', *European Journal of General Practice*, vol. 15, no. 4, pp. 207-11.

Kim, M.T., Hill, M.N., Bone, L.R. & Levine, D.M. 2000, 'Development and Testing of the Hill-Bone Compliance to High Blood Pressure Therapy Scale', *Progress in Cardiovascular Nursing*, vol. 15, no. 3, pp. 90-6.

Koschack, J., Marx, G., Schnakenberg, J., Kochen, M.M. & Himmel, W. 2010, 'Comparison of two self-rating instruments for medication adherence assessment in hypertension revealed insufficient psychometric properties', *Journal of Clinical Epidemiology*, vol. 63, no. 3, pp. 299-306.

Kripalani, S., Risser, J., Gatti, M.E. & Jacobson, T.A. 2009, 'Development and Evaluation of the Adherence to Refills and Medications Scale (ARMS) among Low-Literacy Patients with Chronic Disease', *Value in Health*, vol. 12, no. 1, pp. 118-23.

Krousel-Wood, M., Muntner, P., Jannu, A., Desalvo, K. & RE, R.N. 2005, 'Reliability of a medication adherence measure in an outpatient setting', *The American Journal of The Medical Sciences*, vol. 330, no. 3, pp. 128-33.

Lambert, E.V., Steyn, K., Stender, S., Everage, N. & Fourie, J.M. 2006, 'Cross-cultural validation of the hill-bone compliance to high blood pressure therapy scale in a South African, primary healthcare setting', *Ethnicity and Disease*, vol. 16, no. 1, p. 286.

Lenfant, C., Chobanian, A.V., Jones, D.W. & Roccella, E.J. 2003, 'Seventh Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)', *Circulation*, vol. 107, no. 24, pp. 2993-4.

McCoach, D.B., Gable, R.K. & Madura, J. 2013, *Instrument development in the affective domain*, Springer.

Mweene, M.D. 2012, 'A study to investigate factors associated with poor adherence to antihypertensive population, at the University Teaching Hospital Lusaka, Zambia'.

Nunnally, J.C., Bernstein, I.H. & Berge, J.M.t. 1967, *Psychometric theory*, vol. 226, McGraw-Hill New York.

Ramli, A., Ahmad, N.S. & Paraidathathu, T. 2012, 'Medication adherence among hypertensive patients of primary health clinics in Malaysia', *Patient Preference and Adherence*, vol. 6, p. 613.

Song, Y., Han, H.-R., Song, H.-J., Nam, S., Nguyen, T. & Kim, M.T. 2011, 'Psychometric Evaluation of Hill-Bone Medication Adherence Subscale', *Asian Nursing Research*, vol. 5, no. 3, pp. 183-8.

Streiner, D.L., Norman, G.R. & Cairney, J. 2014, *Health measurement scales: a practical guide to their development and use*, Oxford university press.

Tahmasebi, R. & Noroozi, A. 2012, 'Cross-cultural validation of the diabetes self-management scale in Iranian patients', *HealthMED*, p. 2635.

Voils, C.I., Hoyle, R.H., Thorpe, C.T., Maciejewski, M.L. & Yancy Jr, W.S. 2011, 'Improving the measurement of self-reported medication nonadherence', *Journal of Clinical Epidemiology*, vol. 64, no. 3, pp. 250-4.

Williams, B., Brown, T. & Onsman, A. 2012, 'Exploratory factor analysis: A five-step guide for novices', *Australasian Journal of Paramedicine*, vol. 8, no. 3, p. 1.

World Health Organisation 2009, *Global health risks: Mortality and burden of disease attributable to selected major risks*.

CHAPTER 6: QUANTITATIVE STUDY RESULTS

6.1 INTRODUCTION

This chapter presents the results of the quasi-experimental study to assess the impact of the interventions. The results are divided into six sections. The first section consists of the participants of the study and characteristics of the participant. The second section reveals health status in regards systolic blood pressure, diastolic blood pressure, and waist circumference. The third section reports the results of adherence to high blood pressure therapy including a total score and three-subscales score of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale. Health related quality of life using the Thai SF-36v1 (revised 2005) instrument is presented in the fourth section. The fifth and the sixth section reports the comparison of the outcomes changes at 4 time points' measurement between groups and within subjects resulted in the community-based intervention program.

6.2 THE PARTICIPANTS OF THE STUDY

Between August and October 2013, 786 older people with hypertension from 17 communities were recruited from the primary health centre database as showed in **Figure 6.1.** Of those older people, 630 excluded by reasons comprising 204 were not meeting inclusion criteria, 43 declined to participate in the intervention program, and 383 were excluded from other reasons. The remaining 156 older people from 10 communities were assigned to the intervention group (N = 77) and the control group (N = 79) after measuring the data at pre-intervention (T0). The outcomes were measured for 4 times including pre-intervention measurement (T0), post-intervention measurement (T1), 3-month follow-up measurement

(T2), and 6-month follow-up measurement (T3). Following the intervention measurement, the number of participants in the intervention group was 76, one participant reported moving residential and the number of sample in the control group revealed 77 (1 participant passed away and 1 participant lost to follow-up. At 3-month follow-up measurement, 1 participant of the intervention group lost to follow-up hence 75 participants were retained. Whereas, the control group participants demonstrated 78 at 3-month follow-up measurement (1 participant returned to the study). Finally, the number of participant in the intervention group retained 74 (1 lost to follow-up) and the control group retained 76 (2 participant dropped out from the control group; 1 lost to follow-up and 1 moved out of the community) at 6-month follow-up measurement. The flow diagram summarises patient participation is shown in **Figure 6.1.**

To process data analysis, data cleaning is needed to check an error during data imputing (Van den Broeck et al. 2005). After cleaning, the participants of the control group demonstrated 75 and the intervention group illustrated 73 for analysis.

Assessed for eligibility (N = 786)

Enrolment

Excluded (N = 630)
- Not meeting inclusion criteria (N = 204)
- Declined to participate (N = 43)
- Other reasons (N = 383)

Assigned (N = 156)

Allocation

Allocated to control (N = 79)
- Received allocated intervention (N = 79)
- Did not receive allocated intervention (N = 0)

Allocated to intervention (N = 77)
- Received allocated intervention (N = 77)
- Did not receive allocated intervention (N = 0)

Follow-Up (Post-intervention)

Analysis

Analysed (N = 77)
- Pass away (N = 1)
- Lost to follow-up (N = 1)

Analysed (N = 76)
- Discontinued intervention (moved residential) (N = 1)

Follow-Up (3-month after intervention)

Analysis

Analysed (N = 78)
- Back to the study (N = 1)

Analysed (N = 75)
- Lost to follow-up (N = 1)

Follow-Up (6-month after intervention)

Analysis

Analysed (N = 76)
- Lost to follow-up (N = 2)

Analysed (N = 74)
- Lost to follow-up (N = 1)

Figure 6. 1 the progress of all participants through the study

6.3 CHARACTERISTICS OF THE SAMPLE

Of the 156 participants recruited into the study, 107 were women and 49 were men, with an average age of 70. The majority of participants were graduated high school (n= 111), married (n=83), lived with spouse and/or family (n=125), worked home duties (n=124). Clinical status of participants, the median duration of diagnosed with hypertension was 9 years (IQR = 5.00;13.00; range 1-40); the median comorbidity diseases excluding hypertension was 1 disease (IQR = 1.00;2.00; range 0-4); and the median medication usage was 4 agents (IQR = 3.00;6.00; range 0-11). The characteristic of participant are presented in **Table 6.1.**

6.4 HEALTH STATUS

Table 6.1 demonstrates summary of demographics data and clinical status of the participants before conducted the intervention program. Health status related to hypertension disease was measured in terms of systolic blood pressure, diastolic blood pressure and waist circumference. According to the JNC VII guideline (Chobanian et al. 2003), most participants in the study (70.5%) were assessed as an uncontrolled status of systolic blood pressure level (>140 mmHg). On the other hands, 80.8% of all participants had a controlled status of diastolic blood pressure (<90 mmHg). The range of blood pressure level was 110-200 mmHg (mean 145.83, SD = 13.18) in systolic blood pressure and 55-116 mmHg (mean 80.27, SD = 10.39) in diastolic blood pressure. About three-forth, or 74.4% demonstrated uncontrolled status of waist circumference (Male <90 cm and Female <80 cm) following the standard value for South Asians of the World Health Organisation (World Health Organisation 2011). The range of waist circumference was 62-120 centimetres (mean 89.9, SD = 0.85).

Table 6.2 presents normal distributed by using Shapiro-Wilk test in health status data. To improve the normality of variables, reduce the effects of potential outliers and meet the assumptions of the use a parametric statistical method, log data transformation was needed to perform prior to analysis (DeCoster 2001; Manning 1998; Ratcliff 1993). Importantly, the use of parametric statistical method are more conservative and reduce a Type-I error (MacDonald 1999).

Moreover, the log transformed analysis is more supportive of a treatment effect than the untransformed analysis (Keene 1995). Therefore, health status regarding systolic blood pressure, diastolic blood pressure and waist circumference data were transformed by using the log data transformation to adjust highly skewed distributions to less skewed. After data transformations, one-way between groups ANOVA was performed to compare the outcomes of the intervention and control groups at each time period.

Table 6. 1 Participant characteristics and clinical status at pre-intervention measurement (N = 156)

Characteristics	Total		Intervention group		Control group	
	N	(%)	N	(%)	N	(%)
Female	107	68.6	56	72.7	51	64.6
Married	83	53.2	42	54.5	41	51.9
Living with spouse, carer or relative(s)	125	80.1	64	83.1	61	77.2
Home duties	124	79.5	62	80.5	62	78.5
School or intermediate certificate	111	71.2	55	71.4	56	70.9
	Range	Median (IQR)	Range	Median (IQR)	Range	Median (IQR)
Age	60-88	69 (65;74)	60-87	69 (66;75)	60-88	69 (64;73)
Clinical status						
Duration of diagnosed hypertension	1-40	9 (5;13)	1-40	10 (6;15)	1-36	8 (5;12)
Number of Comorbidity disease	0-4	1 (1;2)	0-4	1 (1;2)	0-3	2 (1;2)
Number of Medicines	0-11	4 (3;6)	0-11	4 (3;6)	1-9	4 (3;5)
Blood pressure						
Systolic Blood Pressure Level[a] (Mean 145.83, SD 13.18)	110-200	145 (138;151)	114-200	141 (134;149)	110-187	147 (142;153)
Diastolic Blood Pressure Level[a] (Mean 80.27, SD 10.39)	55-116	80 (72;87)	58-116	78 (72;85)	55-103	82 (75;90)
Waist circumference[b] (Mean 89.9, SD 0.85)	62-120	89 (82;94)	64-120	87 (82;95)	62-117	90 (81;94)
The Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale						
Sum score	14-31	17 (15;20)	14-31	17 (15;20)	14-27	17 (15;20)
Medication taking subscale score	9-22	10 (9;11)	9-22	10 (9;11)	9-22	10 (9;11)
Salt intake subscale score	3-10	4 (3;6)	3-10	4 (4;6)	3-9	5 (3;6)
Appointment keeping subscale score	2-5	2 (2;3)	2-5	2 (2;3)	2-5	2 (2;2)
The Thai SF-36v1 (revised 2005)						
PF: Physical functioning	0-100	70 (45;95)	0-100	85 (55;100)	0-100	55 (30;90)
RP: Role limitation-physical problems	0-100	100 (50;100)	0-100	100 (50;100)	0-100	100 (0;100)
BP: Body pain	0-100	33 (20;54)	0-78	33 (20;43)	0-100	40 (20;55)
GH: General health perceptions	0-95	40 (20;55)	5-85	40 (25;55)	0-95	30 (20;60)
VT: Vitality, energy and fatigue	0-100	55 (50;65)	25-90	55 (50;65)	0-100	55 (50;65)
SF: Social functioning	0-80	40 (35;40)	30-80	40 (40;43)	0-75	40 (35;40)
RE: Role limitation-emotional problems	0-100	100 (33;100)	0-100	100 (33;100)	0-100	100 (0;100)
MH: Mental health	0-100	60 (56;68)	0-100	60 (56;68)	0-92	60 (56;68)
HT: Health transitional	0-100	50 (25;75)	0-100	50 (25;75)	0-100	50 (25;50)

Note. [a] according to the Report of the JNC VII's guideline; [b] according to the standard value for South Asian of the World Health Organisation (2011).

Table 6. 2 Normal distributed by using Shapiro-Wilk test

Variable	group	Shapiro-Wilk		
		Statistic	df	Sig.
Systolic blood pressure at T0	control	.943	75	.002*
	intervention	.935	73	.001*
Diastolic blood pressure at T0	control	.991	75	.855
	intervention	.948	73	.005*
Waist circumference at T0	control	.980	75	.296
	intervention	.978	73	.225
Systolic blood pressure at T1	control	.970	75	.071
	intervention	.968	73	.063
Diastolic blood pressure at T1	control	.979	75	.236
	intervention	.978	73	.218
Waist circumference at T1	control	.983	75	.406
	intervention	.982	73	.366
Systolic blood pressure at T2	control	.916	75	.000*
	intervention	.981	73	.349
Diastolic blood pressure at T2	control	.978	75	.224
	intervention	.981	73	.339
Waist circumference at T2	control	.988	75	.690
	intervention	.987	73	.652
Systolic blood pressure at T3	control	.937	75	.001*
	intervention	.971	73	.089
Diastolic blood pressure at T3	control	.984	75	.465
	intervention	.948	73	.004*
Waist circumference at T3	control	.988	75	.709
	intervention	.991	73	.882

*p < .05

6.5 ADHERENCE TO HIGH BLOOD PRESSURE THERAPY

The Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and the Thai SF-36v1 (revised 2005) score were not normally distributed in both of the intervention and the control group over the 6-month study period. Therefore, non-parametric statistical method was implemented for analysis. Firstly, the Friedman test was performed to test the different among of the mean in four periods of outcome within the two groups. If there were statistical significant, Wilcoxon signed rank test with Bonferronni adjustment was applied to decrease

type I error result from multiple tests (Simes 1986). Hence, the statistical significant level in Wilcoxon part; the alpha will decrease from 0.05 to 0.05/6=0.0083 (the p-value divided by the number of test performed) due to Bonferronni adjustment. To compare the effectiveness of the intervention program between groups, Mann-Whitney U test was used for comparing the results between the intervention group and the control group.

Adherence to high blood pressure therapy was measured by using the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale. The data of adherence to high blood pressure therapy was not normally distributed. Hence, the median and interquartile range are presented. The range of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale scores was 14-31 (Median 17, IQR 15;20). The subscales consisted of medication taking, salt intake, and appointment keeping. The range of the medication taking subscale score was 9-22 (Median 10, IQR 9;11), salt intake subscale score was 3-10 (Median 4, IQR 3;6), and appointment keeping subscale score was 2-5 (Median 2, IQR 2;3) as showed in **Table 6.1.**

6.6 HEALTH RELATED QUALITY OF LIFE

Of the 156 participants, health related quality of life by using the Thai SF-36v1 (revised 2005) was not normally distributed. Hence, the median and interquartile range were used. All eight aspects plus one special aspects of the Thai SF-36v1 (revised 2005) are summarised in **Table 6.1.**

6.7 EFFECT OF COMMUNITY-BASED INTERVENTION BETWEEN THE INTERVENTION GROUP AND THE CONTROL GROUP

6.7.1 Comparisons of the Changes of Health Status (Systolic Blood Pressure, Diastolic Blood Pressure and Waist Circumference), Adherence to High Blood Pressure Therapy and Health Related Quality of Life over Time between the Two Groups

One-way between groups model Analysis of variance: ANOVA with log data transformation and Mann-Whitney U test were performed to compare the quality of life changes between the intervention group and the control group.

Systolic Blood Pressure

To perform one-way between groups model analysis of variance (ANOVA), systolic blood pressure has been transformed by using log transformation. The results in **Table 6.3** show log-transformed data including mean and standard deviation for the two groups at 4 time points' measurement. The mean of systolic blood pressure in the control group is higher than those in the intervention group in all 4 time points' measurement.

Table 6. 3 Descriptive statistics of systolic blood pressure (log transformation)

	Groups	Mean	Std. Deviation	N
logsys_T0	control	2.1705	.03594	75
	intervention	2.1535	.04073	73
	Total	2.1621	.03919	148
logsys_T1	control	2.1683	.06244	75
	intervention	2.1333	.05220	73
	Total	2.1510	.06006	148
logsys_T2	control	2.1395	.06209	75
	intervention	2.1067	.05314	73
	Total	2.1233	.05996	148
logsys_T3	control	2.1328	.04966	75
	intervention	2.1022	.05290	73
	Total	2.1177	.05335	148

A test for a treatment effect, then, a Mauchly's test of sphericity was performed to test the variances of the differences between all combinations of related groups. Mauchly's Test of Sphericity in **Table 6.4** indicated that the assumption of sphericity had not been violated in systolic blood pressure, $\chi^2(2) = 6.666$, $p = .247$. This can explain that systolic blood pressure is homogeneity of variances in a between the intervention group and the control group. One-way between groups ANOVA was used to compare systolic blood pressure level (log transformation data) between the two groups.

Table 6. 4 Mauchly's Test of Sphericity: systolic blood pressure level

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
intervention	.955	6.666	5	.247	.972	1.000	.333

There was a significant difference across the four times point (pre-intervention, post-intervention, 3-month follow-up and 6-month follow-up measurement) $F(3,438) = 38.078$, $p<.001$ **(Table 6.5)** and significant difference between groups $F(1,146) = 22.863$, $p<.001$, in systolic blood pressure level (log transformation) by using repeated measure (**Table 6.6**). However, there wasn't a significant interaction difference between time and group $F(3,438) = 1.351$, $p=.257$ **(Table 6.5)**.

Table 6. 5 Within-Subjects Effects: systolic blood pressure

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
intervention	Sphericity Assumed	.204	3	.068	38.078	.000	.207
	Greenhouse-Geisser	.204	2.915	.070	38.078	.000	.207
	Huynh-Feldt	.204	3.000	.068	38.078	.000	.207
	Lower-bound	.204	1.000	.204	38.078	.000	.207
intervention * group	Sphericity Assumed	.007	3	.002	1.351	.257	.009
	Greenhouse-Geisser	.007	2.915	.002	1.351	.258	.009
	Huynh-Feldt	.007	3.000	.002	1.351	.257	.009
	Lower-bound	.007	1.000	.007	1.351	.247	.009
Error(intervention)	Sphericity Assumed	.784	438	.002			
	Greenhouse-Geisser	.784	425.518	.002			
	Huynh-Feldt	.784	438.000	.002			
	Lower-bound	.784	146.000	.005			

Table 6. 6 Between-Subjects Effects: systolic blood pressure

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	2706.461	1	2706.461	501147.849	.000
group	.123	1	.123	22.863	.000
Error	.788	146	.005		

The graph below illustrates the comparison of systolic blood pressure level between the intervention group participants (N = 73) and the control group participants (N = 75). The X axis represents the mean after adjustment by using of log transformation data and the Y axis is the point of 4 time points' measurement (pre-intervention measurement (T0), post-intervention measurement (T1), 3-month follow-up measurement (T2), and 6-month follow-up measurement (T3)). The trends of mean level in systolic blood pressure are continuously decreasing in both groups, as we seen from **Figure 6.2.** The mean of systolic blood pressure (log transformation) dropped from 2.1705 $\pm$ .036 in the control group and 2.1535 $\pm$ .041 in the intervention group at the pre-intervention measurement to 2.1328 $\pm$ .050 in the control group and 2.1022 $\pm$ .053 in the intervention group at the 6-month follow-up measurement as mentioned in **Table 6.3.**
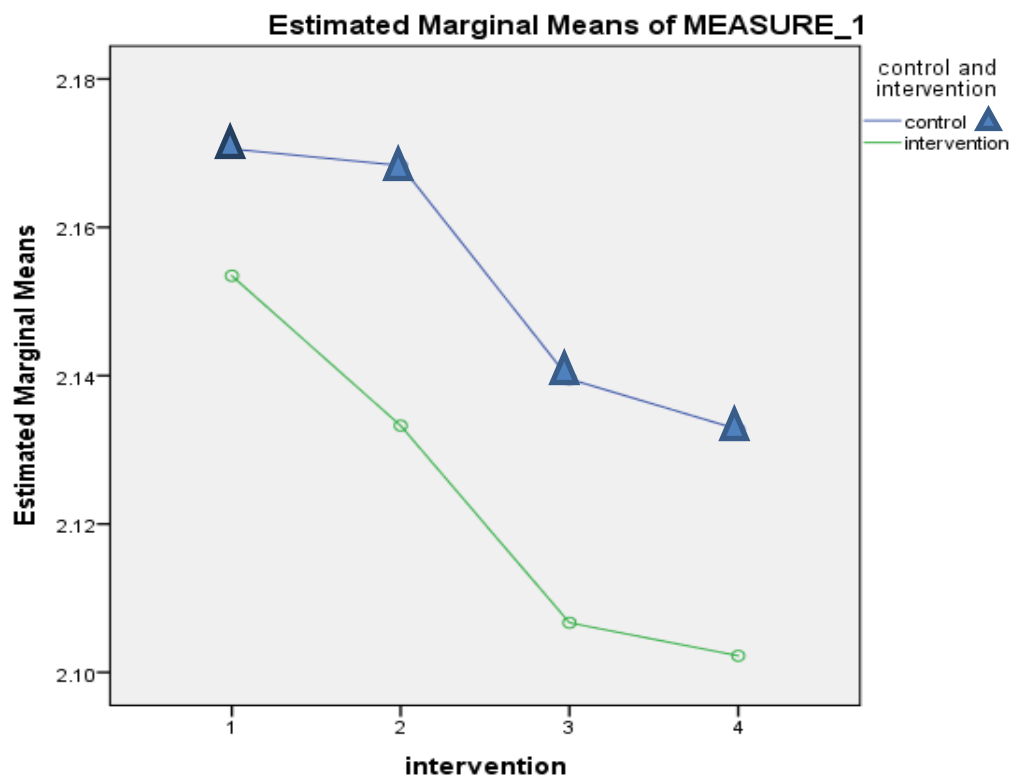
Figure 6. 2 Mean of systolic blood pressure of the intervention group and the control group over times period (N = 75 control group; N = 73 intervention group)

Diastolic Blood Pressure

To perform one-way between groups model analysis of variance (ANOVA), diastolic blood pressure has been transformed by using log transformation. The results in **Table 6.7** show log-transformed data including mean and standard deviation for the two groups at 4 time points' measurement. At pre-intervention measurement, mean of diastolic blood pressure in the control group is higher than those in the intervention group.

Table 6. 7 Descriptive statistics of diastolic blood pressure (log transformation)

	control and intervention	Mean	Std. Deviation	N
logdias_T0	control	1.9105	.05261	75
	intervention	1.8904	.05682	73
	Total	1.9006	.05547	148
logdias_T1	control	1.9054	.07086	75
	intervention	1.8721	.06563	73
	Total	1.8890	.07011	148
logdias_T2	control	1.8847	.06971	75
	intervention	1.8558	.07147	73
	Total	1.8704	.07181	148
logdias_T3	control	1.8921	.06358	75
	intervention	1.8496	.06819	73
	Total	1.8712	.06904	148

Mauchly's test of diastolic blood pressure indicated that the assumption of sphericity had not been violated, $\chi^2(2) = 9.592$, $p = .088$ **(Table 6.7).** This can explain that diastolic blood pressure is homogeneity of variances. The results in diastolic blood pressure level (log transformation data) revealed no statistically significant difference at the pre-intervention measurement $F(1, 154) = 2.944$, p > .05 between the two groups. The results also demonstrated a statistically significant difference between the two groups at the post-intervention measurement, $F(1, 151) = 8.093$, p < .01; the 3-month follow-up measurement, $F(1, 151) = 6.029$, p < .05; and the 6-month follow-up measurement, $F(1, 148) = 16.530$, p < .001 **(Table 6.8).**

Table 6. 8 Mauchly's Test of Sphericity of diastolic blood pressure level

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
intervention	.936	9.592	5	.088	.959	.987	.333

There was a significant difference across the four times point (pre-intervention, post-intervention, 3-month follow-up and 6-month follow-up measurement) $F_{(3,438)} = 13.644$, p = .000 **(Table 6.9)** and significant difference between groups $F_{(1,146)} = 14.425$, p = .000, in diastolic blood pressure level (log transformation) by using repeated measure **(Table 6.10).** However, there wasn't a significant interaction difference between time and group $F_{(3,438)} = 1.372$, p = .251 **(Table 6.9).**

Table 6. 9 Within-Subjects Effects: diastolic blood pressure

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
intervention	Sphericity Assumed	.096	3	.032	13.644	.000	.085
	Greenhouse-Geisser	.096	2.877	.033	13.644	.000	.085
	Huynh-Feldt	.096	2.961	.032	13.644	.000	.085
	Lower-bound	.096	1.000	.096	13.644	.000	.085
intervention * group	Sphericity Assumed	.010	3	.003	1.372	.251	.009
	Greenhouse-Geisser	.010	2.877	.003	1.372	.252	.009
	Huynh-Feldt	.010	2.961	.003	1.372	.251	.009
	Lower-bound	.010	1.000	.010	1.372	.243	.009
Error(intervention)	Sphericity Assumed	1.025	438	.002			
	Greenhouse-Geisser	1.025	419.973	.002			
	Huynh-Feldt	1.025	432.242	.002			
	Lower-bound	1.025	146.000	.007			

Table 6. 10 Between-Subjects Effects: diastolic blood pressure

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	2097.739	1	2097.739	210443.478	.000
group	.144	1	.144	14.425	.000
Error	1.455	146	.010		

The graph demonstrates the comparison of diastolic blood pressure level between the intervention group participants (N = 73) and the control group participants (N = 75). The X axis represents the mean after adjustment by using of log transformation data and the Y axis is the point of 4 time points' measurement. The mean of diastolic blood pressure in the intervention group was slightly lower than that of the control group at all four time points measurement, as shown in **Figure 6.3.** The mean of diastolic blood pressure level in the intervention group are continuously decreasing from the pre-intervention measurement to the 6-month follow-up measurement. Conversely, the mean of diastolic blood pressure level in the control group decreased from the pre-intervention measurement to the 3-month follow-up measurement but bounced at the 6-month follow-up measurement as shown in **Figure 6.3.** The mean of diastolic blood pressure (log transformation) decreased from 1.9105 ± .053 in the control group and 1.8904 ± .057 in the intervention group at the pre-intervention measurement to 1.8921 ± .064 in the control group and 1.8496 ± .068 in the intervention group at the 6-month follow-up measurement as shown in **Table 6.7.**
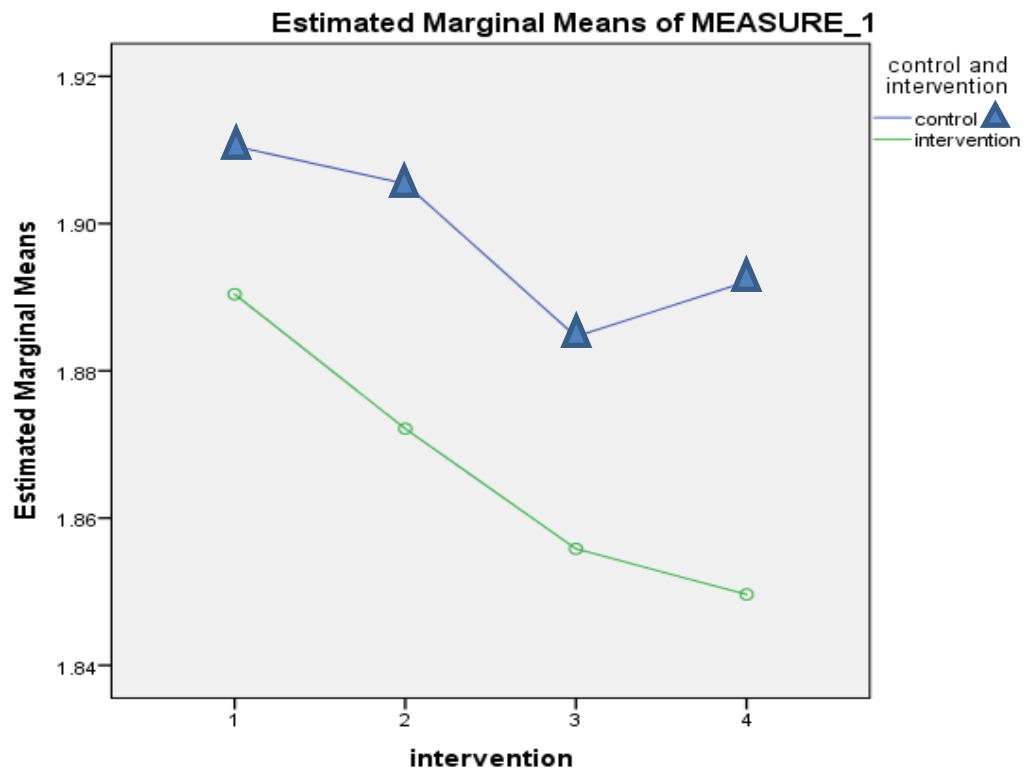
Figure 6. 3 Mean of diastolic blood pressure of the intervention group and the control group over times period (N = 75 control group; N = 73 intervention group)

Waist Circumference

Waist circumference was transformed by using log transformation. The results in **Table 6.11** show log-transformed data including mean and standard deviation for the two groups at 4 time points' measurement. At the pre-intervention measurement, the mean of waist circumference in the control group and those in the intervention group demonstrated a difference.

Table 6. 11 Descriptive statistics of waist circumference (log transformation)

	control and intervention	Mean	Std. Deviation	N
logwaist_T0	control	1.9465	.05618	75
	intervention	1.9468	.04670	73
	Total	1.9467	.05155	148
logwaist_T1	control	1.9476	.05131	75
	intervention	1.9443	.04983	73
	Total	1.9460	.05044	148
logwaist_T2	control	1.9547	.05017	75
	intervention	1.9382	.05947	73
	Total	1.9465	.05539	148
logwaist_T3	control	1.9451	.05258	75
	intervention	1.9301	.07099	73
	Total	1.9377	.06258	148

In analysing waist circumference, Mauchly's test of Sphericity indicated that the assumption of sphericity had been violated, $\chi2(2)$ = 106.078, p = .000, therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity (ε = .690) **(Table 6.12).**

Table 6. 12 Mauchly's Test of Sphericity of waist circumference

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
intervention	.480	106.078	5	.000*	.690	.705	.333

*p < .05

The Greenhouse-Geisser correction was used to report the results for adjusting the degrees of freedom downwards by an appropriate amount. There was a significant difference across the four times point (pre-intervention, post-intervention, 3-month follow-up and 6-month follow-up measurement) $F(2.070,438)$ = 4.308, p = .013 **(Table 6.13)** but no significant difference between groups $F(1,146)$ = 1.085, p = .299, in waist circumference (log transformation) by using repeated measure **(Table 6.14)**. However, there was a significant interaction difference between time and group $F(2.070, 302.170)$ = 3.963, p = .019 with the Greenhouse-Geisser correction **(Table 6.13).**

Table 6. 13 Within-Subjects Effects: waist circumference

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
intervention	Sphericity Assumed	.009	3	.003	4.308	.005	.029
	Greenhouse-Geisser	.009	2.070	.004	4.308	.013*	.029
	Huynh-Feldt	.009	2.114	.004	4.308	.013	.029
	Lower-bound	.009	1.000	.009	4.308	.040	.029
intervention * group	Sphericity Assumed	.008	3	.003	3.963	.008	.026
	Greenhouse-Geisser	.008	2.070	.004	3.963	.019*	.026
	Huynh-Feldt	.008	2.114	.004	3.963	.018	.026
	Lower-bound	.008	1.000	.008	3.963	.048	.026
Error(intervention)	Sphericity Assumed	.289	438	.001			
	Greenhouse-Geisser	.289	302.170	.001			
	Huynh-Feldt	.289	308.685	.001			
	Lower-bound	.289	146.000	.002			

*$p < .05$

Table 6. 14 Between-Subjects Effects: waist circumference

Measure: MEASURE_1					
Transformed Variable: Average					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	2237.208	1	2237.208	220195.167	.000
group	.011	1	.011	1.085	.299
Error	1.483	146	.010		

The graph demonstrates the comparison of waist circumference between the intervention group participants (N = 73) and the control group participants (N = 75). The X axis represents the mean after adjustment by using of log transformation data and the Y axis is the point of 4 time points' measurement. The mean of waist circumference in the intervention group were

lower than those of the control group at almost of the time points' measurement except at pre-intervention measurement, as shown in **Figure 6.4.** The mean of waist circumference in the intervention group are continuously decreasing from the pre-intervention measurement to the 6-month follow-up measurement. Conversely, the mean of waist circumference in the control group are continuously increasing from the pre-intervention measurement to the 3-month follow-up measurement but dropped at the 6-month follow-up measurement as shown in **Figure 6.4.** The mean of waist circumference (log transformation) for the control group in 4 time points showed 1.9465 $\pm$ .056, 1.9476 $\pm$ .051, 1.9547 $\pm$ .050, and 1.9451 $\pm$ .053 respectively. While, the mean of waist circumference (log transformation) for the intervention group in 4 time points showed 1.9468 $\pm$ .047, 1.9443 $\pm$ .050, 1.9382 $\pm$ .059, and 1.9301 $\pm$ .071 respectively **(Table 6.11).**
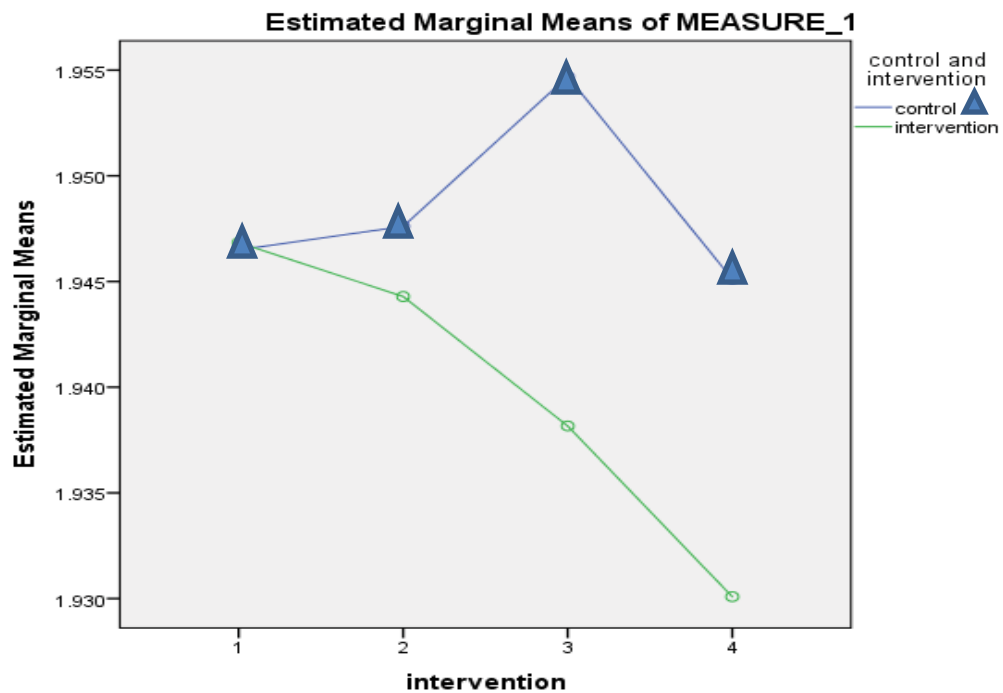

Figure 6. 4 Mean of waist circumference of the intervention group and the control group over time period (N = 75 control group; N = 73 intervention group)

Adherence to high blood pressure therapy

The Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score indicated the level of adherence to high blood pressure therapy in three aspects regards medication taking, salt intake, and appointment keeping. The high scores of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale can be defined a low adherence to high blood pressure therapy. To determine the effectiveness of the intervention program, Mann-Whitney U test was used to examine a mean rank difference in the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales (medication taking subscale, salt intake subscale, and appointment keeping) at each time point between the two groups.

Pre-intervention measurement

Table 6.15 demonstrates mean, standard deviation, and mean rank of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at pre-intervention measurement for two groups. The results indicated that sum score in the Thai Hill-Bone Compliance to High Blood Pressure Therapy and three subscales at pre-intervention measurement of the control group was higher than those of the intervention group as shown in **Table 6.16.**

Table 6. 15 Descriptive statistics of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at pre-intervention measurement

	control and intervention	Mean	Std. Deviation	Mean Rank	N
sum score of Hill-Bone	control	17.81	2.907	2.48	75
Compliance to high blood	intervention	17.60	3.345	2.82	73
pressure scale at T0	Total				148
Hill-Bone scale:	control	10.47	2.075	2.69	75
Medication taking score	intervention	10.44	2.147	2.77	73
at T0	Total				148
Hill-Bone scale: Salt	control	4.89	1.673	2.29	75
intake score at T0	intervention	4.74	1.599	2.65	73
	Total				148
Hill-Bone scale:	control	2.45	0.905	2.37	75
Appointment keeping	intervention	2.42	0.798	2.63	73
score at T0	Total				148

The results in the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and all subscales at pre-intervention measurement indicated that no statistically significant difference in sum score (U = 2510.5, p = .380); medication taking score (U = 2690, p = .847); salt intake score (U = 2598.5, p = .586); and appointment keeping score (U = 2730, p = .970) between the two groups.

Table 6. 16 Mann-Whitney U test between the two groups: the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score at pre-intervention measurement

	sum score of Hill-Bone Compliance to high blood pressure scale at T0	Hill-Bone scale: Medication taking score at T0	Hill-Bone scale: Salt intake score at T0	Hill-Bone scale: Appointment keeping score at T0
Mann-Whitney U	2510.500	2690.000	2598.500	2730.000
Wilcoxon W	5211.500	5391.000	5299.500	5580.000
Z	-.877	-.193	-.545	-.038
Asymp. Sig. (2-tailed)	.380	.847	.586	.970

Post-intervention measurement

Table 6.17 demonstrates mean, standard deviation, and mean rank of ranks of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at post-intervention measurement for the two groups. The results indicated that sum score in the Thai Hill-Bone Compliance to High Blood Pressure Therapy and three subscales at post-intervention measurement in the control group was slightly higher than those of the intervention group, as shown in **Table 6.18.**

Table 6. 17 Descriptive statistics of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at post-intervention measurement

	control and intervention	Mean	Std. Deviation	Mean Rank	N
sum score of Hill-Bone	control	17.12	2.620	2.11	75
Compliance to high blood	intervention	16.95	2.635	2.60	73
pressure scale at T1	Total				148
Hill-Bone scale:	control	9.96	1.502	2.37	75
Medication taking score	intervention	9.89	1.621	2.42	73
at T1	Total				148
Hill-Bone scale: Salt	control	4.84	1.586	2.27	75
intake score at T1	intervention	4.70	1.525	2.62	73
	Total				148
Hill-Bone scale:	control	2.32	0.720	2.29	75
Appointment keeping	intervention	2.36	0.806	2.50	73
score at T1	Total				148

The results indicated that there was no statistically significant difference in the sum score (U = 2622.5, p = .656); medication taking score (U = 2585, p = .515); salt intake score (U = 2597.5, p = .582); and appointment keeping score (U = 2690.5, p = .800), as shown in **Table 6.17.**

Table 6. 18 Mann-Whitney U Test between the two groups: the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score at post-intervention measurement

	sum score of Hill-Bone Compliance to high blood pressure scale at T1	Hill-Bone scale: Medication taking score at T1	Hill-Bone scale: Salt intake score at T1	Hill-Bone scale: Appointment keeping score at T1
Mann-Whitney U	2622.500	2585.000	2597.500	2690.500
Wilcoxon W	5323.500	5286.000	5298.500	5540.500
Z	-.446	-.651	-.550	-.254
Asymp. Sig. (2-tailed)	.656	.515	.582	.800

3-month follow-up measurement

Table 6.19 demonstrates mean, standard deviation, and mean rank of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at 3-month follow-up measurement for the two groups. The results indicated that sum score in the Thai Hill-Bone Compliance to High Blood Pressure Therapy and three subscales at 3-month follow-up measurement in the control group was higher than those of the intervention group.

Table 6. 19 Descriptive statistics of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at 3-month follow-up measurement

	control and intervention	Mean	Std. Deviation	Mean Rank	N
sum score of Hill-Bone Compliance to high blood pressure scale at T2	control	18.55	3.8898	2.80	75
	intervention	16.79	2.386	2.51	73
	Total				148
Hill-Bone scale: Medication taking score at T2	control	10.53	2.901	2.61	75
	intervention	10.01	1.550	2.48	73
	Total				148
Hill-Bone scale: Salt intake score at T2	control	5.16	1.356	2.65	75
	intervention	4.41	1.403	2.41	73
	Total				148
Hill-Bone scale: Appointment keeping score at T2	control	2.85	1.074	2.83	75
	intervention	2.37	0.773	2.55	73
	Total				148

As predicted, the results showed that the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and some subscales at 3-month follow-up measurement were statistically

significant differences in sum score (U = 1890.5, p = .001); salt intake score (U = 1919, p = .001); and appointment keeping score (U = 2024.5, p = .001). In addition, the result in medication taking score showed no statistically significant differences (U = 2551.5, p = .436), as shown in **Table 6.20.**

Table 6. 20 Mann-Whitney U Test between the two groups: the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score at 3-month follow-up measurement

	sum score of Hill-Bone Compliance to high blood pressure scale at T2	Hill-Bone scale: Medication taking score at T2	Hill-Bone scale: Salt intake score at T2	Hill-Bone scale: Appointment keeping score at T2
Mann-Whitney U	1890.500	2551.500	1919.000	2024.500
Wilcoxon W	4591.500	5252.500	4620.000	4725.500
Z	-3.285	-.779	-3.228	-3.205
Asymp. Sig. (2-tailed)	.001*	.436	.001*	.001*

*p < .05

6-month follow-up measurement

Table 6.21 demonstrates mean, standard deviation, and mean rank of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at 6-month follow-up measurement for two groups. The results indicated that sum score in the Thai Hill-Bone Compliance to High Blood Pressure Therapy and three subscales at 6-month follow-up measurement in the control group was greater than those of the intervention group.

Table 6. 21 Descriptive statistics of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at 6-month follow-up measurement

	control and intervention	Mean	Std. Deviation	Mean Rank	N
sum score of Hill-Bone Compliance to high blood pressure scale at T3	control	18.07	3.223	2.61	75
	intervention	16.44	2.609	2.07	73
	Total				148
Hill-Bone scale: Medication taking score at T3	control	10.15	2.398	2.33	75
	intervention	9.74	1.323	2.32	73
	Total				148
Hill-Bone scale: Salt intake score at T3	control	5.36	1.372	2.79	75
	intervention	4.51	1.483	2.32	73
	Total				148
Hill-Bone scale: Appointment keeping score at T3	control	2.56	0.919	2.51	75
	intervention	2.19	0.544	2.32	73
	Total				148

Similarly to the results above, the results in the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score, salt intake score, and medication taking score were statistically significant differences between the two groups at 6-month follow-up measurement (U = 1696, p = .000; U = 1801.5, p = .000; and U = 2203.5, p = .005, respectively). On the other hand, the result in medication taking score showed no statistically significant differences (U = 2648.5, p = .698), as shown in **Table 6.22.**

Table 6. 22 Mann-Whitney U Test between the two groups: the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score at 6-month follow-up measurement

	sum score of Hill-Bone Compliance to high blood pressure scale at T3	Hill-Bone scale: Medication taking score at T3	Hill-Bone scale: Salt intake score at T3	Hill-Bone scale: Appointment keeping score at T3
Mann-Whitney U	1696.000	2648.500	1801.500	2203.500
Wilcoxon W	4397.000	5349.500	4502.500	4904.500
Z	-4.038	-.389	-3.676	-2.785
Asymp. Sig. (2-tailed)	.000*	.698	.000*	.005*

*p < .05

Health Related Quality of life

The Thai SF-36v1 (revised 2005) questionnaire was performed to evaluate quality of life among the participants. The questionnaire consists of 8 domains and one item of health transition. The high score indicates a good quality of life. To determine the effectiveness of the intervention program on the quality of life, Mann-Whitney U test was performed to examine the mean rank difference of the Thai SF-36v1 (revised 2005) score in eight domains (Physical Functioning: PF; Role-Physical: RP; Bodily Pain: BP; General Health: GH; Vitality: VT; Social Functioning: SF; Role-Emotional: RE; Mental Health: MH; and the Reported Health Transition: HT) between the two groups at each time point.

Pre-intervention measurement

Table 6.23 demonstrates mean, standard deviation, and mean rank of the Thai SF-36v1 (revised 2005) score in eight domains and one item of health transition at pre-intervention measurement for the two groups. The results indicated that some domains such as BP, VT and HT at pre-intervention measurement in the control group was higher score than those of the intervention group.

Table 6. 23 Descriptive statistics for the two groups: the Thai SF-36v1 score at pre-intervention measurement

	control and intervention	Mean	Std. Deviation	Mean Rank	N
Physical Functioning: PF	control	61.0000	31.35455	65.56	75
	intervention	74.1781	25.34503	83.68	73
	Total				148
Role-Physical: RP	control	69.3333	42.02905	73.04	75
	intervention	75.3425	35.47621	76.00	73
	Total				148
Bodily Pain: BP	control	37.2667	24.45063	77.23	75
	intervention	33.4932	20.61022	71.69	73
	Total				148
General Health: GH	control	38.0667	25.21386	70.27	75
	intervention	40.6944	19.45210	77.88	72
	Total				147
Vitality: VT	control	56.8000	15.10414	75.84	75
	intervention	56.5068	12.62947	73.12	73
	Total				148
Social Functioning: SF	control	39.0000	10.52667	69.30	75
	intervention	41.8493	8.87830	79.84	73
	Total				148
Role-Emotional: RE	control	64.8889	44.48347	71.39	75
	intervention	71.2329	40.56509	77.70	73
	Total				148
Mental Health: MH	control	60.2667	14.07829	73.83	75
	intervention	61.3699	12.94809	75.18	73
	Total				148
Health Transition: HT	control	46.3333	29.26271	73.51	75
	intervention	46.2329	32.18632	75.52	73
	Total				148

The results indicated no statistically significant differences between groups in the pre-intervention measurement in all domains: RP(U = 2936, p = .676); BP(U = 2645.5, p = .158); GH(U = 2787, p = .462); VT(U = 2981, p = .828); SF(U = 2638, p = .126); RE(U = 2782, p = .297); MH(U = 2957, p = .761); and HT(U = 3016, p = .925). Merely, the result in PF demonstrated a statistically significant difference between the intervention group and the control group (U = 2200, p = .003) as showed in **Table 6.24.**

Table 6. 24 Mann-Whitney U Test between the two groups: the Thai SF-36v1 score at pre-intervention measurement

	PF	RP	BP	GH	VT	SF	RE	MH	HT
Mann-Whitney U	2067.00	2628.00	2532.50	2420.50	2637.00	2347.50	2504.00	2687.50	2663.00
Wilcoxon W	4917.00	5478.00	5233.50	5270.50	5338.00	5197.50	5354.00	5537.50	5513.00
Z	-2.586	-.471	-.792	-1.086	-.390	-1.599	-1.017	-.194	-.296
Asymp. Sig. (2-tailed)	.010*	.638	.428	.277	.696	.110	.309	.846	.767

(Physical Functioning: PF; Role-Physical: RP; Bodily Pain: BP; General Health: GH; Vitality: VT; Social Functioning: SF; Role-Emotional: RE; Mental Health: MH; and the Reported Health Transition: HT)
*p < .05

Post-intervention measurement

Table 6.25 demonstrates mean, standard deviation, and mean rank of the Thai SF-36v1 (revised 2005) score in eight domains and one item of health transition at post-intervention measurement for two groups. The results indicated that BP, GH, VT, SF and MH at post-intervention measurement of the control group was higher than those in the intervention group.

Table 6. 25 Descriptive statistics for the two groups: the Thai SF-36v1 score at post-intervention measurement

	control and intervention	Mean	Std. Deviation	Mean Rank	N
Physical Functioning: PF	control	56.6000	31.37782	59.47	75
	intervention	77.4658	23.49828	89.94	73
	Total				148
Role-Physical: RP	control	71.0000	42.12273	73.10	75
	intervention	77.7397	33.73756	75.94	73
	Total				148
Bodily Pain: BP	control	31.0000	23.11107	77.65	75
	intervention	27.4315	21.80633	71.27	73
	Total				148
General Health: GH	control	44.3333	23.19619	78.86	75
	intervention	39.3151	19.60221	70.02	73
	Total				148
Vitality: VT	control	57.4000	14.59730	75.83	75
	intervention	57.0548	12.95922	73.13	73
	Total				148
Social Functioning: SF	control	41.4667	8.99600	75.88	75
	intervention	39.1781	11.36557	73.08	73
	Total				148
Role-Emotional: RE	control	68.0000	43.64751	73.59	75
	intervention	70.3196	40.27745	75.44	73
	Total				148
Mental Health: MH	control	64.4800	11.68894	74.60	75
	intervention	65.2055	11.36632	74.40	73
	Total				148
Health Transition: HT	control	47.6667	29.96995	72.53	75
	intervention	50.0000	29.75595	76.52	73
	Total				148

The results in the post-intervention measurement are similar to the results above, there was no statistically significant difference in all domains: RP(U = 2834.5, p = .702); BP(U = 2605.5, p = .237); GH(U = 2576, p = .200); VT(U = 2857, p = .801); SF(U = 2795, p = .608); RE(U = 2827.5, p = .682); MH(U = 2890, p = .895); and HT(U = 2767, p = .550). Whereas, only the result in PF domain demonstrated a statistically significant difference between the intervention group and the control group at post-intervention measurement (U = 1682.5, p = .000) **(Table 6.26).**

Table 6. 26 Mann-Whitney U Test between the two groups: the Thai SF-36v1 score at post-intervention measurement

	PF	RP	BP	GH	VT	SF	RE	MH	HT
Mann-Whitney U	1610.50	2632.50	2501.50	2410.50	2637.50	2634.00	2669.00	2730.00	2590.00
Wilcoxon W	4460.50	5482.50	5202.50	5111.50	5338.50	5335.00	5519.00	5431.00	5440.00
Z	-4.337	-.459	-.915	-1.258	-.387	-.429	-.299	-.029	-.582
Asymp. Sig. (2-tailed)	.000*	.646	.360	.209	.698	.668	.765	.977	.560

(Physical Functioning: PF; Role-Physical: RP; Bodily Pain: BP; General Health: GH; Vitality: VT; Social Functioning: SF; Role-Emotional: RE; Mental Health: MH; and the Reported Health Transition: HT)
*p < .05

3-month follow-up measurement

Table 6.27 demonstrates mean, standard deviation, and mean rank of the Thai SF-36v1 (revised 2005) score in eight domains and one item of health transition at 3-month follow-up measurement for the two groups. The results indicated that all almost of the domains: RP, BP, GH, VT, SF, RE and HT at 3-month follow-up measurement of the control group was higher score than those of the intervention group. On the other hand, the results in PF and MH of the control group show a lower score than that of the intervention group.

Table 6. 27 Descriptive statistics for the two groups: the Thai SF-36v1 score at 3-month follow-up measurement

	control and intervention	Mean	Std. Deviation	Mean Rank	N
Physical Functioning: PF	control	51.9333	30.49029	59.59	75
	intervention	72.8767	27.09189	89.82	73
	Total				148
Role-Physical: RP	control	73.6667	39.39863	76.04	75
	intervention	75.3425	33.97639	72.92	73
	Total				148
Bodily Pain: BP	control	41.3333	25.52600	85.05	75
	intervention	28.5616	23.56624	63.66	73
	Total				148
General Health: GH	control	50.8000	26.39410	77.99	75
	intervention	47.1233	17.92960	70.91	73
	Total				148
Vitality: VT	control	60.8667	11.43056	75.27	75
	intervention	61.4384	14.08011	73.71	73
	Total				148
Social Functioning: SF	control	43.5333	12.91274	78.18	75
	intervention	40.2740	9.20033	70.72	73
	Total				148
Role-Emotional: RE	control	69.3333	42.71563	74.87	75
	intervention	68.4932	41.16004	74.12	73
	Total				148
Mental Health: MH	control	62.6667	12.44809	70.37	75
	intervention	65.4247	13.32283	78.75	73
	Total				148
Health Transition: HT	control	51.6667	30.84763	77.80	75
	intervention	46.9178	23.55004	71.11	73
	Total				148

The results showed a statistically significant difference in PF and BP (U = 1638, p = .000;

U = 2006, p = .001, respectively) in 3-month follow-up measurement, as shown in **Table 6.28.**

Table 6. 28 Mann-Whitney U Test between the two groups: the Thai SF-36v1 score at 3-month follow-up measurement

	PF	RP	BP	GH	VT	SF	RE	MH	HT
Mann-Whitney U	1619.00	2622.00	1946.00	2475.50	2680.00	2461.50	2709.50	2427.50	2490.00
Wilcoxon W	4469.00	5323.00	4647.00	5176.50	5381.00	5162.50	5410.50	5277.50	5191.00
Z	-4.304	-.502	-3.071	-1.008	-.224	-1.105	-.122	-1.199	-.986
Asymp. Sig. (2-tailed)	.000*	.616	.002*	.313	.823	.269	.903	.231	.324

(Physical Functioning: PF; Role-Physical: RP; Bodily Pain: BP; General Health: GH; Vitality: VT; Social Functioning: SF; Role-Emotional: RE; Mental Health: MH; and the Reported Health Transition: HT)
*p < .05

6-month follow-up measurement

Table 6.29 demonstrates mean, standard deviation, and mean rank of the Thai SF-36v1 (revised 2005) score in eight domains and one item of health transition at 6-month follow-up measurement for two groups. The results supported the 3-month follow-up measurement's results that RP, BP, GH, VT, SF, RE and HT in the control group scored higher than those of the intervention group as showed in **Table 6.29** demonstrating descriptive statistics of the Thai SF-36v1 score at 6-month follow-up measurement for the two groups. Additionally, the results in PF and MH of the control group illustrated lower score than those of the intervention group.

Table 6. 29 Descriptive statistics for the two groups: the Thai SF-36v1 score at 6-month follow-up measurement

	control and intervention	Mean	Std. Deviation	Mean Rank	N
Physical Functioning: PF	control	51.7333	31.61736	58.96	75
	intervention	74.3836	25.50797	90.47	73
	Total				148
Role-Physical: RP	control	64.6667	44.09245	74.57	75
	intervention	66.0959	39.38985	74.42	73
	Total				148
Bodily Pain: BP	control	37.9333	26.93013	79.55	75
	intervention	30.9932	21.01066	69.31	73
	Total				148
General Health: GH	control	48.2000	22.17315	76.03	75
	intervention	46.3014	15.85585	72.92	73
	Total				148
Vitality: VT	control	60.8667	12.28527	80.46	75
	intervention	57.6712	13.01928	68.38	73
	Total				148
Social Functioning: SF	control	42.0667	9.58931	73.78	75
	intervention	42.3288	9.09373	75.24	73
	Total				148
Role-Emotional: RE	control	63.1111	47.32272	74.01	75
	intervention	63.9269	44.35875	75.00	73
	Total				148
Mental Health: MH	control	63.8560	10.70153	72.85	75
	intervention	64.6027	11.10898	76.20	73
	Total				148
Health Transition: HT	control	50.0000	30.75623	74.05	75
	intervention	50.6849	21.63965	74.97	73
	Total				148

The results of the 6-month follow-up measurement showed no statistically significant differences in all domains except PF which was a statistically significant difference (U = 1587, p = .000) as shows in **Table 6.30.**

Table 6. 30 Mann-Whitney U Test between the two groups: the Thai SF-36v1 score at 6-month follow-up measurement

	PF	RP	BP	GH	VT	SF	RE	MH	HT
Mann-Whitney U	1572.00	2732.00	2358.50	2622.50	2290.50	2683.50	2701.00	2613.50	2703.50
Wilcoxon W	4422.00	5433.00	5059.50	5323.50	4991.50	5533.50	5551.00	5463.50	5553.50
Z	-4.485	-.023	-1.469	-.443	-1.733	-.220	-.160	-.480	-.136
Asymp. Sig. (2-tailed)	.000*	.982	.142	.658	.083	.826	.873	.631	.892

*p < .05

6.8 EFFECT OF COMMUNITY-BASED INTERVENTION WITHIN SUBJECTS

6.8.1 Comparisons of the Change of Health Status (Systolic Blood Pressure, Diastolic Blood Pressure and Waist Circumference), Adherence to High Blood Pressure Therapy and Health Related Quality of Life Over Time Measurement

One-way repeated ANOVA (with significance at p-value <0.05) was calculated, comparing the pre- intervention measurement, the post-intervention measurement, the 3-month follow-up measurement, and the 6-month follow-up measurement levels for systolic blood pressure, diastolic blood pressure, and lengths for waist circumference.

Additionally, the Thai Hill-Bone Compliance to High Blood Pressure Scale score and quality of life using the Thai SF-36v1 (revised 2005) scale were calculated by using the Friedman test, and Post-hoc analysis with Wilcoxon signed-rank tests (Bonferroni-adjusted) for the outcomes on each of combination. The statistical significant level in Wilcoxon part; the alpha will decrease from 0.05 to 0.05/6=0.0083 due to Bonferronni adjustment. Therefore, the significance level was set at 0.0083 to accept or reject the research hypotheses previously formulated.

The Control group

Systolic Blood Pressure

The statistical analysis in **Table 6.31** compares the difference in levels between the pre-intervention measurement and the post-intervention measurement including 3-month and 6-month follow-up measurement for systolic blood pressure by the control group. A post-hoc test revealed that systolic blood pressure level at 3-month follow-up measurement and 6-month follow-up measurement significantly differ with the pre-intervention measurement (p = .001 and p = .000, respectively). Moreover, post-intervention measurement illustrated a statistically significant difference between 3-month follow-up measurement (p = .002) and 6-month follow-up measurement (p = .000). In addition, the results in systolic blood pressure at post-intervention measurement did not differ with the pre-intervention measurement. Similarly, the results in at 3-month follow-up measurement did not differ with those 6-month follow-up measurement.

Table 6. 31 Pairwise comparisons of systolic blood pressure in the control group

(I) intervention	(J) intervention	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
1	2	.002	.008	1.000	-.019	.023
	3	.031*	.008	.001	.010	.052
	4	.038*	.007	.000	.020	.056
2	1	-.002	.008	1.000	-.023	.019
	3	.029*	.008	.002	.008	.049
	4	.036*	.007	.000	.017	.054
3	1	-.031*	.008	.001	-.052	-.010
	2	-.029*	.008	.002	-.049	-.008
	4	.007	.007	1.000	-.012	.025
4	1	-.038*	.007	.000	-.056	-.020
	2	-.036*	.007	.000	-.054	-.017
	3	-.007	.007	1.000	-.025	.012

*p < .05

Diastolic Blood Pressure

The statistical analysis in **Table 6.32** compares the difference in levels between the pre-intervention measurement and the post-intervention measurement including 3-month and 6-month follow-up measurement for diastolic blood pressure by the control group. A post-hoc test revealed that there was a statistically significant difference in diastolic blood pressure level between pre-intervention measurement and 3-month follow-up measurement (p = .005). Moreover, the level in post-intervention measurement illustrated a statistically significant difference to those in 3-month follow-up measurement (p = .022). In addition, the results in diastolic blood pressure at post-intervention measurement did not differ with pre-intervention measurement. Similarly, the result in 3-month follow-up measurement did not differ with those in 6-month follow-up measurement.

Table 6. 32 Pairwise comparisons of diastolic blood pressure in the control group

(I) intervention	(J) intervention	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
1	2	.005	.008	1.000	-.016	.026
	3	.026*	.007	.005	.006	.046
	4	.018	.008	.158	-.004	.040
2	1	-.005	.008	1.000	-.026	.016
	3	.021*	.007	.022	.002	.040
	4	.013	.008	.690	-.009	.036
3	1	-.026*	.007	.005	-.046	-.006
	2	-.021*	.007	.022	-.040	-.002
	4	-.007	.008	1.000	-.030	.015
4	1	-.018	.008	.158	-.040	.004
	2	-.013	.008	.690	-.036	.009
	3	.007	.008	1.000	-.015	.030

*p < .05

Waist Circumference

The statistical analysis in **Table 6.33** compares the difference scores between the pre-intervention measurement and the post-intervention measurement including 3-month and 6-month follow-up measurement for waist circumference by the control group. A post-hoc test indicated that the intervention program did not change waist circumference measurement of the participants in the control group. The results showed no significantly difference.

Table 6. 33 Pairwise comparisons of waist circumference in the control group

(I) intervention	(J) intervention	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
1	2	-.001	.003	1.000	-.008	.006
	3	-.008	.004	.279	-.019	.003
	4	.001	.004	1.000	-.009	.011
2	1	.001	.003	1.000	-.006	.008
	3	-.007	.003	.257	-.016	.002
	4	.002	.003	1.000	-.006	.011
3	1	.008	.004	.279	-.003	.019
	2	.007	.003	.257	-.002	.016
	4	.010	.004	.075	-.001	.020
4	1	-.001	.004	1.000	-.011	.009
	2	-.002	.003	1.000	-.011	.006
	3	-.010	.004	.075	-.020	.001

*p < .05

The statistical analysis in **Table 6.34** demonstrates the comparison of the total score of the Thai Hill-Bone HBP Compliance Scale and subscales changes over time within the control subjects by using Friedman Test and followed by Wilcoxon Sign Ranks test with a Bonferroni correction adjusted if the results from Friedman test showed statistical significant at p < .05.

The results indicated that there was a statistically significant differences in sum scores of the Thai Hill-Bone HBP Compliance Scale, salt intake subscales, and appointment keeping subscale, $\chi 2(2) = 14.110$, $p = 0.003$; $\chi 2(2) = 14.030$, $p = 0.003$; $\chi 2(2) = 17.227$, $p = 0.001$, respectively. Consequently, post-hoc analysis with Wilcoxon signed-rank tests was conducted with a Bonferroni correction adjusted with a statistically significant at p < .0083, resulting in the mean rank of the sum score of Thai Hill-Bone HBP Compliance Scale score by testing with Wilcoxon Sign Ranks test with a Bonferroni correction adjusted found statistically significant differences (p < .0083) in two pairs: T0-T1 (Z = -2.696, p = .007) and T1-T2 (Z = -2.696, p = .007).

However, the results in medical taking subscale score did not demonstrate a statistically significant difference by using Friedman test (p > .05) but the results of Wilcoxon Sign Ranks test with a Bonferroni correction adjusted revealed statistically significant differences (p < .0083) in one pairs: T0-T1 (Z = -2.757, p = .006).

Additionally, the results in salt intake subscale score showed statistically significant differences by using the Friedman test. The results showed statistically significant differences (p < .0083) in one pairs: T1-T3 (Z = -3.420, p = .001) by using Post-hoc analysis with Wilcoxon signed-rank tests.

Lastly, appointment keeping subscale, Wilcoxon Sign Ranks test with a Bonferroni correction adjusted demonstrated a statistically significant difference (p = .0083) in one pairs: T1-T2 (Z = -3.976, p = .000).

Table 6. 34 Comparison of the total score of the Thai Hill-Bone HBP Compliance Scale and subscales change over time by using Wilcoxon Sign Ranks test and Friedman Test for the control group

Group	Control group	
Variable	Z	p-value
The total score of Thai Hill-Bone HBP Compliance Scale		
post-test (T1) - pre-test (T0)	-2.696	.007*
3-month follow-up (T2) - pre-test (T0)	-1.471	.141
6-month follow-up (T3) - pre-test (T0)	-0.411	.681
3-month follow-up (T2) - post-test (T1)	-3.715	.000*
6-month follow-up (T3) - post-test (T1)	-2.592	.010
6-month follow-up (T3) - 3-month follow-up (T2)	-1.241	.214
Friedman Test	.003**	
Medical taking subscale		
post-test (T1) - pre-test (T0)	-2.757	.006*
3-month follow-up (T2) - pre-test (T0)	-0.418	.676
6-month follow-up (T3) - pre-test (T0)	-2.167	.030
3-month follow-up (T2) - post-test (T1)	-1.858	.063
6-month follow-up (T3) - post-test (T1)	-0.054	.957
6-month follow-up (T3) - 3-month follow-up (T2)	-1.720	.086
Friedman Test	.060	
Salt intake subscale		
post-test (T1) - pre-test (T0)	-0.078	.937
3-month follow-up (T2) - pre-test (T0)	-1.757	.079
6-month follow-up (T3) - pre-test (T0)	-2.472	.013
3-month follow-up (T2) - post-test (T1)	-1.967	.049
6-month follow-up (T3) - post-test (T1)	-3.420	.001*
6-month follow-up (T3) - 3-month follow-up (T2)	-1.440	.150
Friedman Test	.003**	
Appointment keeping subscale		
post-test (T1) - pre-test (T0)	-1.185	.236
3-month follow-up (T2) - pre-test (T0)	-2.629	.009
6-month follow-up (T3) - pre-test (T0)	-0.913	.361
3-month follow-up (T2) - post-test (T1)	-3.976	.000*
6-month follow-up (T3) - post-test (T1)	-2.152	.031
6-month follow-up (T3) - 3-month follow-up (T2)	-2.010	.044
Friedman Test	.001**	

***Friedman Test (p < .05) * Wilcoxon Sign Ranks test with Bonferroni correction adjusted (p < .0083)*

Health related quality of life

The statistical analysis in **Table 6.35** compares the difference scores of the Thai SF-36v1 (revised 2005) scales over time by using Friedman Test and followed by Wilcoxon Sign Ranks test with a Bonferroni correction adjusted with statistically significant at p < .0083 if the results from Friedman test showed statistically significant at p < .05. The results are presented separately below.

PF: Physical functioning: The difference among the mean in 4 time points' measurement of the physical functioning domain by using Friedman test demonstrated a statistically significant differences (p = .001). Therefore, the mean rank was tested by using Wilcoxon Sign Ranks test with a Bonferroni correction adjusted with statistically significant at p < .0083. The results revealed statistically significant difference in one pairs: T0-T2(Z = -2.6759, p = .006).

RP: Role limitation-physical problems: The difference among the mean in 4 time points measurement of the role limitation-physical problems domain by using Friedman test was not statistically significant differences (p = .096).

BP: Body pain: The difference among the mean in 4 time points' measurement of the body pain domain by using Friedman test demonstrated a statistically significant differences (p = .005). Therefore, the mean rank was tested by using Wilcoxon Sign Ranks test with a Bonferroni correction adjusted with statistically significant at p < .0083. The results found a statistically significant difference in one pairs: T1-T2(Z = -3.733, p = .000).

GH: General health perceptions: The difference among the mean in 4 time points' measurement of the general health perception domain by using Friedman test demonstrated a statistically significant differences (p = .000). Therefore, the mean rank was tested by using Wilcoxon Sign Ranks test with a Bonferroni correction adjusted with statistically significant at p < .0083. The results found statistically significant difference in three pairs: T0-T1(Z = -2.700, p = .007); T0-T2(Z = -3.683, p = .000); and T0-T3(Z = -3.729, p = .000).

VT: Vitality, energy and fatigue: The difference among the mean in 4 time points' measurement of the vitality, energy and fatigue domain by using Friedman test was not statistically significant differences (p = .096).

SF: Social functioning: The difference among the mean in 4 time points' measurement of the social functioning domain by using the Friedman test was statistically significant differences (p = .014). Therefore, the mean rank was tested by using Wilcoxon Sign Ranks test with a Bonferroni correction adjusted with statistically significant at p < .0083. The results found statistically significant difference in two pairs: T0-T2(Z = -3.042, p = .002) and T0-T3(Z = -2.707, p = .007).

RE: Role limitation-emotional problems: The difference among the mean in 4 time points' measurement of the role limitation-emotional problems domain by using Friedman test was not statistically significant differences (p = .491).

MH: Mental health: The difference among the mean in 4 time points' measurement of the mental health domain by using Friedman test was statistically significant differences (p = .032). Therefore, the mean rank was tested by using Wilcoxon Sign Ranks test with a Bonferroni correction adjusted with statistically significant at p < .0083. However, the results were not statistically significant difference in all pairs.

HT: Health transitional: The difference among the mean in 4 time points' measurement of the health transitional domain by using Friedman test was not statistically significant differences (p = .289).

Table 6. 35 Comparison of the mean score of the Thai SF-36v1 (revised 2005) scales over time by using Wilcoxon Sign Ranks test and Friedman Test for the control group

Group	Control group	
Variable	Z	p-value
PF: Physical functioning		
post-test (T1) - pre-test (T0)	-1.629	.103
3-month follow-up (T2) - pre-test (T0)	-2.759	.006*
6-month follow-up (T3) - pre-test (T0)	-2.543	.011
3-month follow-up (T2) - post-test (T1)	-2.022	.043
6-month follow-up (T3) - post-test (T1)	-2.142	.032
6-month follow-up (T3) - 3-month follow-up (T2)	-0.147	.883
Friedman Test		.001*
RP: role limitation-physical problems		
post-test (T1) - pre-test (T0)	-0.471	.637
3-month follow-up (T2) - pre-test (T0)	-0.619	.536
6-month follow-up (T3) - pre-test (T0)	-0.959	.338
3-month follow-up (T2) - post-test (T1)	-0.303	.762
6-month follow-up (T3) - post-test (T1)	-1.235	.217
6-month follow-up (T3) - 3-month follow-up (T2)	-1.848	.065
Friedman Test		.096
BP: Body pain		
post-test (T1) - pre-test (T0)	-1.866	.062
3-month follow-up (T2) - pre-test (T0)	-1.397	.162
6-month follow-up (T3) - pre-test (T0)	-0.141	.888
3-month follow-up (T2) - post-test (T1)	-3.733	.000*
6-month follow-up (T3) - post-test (T1)	-2.425	.015
6-month follow-up (T3) - 3-month follow-up (T2)	-0.939	.348
Friedman Test		.005**
GH: General health perceptions		
post-test (T1) - pre-test (T0)	-2.700	.007*
3-month follow-up (T2) - pre-test (T0)	-3.683	.000*
6-month follow-up (T3) - pre-test (T0)	-3.729	.000*
3-month follow-up (T2) - post-test (T1)	-2.526	.012
6-month follow-up (T3) - post-test (T1)	-2.038	.042
6-month follow-up (T3) - 3-month follow-up (T2)	-0.880	.379
Friedman Test		.000**
VT: Vitality, energy and fatigue		
post-test (T1) - pre-test (T0)	-0.040	.968
3-month follow-up (T2) - pre-test (T0)	-1.414	.157
6-month follow-up (T3) - pre-test (T0)	-1.884	.059
3-month follow-up (T2) - post-test (T1)	-1.719	.086
6-month follow-up (T3) - post-test (T1)	-2.096	.036
6-month follow-up (T3) - 3-month follow-up (T2)	-0.184	.854
Friedman Test		.096
SF: Social functioning		
post-test (T1) - pre-test (T0)	-2.456	.014
3-month follow-up (T2) - pre-test (T0)	-3.042	.002*
6-month follow-up (T3) - pre-test (T0)	-2.707	.007*
3-month follow-up (T2) - post-test (T1)	-1.217	.224
6-month follow-up (T3) - post-test (T1)	-0.449	.653
6-month follow-up (T3) - 3-month follow-up (T2)	-0.852	.394
Friedman Test		.014**
RE: Role limitation-emotional problems		
post-test (T1) - pre-test (T0)	-0.900	.368
3-month follow-up (T2) - pre-test (T0)	-0.708	.479
6-month follow-up (T3) - pre-test (T0)	-0.365	.715
3-month follow-up (T2) - post-test (T1)	-0.247	.805
6-month follow-up (T3) - post-test (T1)	-0.733	.463
6-month follow-up (T3) - 3-month follow-up (T2)	-1.145	.252
Friedman Test		.491
MH: Mental health		
post-test (T1) - pre-test (T0)	-2.612	.009

Group	Control group	
Variable	Z	p-value
3-month follow-up (T2) - pre-test (T0)	-1.559	.119
6-month follow-up (T3) - pre-test (T0)	-1.728	.084
3-month follow-up (T2) - post-test (T1)	-0.987	.324
6-month follow-up (T3) - post-test (T1)	-0.434	.664
6-month follow-up (T3) - 3-month follow-up (T2)	-0.668	.504
Friedman Test	.032*	
HT: Health transitional		
post-test (T1) - pre-test (T0)	-0.494	.621
3-month follow-up (T2) - pre-test (T0)	-2.325	.020
6-month follow-up (T3) - pre-test (T0)	-1.286	.199
3-month follow-up (T2) - post-test (T1)	-1.529	.126
6-month follow-up (T3) - post-test (T1)	-0.821	.412
6-month follow-up (T3) - 3-month follow-up (T2)	-0.805	.421
Friedman Test	.289	

***Friedman Test (p < .05) * Wilcoxon Sign Ranks test with Bonferroni correction adjusted (p < .0083)*

The Intervention group

Systolic Blood Pressure

The statistical analysis in **Table 6.36** compares the difference levels between the pre-intervention measurement and the post-intervention measurement including 3-month and 6-month follow-up measurement for systolic blood pressure by the intervention group. A post-hoc test revealed that systolic blood pressure level in post-intervention, 3-month follow-up measurement and 6-month follow-up measurement significantly differ with pre-intervention measurement in the intervention group (p = .008, p = .000 and p = .000, respectively). Moreover, post-intervention measurement illustrated a statistically significant difference between 3-month follow-up measurement (p = .002) and 6-month follow-up measurement (p = .000). In addition, the results in systolic blood pressure only at 3-month follow-up measurement did not differ with 6-month follow-up measurement.

Table 6. 36 Pairwise comparisons of systolic blood pressure in the intervention group

(I) intervention	(J) intervention	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
1	2	.020[*]	.006	.008	.004	.037
	3	.047[*]	.007	.000	.027	.066
	4	.051[*]	.007	.000	.033	.069
2	1	-.020[*]	.006	.008	-.037	-.004
	3	.027[*]	.007	.002	.008	.045
	4	.031[*]	.007	.000	.013	.049
3	1	-.047[*]	.007	.000	-.066	-.027
	2	-.027[*]	.007	.002	-.045	-.008
	4	.004	.006	1.000	-.012	.021
4	1	-.051[*]	.007	.000	-.069	-.033
	2	-.031[*]	.007	.000	-.049	-.013
	3	-.004	.006	1.000	-.021	.012

*p < .05

Diastolic Blood Pressure

The statistical analysis in **Table 6.37** compares the difference levels between the pre-intervention measurement and the post-intervention measurement including 3-month and 6-month follow-up measurement for diastolic blood pressure by the intervention group. A post-hoc test revealed that the levels in diastolic blood pressure in post-intervention, 3-month follow-up measurement and 6-month follow-up measurement were a statistically significantly difference to those in pre-intervention measurement (p = .045, p = .002 and p = .000, respectively). On the other hand, the results in diastolic blood pressure at post-intervention measurement did not differ with 3-month follow-up measurement and 6-month follow-up measurement. Moreover, diastolic blood pressure level at 3-month follow-up measurement and 6-month follow-up measurement were not statistically significant differences.

Table 6. 37 Pairwise comparisons of diastolic blood pressure in the intervention group

(I) intervention	(J) intervention	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
1	2	.018[*]	.007	.045	.000	.036
	3	.035[*]	.009	.002	.010	.059
	4	.041[*]	.008	.000	.018	.064
2	1	-.018[*]	.007	.045	-.036	.000
	3	.016	.008	.307	-.006	.039
	4	.023	.009	.076	-.001	.046
3	1	-.035[*]	.009	.002	-.059	-.010
	2	-.016	.008	.307	-.039	.006
	4	.006	.007	1.000	-.013	.025
4	1	-.041[*]	.008	.000	-.064	-.018
	2	-.023	.009	.076	-.046	.001
	3	-.006	.007	1.000	-.025	.013

*p < .05

Waist Circumference

The statistical analysis in **Table 6.38** compares the difference in lengths between the pre-intervention measurement and the post-intervention measurement including 3-month and 6-month follow-up measurement for waist circumference by the intervention group. Similar results to the control group, a post-hoc test indicated that the intervention program did not change waist circumference measurements of participants in the intervention group. The results showed no significantly difference.

Table 6. 38 Pairwise comparisons of waist circumference in the intervention group

(I) intervention	(J) intervention	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
1	2	.003	.002	1.000	-.004	.009
	3	.009	.005	.527	-.005	.022
	4	.017	.006	.072	-.001	.034
2	1	-.003	.002	1.000	-.009	.004
	3	.006	.005	1.000	-.006	.018
	4	.014	.006	.123	-.002	.030
3	1	-.009	.005	.527	-.022	.005
	2	-.006	.005	1.000	-.018	.006
	4	.008	.004	.230	-.002	.018
4	1	-.017	.006	.072	-.034	.001
	2	-.014	.006	.123	-.030	.002
	3	-.008	.004	.230	-.018	.002

*p < .05

Adherence to high blood pressure therapy

The statistical analysis in **Table 6.39** demonstrates the comparison of the total score of the Thai Hill-Bone HBP Compliance Scale and subscales changes over time within the intervention subjects by using Friedman Test and followed by Wilcoxon Sign Ranks test with a Bonferroni correction adjusted if the results from Friedman test showed statistical significant at p < .05.

The results indicated that there was a statistically significant differences in the sum scores of the Thai Hill-Bone HBP Compliance Scale, medication taking subscales, and appointment keeping subscale, $\chi2(2)$ = 16.581, *p* = 0.001; $\chi2(2)$ = 10.166, *p* = 0.017; $\chi2(2)$ = 7.985, *p* = 0.046, respectively. Consequently, post-hoc analysis with Wilcoxon signed-rank tests was conducted with a Bonferroni correction adjusted with a statistically significant at p < .0083, resulting in the mean rank of the sum score of Thai Hill-Bone Compliance Scale score by testing with Wilcoxon Sign Ranks test with a Bonferroni correction adjusted found statistically significant differences (p < .0083) in one pairs: T0-T3 (Z = -3.004, p = .003).

Medication taking subscale, the results Wilcoxon Sign Ranks test with a Bonferroni correction adjusted demonstrated a statistically significant differences (p = .0083) in one pairs: T0-T3 (Z = -2.910, p = .004).

In terms of salt intake subscale score, the results did not demonstrate a statistically significant difference by using Friedman test (p > .05) and were no statistically significant differences found in all pairs (p > .0083).

Lastly, appointment keeping subscale, a Friedman test indicated statistically significant difference but Wilcoxon Sign Ranks test with a Bonferroni correction adjusted did not demonstrate statistically significant difference (p > .0083) in all pairs.

Table 6. 39 Comparison of the total score of the Thai Hill-Bone HBP Compliance Scale and subscales change over time by using Wilcoxon Sign Ranks test and Fried Man Test for the intervention group

Group	Intervention group	
Variable	Z	p-value
The total score of Thai Hill-Bone HBP Compliance Scale		
post-test (T1) - pre-test (T0)	-0.769	.442
3-month follow-up (T2) - pre-test (T0)	-2.149	.032
6-month follow-up (T3) - pre-test (T0)	-3.004	.003*
3-month follow-up (T2) - post-test (T1)	-0.499	.618
6-month follow-up (T3) - post-test (T1)	-1.745	.081
6-month follow-up (T3) - 3-month follow-up (T2)	-1.531	.126
Friedman Test	.001**	
Medical taking subscale		
post-test (T1) - pre-test (T0)	-2.339	.019
3-month follow-up (T2) - pre-test (T0)	-2.012	.044
6-month follow-up (T3) - pre-test (T0)	-2.910	.004*
3-month follow-up (T2) - post-test (T1)	-0.526	.599
6-month follow-up (T3) - post-test (T1)	-0.699	.485
6-month follow-up (T3) - 3-month follow-up (T2)	-1.499	.134
Friedman Test	.017**	
Salt intake subscale		
post-test (T1) - pre-test (T0)	-0.383	.702
3-month follow-up (T2) - pre-test (T0)	-1.769	.077
6-month follow-up (T3) - pre-test (T0)	-1.072	.284
3-month follow-up (T2) - post-test (T1)	-1.696	.090
6-month follow-up (T3) - post-test (T1)	-0.814	.416
6-month follow-up (T3) - 3-month follow-up (T2)	-0.674	.500
Friedman Test	.157	
Appointment keeping subscale		
post-test (T1) - pre-test (T0)	-0.911	.362
3-month follow-up (T2) - pre-test (T0)	-0.761	.447
6-month follow-up (T3) - pre-test (T0)	-2.198	.028
3-month follow-up (T2) - post-test (T1)	-0.199	.842
6-month follow-up (T3) - post-test (T1)	-1.575	.115
6-month follow-up (T3) - 3-month follow-up (T2)	-2.207	.027
Friedman Test	.046**	

***Friedman Test (p < .05) * Wilcoxon Sign Ranks test with Bonferroni correction adjusted (p < .0083)*

Health related Quality of life

The statistical analysis in **Table 6.40** compares the difference scores of the Thai SF-36va (revised 2005) scales over time by using Friedman Test and followed by Wilcoxon Sign Ranks test with a Bonferroni correction adjusted with statistically significant at $p < .0083$ if the results from Friedman test showed statistically significant at $p < .05$. The results are presented separately below.

PF: Physical functioning: The difference among the mean scores in 4 time points' measurement of the physical functioning domain by using Friedman test was not statistically significant differences ($p = .795$).

RP: Role limitation-physical problems: The difference among mean scores in 4 time points' assessed by the role limitation-physical problems domain by using Friedman test was not statistically significant differences ($p = .069$).

BP: Body pain: The difference among the mean in 4 time points' measurement of the body pain domain by using Friedman test demonstrated a statistically significant differences ($p = .032$). However, the mean rank was tested by using Wilcoxon Sign Ranks test with a Bonferroni correction adjusted with statistically significant at $p < .0083$. The results were not statistically significant difference in all pairs.

GH: General health perceptions: The difference among the mean in 4 time points' measurement of the general health perception domain by using Friedman test demonstrated a statistically significant differences ($p = .000$). Therefore, the mean rank was tested by using Wilcoxon Sign Ranks test with a Bonferroni correction adjusted with statistically significant at $p < .0083$. The results found statistically significant difference in three pairs: T0-T2($Z = -2.921$, $p = .003$); T1-T2($Z = -3.818$, $p = .000$); and T1-T3($Z = -3.329$, $p = .001$).

VT: Vitality, energy and fatigue: The difference among the mean in 4 time points' measurement of the vitality, energy and fatigue domain by using Friedman test was not statistically significant differences ($p = .096$).

SF: Social functioning: The difference among the mean in 4 time points' measurement of the social functioning domain by using Friedman test was not statistically significant differences (p = .094).

RE: Role limitation-emotional problems: The difference among the mean in 4 time points' measurement of the role limitation-emotional problems domain by using Friedman test was not statistically significant differences (p = .552).

MH: Mental health: The difference among the mean in 4 time points' measurement of the mental health domain by using Friedman test was not statistically significant differences (p = .079).

HT: Health transitional: The difference among the mean in 4 time points' measurement of the health transitional domain by using Friedman test was not statistically significant differences (p = .578).

Table 6. 40 Comparison of the mean score of the Thai SF-36v1 (revised 2005) scales over time by using Wilcoxon Sign Ranks test and Fried Man Test for the intervention group

Group	Intervention group	
Variable	Z	p-value
PF: Physical functioning		
post-test (T1) - pre-test (T0)	-1.262	.207
3-month follow-up (T2) - pre-test (T0)	-0.453	.650
6-month follow-up (T3) - pre-test (T0)	-0.193	.847
3-month follow-up (T2) - post-test (T1)	-1.939	.052
6-month follow-up (T3) - post-test (T1)	-1.426	.154
6-month follow-up (T3) - 3-month follow-up (T2)	-0.595	.552
Friedman Test	.795	
RP: role limitation-physical problems		
post-test (T1) - pre-test (T0)	-1.146	.252
3-month follow-up (T2) - pre-test (T0)	-0.217	.828
6-month follow-up (T3) - pre-test (T0)	-2.039	.041
3-month follow-up (T2) - post-test (T1)	-0.595	.552
6-month follow-up (T3) - post-test (T1)	-2.538	.011
6-month follow-up (T3) - 3-month follow-up (T2)	-2.285	.022
Friedman Test	.069	
BP: Body pain		
post-test (T1) - pre-test (T0)	-2.378	.017
3-month follow-up (T2) - pre-test (T0)	-2.133	.033
6-month follow-up (T3) - pre-test (T0)	-0.629	.529
3-month follow-up (T2) - post-test (T1)	-0.549	.583
6-month follow-up (T3) - post-test (T1)	-1.941	.052
6-month follow-up (T3) - 3-month follow-up (T2)	-1.747	.081
Friedman Test	.032*	
GH: General health perceptions		
post-test (T1) - pre-test (T0)	-0.698	.485
3-month follow-up (T2) - pre-test (T0)	-2.921	.003*
6-month follow-up (T3) - pre-test (T0)	-2.481	.013
3-month follow-up (T2) - post-test (T1)	-3.818	.000*
6-month follow-up (T3) - post-test (T1)	-3.329	.001*
6-month follow-up (T3) - 3-month follow-up (T2)	-0.142	.887
Friedman Test	.000*	
VT: Vitality, energy and fatigue		
post-test (T1) - pre-test (T0)	-0.253	.801
3-month follow-up (T2) - pre-test (T0)	-2.193	.028
6-month follow-up (T3) - pre-test (T0)	-0.866	.386
3-month follow-up (T2) - post-test (T1)	-2.163	.031
6-month follow-up (T3) - post-test (T1)	-0.093	.926
6-month follow-up (T3) - 3-month follow-up (T2)	-2.219	.027
Friedman Test	.096	
SF: Social functioning		
post-test (T1) - pre-test (T0)	-0.828	.408
3-month follow-up (T2) - pre-test (T0)	-0.897	.370
6-month follow-up (T3) - pre-test (T0)	-1.171	.242
3-month follow-up (T2) - post-test (T1)	-0.185	.854
6-month follow-up (T3) - post-test (T1)	-2.250	.024
6-month follow-up (T3) - 3-month follow-up (T2)	-2.470	.014
Friedman Test	.094	
RE: Role limitation-emotional problems		
post-test (T1) - pre-test (T0)	-0.014	.989
3-month follow-up (T2) - pre-test (T0)	-0.716	.474
6-month follow-up (T3) - pre-test (T0)	-1.410	.158
3-month follow-up (T2) - post-test (T1)	-0.575	.565
6-month follow-up (T3) - post-test (T1)	-1.300	.194
6-month follow-up (T3) - 3-month follow-up (T2)	-0.927	.354
Friedman Test	.552	
MH: Mental health		
post-test (T1) - pre-test (T0)	-2.305	.021

Group	Intervention group	
Variable	Z	p-value
3-month follow-up (T2) - pre-test (T0)	-2.597	.009
6-month follow-up (T3) - pre-test (T0)	-2.395	.017
3-month follow-up (T2) - post-test (T1)	-0.346	.729
6-month follow-up (T3) - post-test (T1)	-0.174	.862
6-month follow-up (T3) - 3-month follow-up (T2)	-0.516	.606
Friedman Test	.079	
HT: Health transitional		
post-test (T1) - pre-test (T0)	-0.970	.332
3-month follow-up (T2) - pre-test (T0)	-0.533	.594
6-month follow-up (T3) - pre-test (T0)	-1.366	.172
3-month follow-up (T2) - post-test (T1)	-0.740	.459
6-month follow-up (T3) - post-test (T1)	-0.305	.761
6-month follow-up (T3) - 3-month follow-up (T2)	-1.339	.181
Friedman Test	.578	

**Friedman Test (p < .05) * Wilcoxon Sign Ranks test with Bonferroni correction adjusted (p < .0083)

6.9 CHAPTER SUMMARY

This chapter has provided findings of quantitative study part summarising the characteristics of participants, their health status, adherence to high blood pressure therapy and health related quality of life. Moreover, the impact of the community-based intervention to promote self-management between groups and within group was provided. The following chapter provides findings of qualitative study part using a focus group discussion to assess the acceptability of the intervention.

6.10 REFERENCES

Chobanian, A.V., Bakris, G.L., Black, H.R., Cushman, W.C., Green, L.A., Izzo Jr, J.L., Jones, D.W., Materson, B.J., Oparil, S. & Wright Jr, J.T. 2003, 'Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure', *Hypertension*, vol. 42, no. 6, pp. 1206-52.

DeCoster, J. 2001, 'Transforming and restructuring data', *Department of Psychology University of Alabama*.

Keene, O.N. 1995, 'The log transformation is special', *Statistics in Medicine*, vol. 14, no. 8, pp. 811-9.

MacDonald, P. 1999, 'Power, Type I, and Type III Error Rates of Parametric and Nonparametric Statistical Tests', *Journal of Experimental Education*, vol. 67, no. 4, p. 367.

Manning, W.G. 1998, 'The logged dependent variable, heteroscedasticity, and the retransformation problem', *Journal of Health Economics*, vol. 17, no. 3, pp. 283-95.

Ratcliff, R. 1993, 'Methods for dealing with reaction time outliers', *Psychological Bulletin*, vol. 114, no. 3, p. 510.

Simes, R.J. 1986, 'An improved Bonferroni procedure for multiple tests of significance', *Biometrika*, vol. 73, no. 3, pp. 751-4.

Van den Broeck, J., Cunningham, S.A., Eeckels, R. & Herbst, K. 2005, 'Data cleaning: detecting, diagnosing, and editing data abnormalities', *PLoS Medicine*, vol. 2, no. 10, p. 966.

World Health Organisation 2011, *Waist circumference and waist-hip ratio: report of a WHO expert consultation, Geneva, 8–11, December 2008*.

CHAPTER 7: QUALITATIVE STUDY RESULTS

7.1 INTRODUCTION

Focus group discussion provided detailed and subjective experiences from samples who participated in the community-based intervention to promote self-management. An overview of the effect of intervention is presented above, followed by content analysis of experiences during participation the intervention. The five-dimensions of access health care service framework have been utilized for guiding the focus group discussion and analysing the transcripts of the focus group discussion (Levesque, Harris & Russell 2013). Focus groups were conducted after the final 6 month follow-up by the researcher and continued until data saturation occurred wherein no new information arose. Finally, there were eight groups of focus group discussion interviewing. Eight focus groups (n=6-8 in each group) with the participants of the intervention group were formed to discuss the coverage of the five-dimensions of access health care service as part of the evaluation of the intervention program.

Qualitative analysis

Directed content analysis (Hsieh & Shannon 2005) was used to improve understanding of the participants' perceptions of the community-based intervention program from the quasi-experimental study. Analysis of transcripts began with manual coding wherein codes reflected the dimensions of access framework (Levesque, Harris & Russell 2013). The researcher and one of her supervisor independently reviewed all transcripts carefully and coded text using the predetermined categories wherever possible (Hsieh & Shannon 2005). Any text that could not be coded into one of these categories was set aside for consideration of alternate categorisation. The analysts met periodically to discuss these processes and clarify reasons for

categorisation. Differences were discussed until the two authors (the researcher and her supervisor) were able to reach consensus. The final phase of analysis involved development of narratives to reflect participants' perspectives of factors that motivated, facilitated, or hindered their participation in the program. Eight focus groups were conducted with 47 participants to elicit their perspectives and experiences of participating in the program. Results of content analysis of qualitative data are reported according to the dimensions of access framework. The findings provides below:

7.2 PARTICIPANT DEMOGRAPHICS

Forty-seven participants involved in focus group discussion:

- Seven men and forty women with an average age of 73.5 years old

- 24 participants were married; 12 were widowed; 8 were single; and 3 were divorced

- 37 participants were living with spouse, carer or relative(s); 8 were living alone; and 2 were living with others

- 40 participants identified themselves as doing home duties; 4 identified retired/pensioner; and 3 are employed

- 35 participants have completed school or intermediate certificate; 7 have completed higher school; 3 have no school; 1 have completed certificate; and 1 have completed university

- The average year of hypertension diagnosis was 11 years

- The average of comorbid disease for 47 participants was 2

- The number of medicine for 47 participants was 4

- All 47 participants are members of the intervention group

7.3 APPROACHABILITY

Reasons for participation

Reasons provided by informants for why agreed to participate in this intervention program with several reasons including interest in the program, and willingness to provide cooperation with the health care programs. The informants emphasized the reason that inspired them to involve in this program is need to live longer with healthy state. Additionally, one group expressed that they would like to join this program because they need to help themselves away from the doctors and do not need to burden their children in the future.

> *"We should take care ourselves otherwise we always have to depend on health care professional. I don't want to be burden for my children." (FG1)*

Another example, one female informant stated,

> *"We also want to take care ourselves." (FG5)*

Almost all of the opinions from the eight groups agreed that knowledge and techniques needed for self-management. Most of informants described that they are immediately willingness to join the program when they got the invitation from health care volunteer workers. An example reported, they intend to involve all activities that they thought it would be useful for them.

> *"I always want to attend all activities. I want to know more and get more experiences." (FG3)*

> *"I want to know how to decrease my BP level. There are high every time that I measured. I tried to fix them. I don't know how to deal with that…..I received information from several sources then it make me feel wondering and want to know how to be alive. To protect the further problem, I want to go, want to do, want to live longer and want to know more." (FG3)*

Some informants indicated that they join the program because they concern about their health state. One informant stated that she has hypertension and diabetes at this moment so she intends to join the program in order to know the strategies to manage herself.

> *"I knew I got hypertension and diabetes." (FG5)*

Conversely, some groups concerned in several issues such as timing, strategies, and topics once they received the invitation. These are because some of them experienced involving in several health care programs from several sources. It made them thought that this program would be the same as the previous programs, so they hesitated to join the program at the beginning. This factor can be related to the decision-making to join the intervention program among potential participants. Some examples are below:

> *"Actually, I was not like to join this program. Because, I have an appointment with health care professionals quite often. I thought that why they come to see me again. I was bored to see. Every time that I met health professional, my BP are always high. ....Just try!! I have no idea about this program actually." (FG2)*

One informants concerned about the timing to join the intervention because she has her own laundry business. Therefore, she stated her hesitation to join this program when she got the invitation.

> *"Once P'Tangorn and N'Mook (Health care volunteer workers) invited me to this program, I was not sure at that time. Because I thought, I have no time to participate. I also told them that I have no time to do."(FG2)*

7.4 ACCEPTABILITY

Almost all of the informants expressed that their decision-making to join the program was because of the influence of the group and health care professional. Some of them stated that they give cooperation to any programs from the health care professional because they believe

in the health care professional always arrange all activates with good concerns and intentions. For example, they would like to attend this program because they respect to health care professional and also trust in all activities conducted by health care professional would be helpful.

"I should join the program because you (the researcher) have a good intention to improve our health status. Once, I got invitation from P'Mook. I really appreciate to join."(FG5)

"You (the researcher) have a good intention to help us." (FG7)

Another example from the focus group indicated that they are followed the other people in the community or their relative to join the program because they might be afraid that they would be missed something if they would not join the program. This issue can represent the effect of community on potential participants' decision-making to join the program as a Thai culture.

"P1: Ah...I just followed her.

P2: They are buddy if you invited this person, another one will follow." (FD3)

Another example, one informant stated at the beginning that she does not have enough time to join the program while her husband would like was to join the program. Finally, she also had to join the program because of her husband.

"I realized it should be good but I have no time to join."(FG2)

Some groups mentioned about the issues of the aspect of the program activity. They expressed that the activity in this program encouraged them to take a good care of themselves. Almost all of the informants expressed that they are 'happy' with this program because this program is suitable with their life and able to make them feel more active, relief, appreciation, and motivation.

"I think you are a stimulator." (FG6)

"Health care professional should give us a power." (FG5)

Many groups expressed views about the issue relating to the organisation of the group. They mentioned that a small group activity is better than a large group because they can share their experiences and have more opportunities to ask some questions that they need in a small group activity. In Thai culture, people will not ask the questions that they are in front of a big group meeting. This is because they are embarrassed to speak in the public. Moreover, a small group activity allows them to share and evaluate the outcomes of each other.

"Small group is better than the big group because I can ask everything with group. In the big group, I cannot ask any thing because I afraid someone will blame me. If it is not bothering you too much, I would like to have a small group activity instead of a big group." (FG5)

Another interesting issue, the power of group activity can affect the changing of health behaviours. As they do activities together such as having meals, doing an exercise those activities allow everyone to get to monitor and remind each other to control health status. Therefore, this power can make encourage to others to change their behaviours. For example, as one group conversation:

"P1: Sometime she ate double if that food are so delicious.

P2: When we have lunch or dinner together, I always tell then to eat less." (FG5)

7.5 AVAILABILITY AND ACCOMMODATION

Geographic location to conduct the intervention program

Almost all opinions from eight focus groups emphasized that the location to conduct the intervention program was convenient for them because the program was located close to their residence. Informants could walk to the intervention-conducting place by themselves. For example, as informants confirmed:

"Wat Hong is the centre point in our community." (FG1)

"Not laboured because the program conducted near community. I can go." (FG1)

Some informants stated the immobility issue because they have difficulty to walk to the intervention-conducting place. They stated bone and joint problem as an obstacle to bring them to the place. Even thought, the place is located close to their home.

"She walks not well because she hurt her knee." (FG7)

"My knees are not well so it make me a little bit hard to walk." (FG3)

Researcher asked if the intervention program conducted at the primary health care centre was facilitated because the primary health care centre has electronic equipment such as electronic fan, computer, and projector to facilitate the group activities easily. Many opinions from focus groups stated that they would be needed transportation to go there because it locates at the other side of the community. Some groups stated that if this intervention program was conducted in the primary health care centre, they would not go because it is a little bit too far and they have to use the flyover bridge to across the road.

"If it conducted in health care centre, some people could not across the road." (FG3)

"It is hard because we have to use the bridge." (FG5)

Timing

Many informants stated that they were able to join the intervention program any time because they are a retired people and have no business at home. However, most of them preferred to have the intervention program in the morning rather than the afternoon because they just does house shores in the morning and after that they would get tired from doing house shores in the afternoon. Normally, they would take a nap in the afternoon.

"…I will take a nap at noon." (FG5)

"We will feel very fresh in the morning." (FG1)

Moreover, morning times were a convenient time for them because the weather was not too hot to walk to the intervention program conducting place. For example, one informant stated that:

"I prefer in the morning because in the afternoon, the weather in the afternoon is too hot to walk there" (FG6)

In addition, some informants mentioned that they have more power or more feel fresh in the morning but in the afternoon they would be less of power or feel sleepy because the weather will keep their concentration away. As one informant mentioned:

"I think in the noon will make me feel inert." (FG5)

"The sun is too strong shine, it make us feel exhausted." (FG3)

In contrast, the consensus of one focus group expressed that they have to do more things in the morning such as household chores, working outside. Hence, they agreed to have the intervention group in the afternoon instead of in the morning. For example, she stated that she works as an apartment cleaner every morning so she preferred to have the intervention program in the afternoon when she have done her work.

"Afternoon is better than in the morning. I have to work every day in the morning." (FG5)

7.6 AFFORDABILITY

During the program, the opinions form focus groups expressed that they were not spend extra cost for all money form, employed form or opportunity form. Because almost of them described that they does non-profit job at home such as doing the household chores, taking care of grandchildren or love one.

"We just stay at home with children or grandchildren." (FG1)

Even though, some informants in focus group are still working as a cleaner, a merchant but they said they are pleased to join the program and they can organise time to join the intervention program. Because they mentioned that, this intervention program is a special event and it is useful.

"I work around here so I can participate the program." (FG5)

"No I am ok now because I'm waiting all cloth dry around this time. I have a break time until after noon." (FG2)

"I do laundry shop delivery. It's ok for special event like this." (FG8)

Another example, one informants expressed she have to sell her dessert so in the morning may be not her convenient time. It depends upon whenever her desserts are sold out. However, she said her desserts are sold out before the intervention program start so she can participate in the program.

"I have no time in the morning. I have to sell the dessert." (FG6)

In regards, the direct cost, only one informant expressed that she spent an extra money for transportation to go the intervention-conducting place sometimes. Because her house is located far from the intervention-conducting place around 800 metre and sometime the weather is a little hot during the day. Motorcycle is a very convenient vehicle in community. The cost of traveling on a motorcycle to go to the place is around 10-15 Thai baht for one trip (30 cents AU Dollar).

"Yes, I pay for motorcycle to go there sometime." (FG6)

7.7 APPROPRIATENESS

The opinions from eight focus groups clearly reflected positive attitude on the intervention program in overall. Participants agreed that the intervention was suitable for their needs. For example, the use of language and the information, and the activities and the time use. Some

recommended from several focus groups, the researcher should keep continuing this program because they expressed that this program seem like the monitoring tool for them to manage their health status and their behaviours. Many informants also stated they are increasing in knowledge and attitude. In terms of knowledge, informants expressed that they gained more information from the intervention program and up to date their information. The activity of sharing information is one of activity that gain their ability to manage themselves related to hypertension management. Not only gaining information or strategies to manage themselves but the intervention also improved their attitude of themselves or attitude of the program. These good attitude led they change behaviours to control their health status as well. For example, as the informants expressed:

"I feel very good that I get the suggestion from this program." (FG2)

"...will you organize the program again? I want you to organize again. To motivate us. Otherwise, we will be inert person as before." (FG5)

"This program increases more my self-evaluation." (FG2)

Participants provided views on previous experiences. The previous program only focused on impractical knowledge in terms of the knowledge from textbook that is difficult to understand. Moreover, the health care professional attempt to increase the number of medication for controlling their blood pressure. On the one hand, this program explained the questions that they were wondering in easy way. In addition, the activities in this program let them have learnt from other experiences, analysed their life situation, and investigated the strategies that more fit with their life for managing themselves. Another issue expressed from groups is the communication between researcher and patient. Unsurprisingly, many groups mentioned that the intervention program make more inspiration or motivation to do more self-management.

"You explained so clear." (FG5)

"You told that and this and I can remember all. (FG2)

''…they suggested to take medication. They attempt to increase number of medication." (FG1)

"Almost the same (as the other program) but your activities have more skill. Another thing is this program makes me feel alert to improve myself." (FG1)

"…other programs are too broad" (FG8)

"I feel more inspiration to do thing and more concern about myself." (FG6)

The activities in this intervention program focused on assessing self-status, goal setting, sharing the information, evaluating the outcomes of self-management and home visiting. All activities are flexible style depend upon the dynamic of the group and individual. The duration to conduct the activity is approximately 2-3 hours for the big group activity and 1 hour for the individual activity. Almost informants stated that it is suitable duration if it conduct longer than 3 hours they would be lost of concentrate and got discomfort such as low back pain, sleepy and exhausted.

"I think it's suitable. If it was longer than 3 hours, I will feel hurt my back." (FG2)

7.8 CHAPTER SUMMARY

This chapter has provided findings of qualitative study part expressed by participants of the intervention group. The qualitative content analysis method was applied. The following chapter integrates the results of both quantitative and qualitative data.

7.9 REFERENCES

Hsieh, H.-F. & Shannon, S.E. 2005, 'Three approaches to qualitative content analysis', *Qualitative health research*, vol. 15, no. 9, pp. 1277-88.

Levesque, J.F., Harris, M.F. & Russell, G. 2013, 'Patient-centred access to health care: conceptualising access at the interface of health systems and populations', *International Journal for Equity in Health*, vol. 12, no. 1, p. 18.

CHAPTER 8: DISCUSSION AND CONCLUSION

8.1 INTRODUCTION

Outcomes of this thesis have described the essential elements of a self-management intervention program for older people with chronic conditions in Thailand and the effectiveness of an intervention program to improve hypertension management in rural dwelling older people in Thailand. This chapter aims to discuss the findings from both the quasi-experimental study and the focus group discussion study using the constructs of the theoretical framework and the outlined in **Chapter Three**. In addition, the limitations and implications of the study findings are discussed.

8.2 SUMMARY OF THE EFFECTIVE ELEMENTS OF THE INTERVENTION PROGRAM: WHAT ARE THE CORE ELEMENTS OF A COMMUNITY BASED INTERVENTION FOR HYPERTENSION IN THAILAND? (RESEARCH QUESTION ONE)

Developing intervention programs for improving the health status and decreasing burden related to chronic condition in older people evidence based and theoretically justified. A review of existing evidence is needed clearly define the crucial elements of the intervention program before progressing to intervention development. Therefore, to improve the quality of the intervention program development, this study focussed on the gap between theoretical knowledge and the clinical practice as a consequence of this study reviewed appropriateness elements of the intervention program for older people from various data sources Anuruang et al. (2013), as described in Chapter Two: Literature Review. The aim of this doctoral work was to develop an intervention to improve hypertension management that was tailored and

targeted to a specific population, considering the characteristics of older people and the cultural beliefs of Thai individuals living in rural areas.

The results of the integrative review demonstrated three effective elements of intervention program for enhancing the outcomes in older people with chronic conditions in Thailand. These elements included providing culturally-sensitive information; engaging in shared decision making and mutual goal setting; and flexibility within the intervention to adapt participant needs. These findings are supported by a previous systematic review study of disease management programs for older people with heart failure originated in eight countries including Australia, Canada, Ireland, Netherlands, Spain, Sweden, UK, USA (Doris, Thompson & Lee 2006). The findings stated that the effective intervention should be delivered using multiple methods; conducting the intervention program by multi-disciplinary care team and using a wider range of expertise; active participation; intensive education and self-care supportive strategy; optimization of medical regimen; determining care by the clinical condition; and delivered information by home visiting. In addition, the findings are in congruence with Stanford's suite of Chronic Disease Self-Management Education (CDSME) programs (Ory et al. 2015), demonstrating the essential elements for chronic disease self-management program in older people. The studies addressed several considerations to improve the outcomes including applying the philosophy to help older people deal with their chronic conditions; an appropriate delivery setting; patient targets; aims to improve health, service and value of care; maintaining intervention fidelity and promoting scalability; adopting technologies; and applicability to current health care policies (Ory et al. 2015). Moreover, the importance of person-centred approaches are emphasised in Cochrane systematic reviews of the interventions designed to improve knowledge and disease management skill in several chronic illness populations (Coster & Norman 2009). Findings of a Cochrane systematic review also pointed out that the preliminary work on the population suitability and the appropriate

outcome measurement is needed when developing and delivering interventions in hypertensive patients and also stated the effectiveness of cooperation between patients and health care professionals to improve clinical outcomes of systolic and diastolic blood pressure (Fahey, Schroeder & Ebrahim 2006).

More importantly, the findings of the study have indicated that providing culturally-sensitive information is an important factor to enhance the effectiveness of the intervention program for older people. This view is supported by Kreuter et al. (2003)'s study, which emphasized the need for cultural tailoring of programs to increase the effectiveness of health promotion programs. Appreciating individual and community perspectives, particularly, knowledge, attitudes, beliefs and culture can influence health behaviours and health outcomes as discussed in Chapter Two: Literature Review.

8.3 THE EFFECTIVENESS OF THE COMMUNITY-BASED PROGRAM FOR OLDER PEOPLE IN THAILAND: WHAT IS THE IMPACT OF A COMMUNITY-BASED INTERVENTION IMPROVE SELF-MANAGEMENT FOR HYPERTENSION, SPECIFICALLY DECREASE BLOOD PRESSURE; DECREASE WAIST CIRCUMFERENCE; DECREASE SODIUM INTAKE; PROMOTE APPOINTMENT KEEPING; IMPROVE ADHERENCE TO HIGH BLOOD PRESSURE THERAPY AND IMPROVE HEALTH RELATED QUALITY OF LIFE AMONG OLDER PEOPLE WITH HYPERTENSION? (RESEARCH QUESTION TWO)

To ensure not only the potential effectiveness but also acceptability and scalability of the intervention program, a mixed method study design was employed. The outcomes were measured in term of health status (systolic blood pressure, diastolic blood pressure, and waist circumference), adherence to high blood pressure therapy, and health related quality of life. In addition, qualitative interviews allowed the potential to elucidate participant's views and identify the barriers and interventions to intervention development.

Health status: systolic, diastolic blood pressure and waist circumference

Health status measurements in terms of systolic, diastolic blood pressure and waist circumference were used to assess the effectiveness of the intervention program. The results of this study have indicated that the cultural appropriateness, patient focusing, and flexibility of community-based intervention can greatly improve health status in regards systolic blood pressure and diastolic blood pressure among rural dwelling older people with hypertension in Thailand.

Although results tended to report limited success in waist circumference change that may be explained that systolic and diastolic blood pressure is more sensitive to the effect of the intervention program in the short-term outcomes measurement than waist circumference as presented in previous studies. Moreover, weight loss is a challenging health outcome to address (Dombrowski et al. 2014). A systematic review of randomized controlled trials to determine the effectiveness of lifestyle interventions for hypertension, systolic and diastolic blood pressure showed a reduction within a 8-week measurement (Dickinson et al. 2006). Whereas, waist circumference of the intervention participants demonstrated significantly decreased over the six-month period study (Burke et al. 2012). Similarly, another one successful RCT study with 1-year lifestyle intervention, the results of the intervention participants showed significantly reduction in waist circumference at the six-month measurement (Bouchonville et al. 2014).

Therefore, it is as we expected that waist circumference illustrated no significantly reduction along the 6-month period of the study. However, waist circumference illustrated a statistical significant difference between the two groups at the 3-month follow-up measurement which is

faster change than in previous studies as mentioned above (Bouchonville et al. 2014; Burke et al. 2012).

According to the results of this study and the published literature, it is possible that the beneficial effect of the intervention program may be related to continuously enhance self-management, as confirmed by the focus group discussion findings. Many participants expressed the acceptability of this intervention program that there are some aspects from the intervention program that encouraged them to take a good care of themselves, for example *"I think you are a stimulator." (FG6).* The participants also mentioned the appropriateness of the program such as *"This program increases more my self-evaluation." (FG2).* Potentially, methods to enable booster doses of the intervention may improve outcomes in the longer term (Tolan 2014).

Health behaviours: Adherence to high blood pressure therapy

Health behaviours specifically designed to impact on the outcomes influencing high blood pressure therapy was undertaken using the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale. In order to undertake intervention research it is important that outcome assessment measures are reliable, valid, and acceptable to the target population. Therefore, the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale was translated and validated in the Thai population. Study findings showed a statistically significant improvement between the intervention and control groups at 3 months and 6 months outcome windows. This results support a previous study in which intervention participants demonstrated significantly greater improvement of the Hill-Bone Compliance to High Blood Pressure Therapy Scale score in medication adherence aspect and sodium intake behaviour aspect at 6-month follow-up measurement (Bennett et al. 2012).

The scores of the Thai Hill-Bone Compliance to High Blood Pressure Therapy in this study were not difference between the intervention group participants and the control group participants at pre-intervention measurement and post-intervention measurement but showed a significantly difference between groups at 3-month and 6-month follow-up measurement in sum score, salt intake subscale and appointment keeping subscale. These support the finding of Kim et al. (2011) in which stated adherence scores were not improved at 3-month measurement but improved at 6 month and similar to the study of Parker et al. (2014) that also showed no significantly difference adherence scores between groups at 6 month measurement.

The Social Cognitive Theory of Self-regulation (Bandura 1991), was useful in both developing conceptual elements of the intervention, tailoring modes of delivery and theoretical premises to allow interpretation and synthesis of the barriers and the facilitators of the intervention implementation. One of the activities in the program encouraged the participants in the intervention group to consider themselves compared with the standard value; previous outcomes; and also compared with a close friend which are important processes of self-regulation (self-monitoring sub-function, judgmental sub-function and self-reactive influences) for changing behaviours (Bandura 1991). The effective strategies in the intervention program were noted by the participants. For example, they expressed that they need not only knowledge in general from health care professionals but they also need more specific skill that suitable for their life and more inspiration and motivation to do more self-management from health care professionals.

Health related quality of life

As we know, improving of health status can enhance the quality of life in individuals with chronic condition. Significant improvements between groups were found in the physical functioning domain of the Thai SF-36v1 (revised 2005) scales at all-time points and in the body pain domain at 3-month measurement as show in Table 5. In addition, the role limitation related to physical problems and the role limitation related to emotional problems showed the best possible level of functioning (median 100) in both groups at all time-point measurement and the lowest score in the body pain domain in both groups. These findings support a previous study that patients with hypertension showed statistically significant lower scores on most domains in the SF-36 except role emotional and mental health (Bardage & Isacson 2001). This is unexpected, as promoting physical activity is likely an easier outcome to shift via a comprehensive disease management intervention than addressing more complex psychological and social concerns.

Tangtrakulwanich et al. (2006) which examined health related quality of life using the Thai SF-36 in knee osteoarthritis patients showed the highest change in mean scores in mental and social functioning domain and the lowest score in body pain. These findings can be explained with the nature of disease. As we recognised that hypertension is the asymptomatic disease, it is not surprising that almost all of eight domains did not change over time and there were no difference between the groups.

Another study on the association of adherence to high blood pressure therapy and the quality of life in hypertension patients applied the SF-36 questionnaire to identify persons at risk for non-adherence. The results found the high physical functioning domain and low mental health

scores displayed the lowest adherence rate (Konerman et al. 2011). Therefore, these two domains can be used as the predictor of the behaviours change in people with hypertension.

8.4 THE ACCEPTABILITY OF THE COMMUNITY-BASED PROGRAM FOR OLDER PEOPLE IN THAILAND: PATIENT-CENTRED ACCESS TO HEALTH CARE

The findings of the focus group discussion study were interpreted using the five dimensions of patient-centred access to health care (Levesque, Harris & Russell 2013). The key finding of the five dimensions consisting of approachability, acceptability, availability and accommodation, affordability and appropriateness discusses with the findings of the quasi-experimental study.

Views on intervention application and content were discussed in the focus group discussions. Data indicated that the cultural appropriateness of participants was needed and necessary to improve the expected outcomes of the intervention program through the engagement of the participants. In general, the elements of the community-based intervention program were acceptable through participants' views that the activities in the program were suited to their life style and the characteristics of rural dwelling older people in Thailand. The five dimensions of patient-centred access to health care (Levesque, Harris & Russell 2013) focusing on health care needs and reflected factors of the characteristics of person, social, health system, organisation and provider related to health care needs are discussed as follows.

Approachability

The key findings of the participants expressed that their concerns of their health status was their main reason to become involved in the program. The findings from this study are similar to previous studies in which older people concerned with their health status derived the significant benefits through engaging the psychodynamic support of group interactions. For

example, one study conducted on 57 French older adults who were living alone found that older people reported a negative stereotype activation consequently a more frequent help-seeking behaviour (Coudin & Alexopoulos 2010). As the Thai cultural context is an expanded family structure, the majority of participants lived with children or spouse. This is supported by the literature (Knodel & Chayovan 2009; Knodel & Chayovan 2011). Moreover, the participants also expressed social and family factors to support their willingness to participate in the study. Other factors include the need of being healthy and less burden family. This is similar to rural Americans (Dibartolo & McCrone 2003). This main finding is also supported by the study of Knodel & Chayovan (2011) which found a large majority (88 percent) of older people indicated that they are able to take care of themselves, while only one percent indicated that they needed help for daily activities.

Acceptability

One of the main findings for the dimension of acceptability indicated that the intervention program allows them to engage in a shared decision-making process with the researcher. This can be claimed as an active participation style. Moreover, the power of group and social enabled changes in participants' behaviours. The findings of this study are supported by the study of Thanakwang & Soonthorndhada (2011) which conducted on 469 Thai rural dwelling older people that friendship networks had a significant direct effect on the older people health-promoting behaviours. Importantly, one study among Thai elderly found that acceptance and respect are important dimensions influencing well-being in older Thai people (Ingersoll-Dayton et al. 2001). Participants determined that the intervention program was suitable for their characteristics to manage their behaviours and to gain their experience in self-care strategies.

Availability and accommodation

The majority of the participants emphasized that the location and accommodation of the program was the reason that facilitated and motivated them to participate in the program. Some participants indicated that although they can travel alone but they are not willingness to join if this intervention program is conducted in the location that is distant from their residence. Several studies mentioned that transportation is one of a significant barrier of willingness to participate in their program (Dodge et al. 1993; Feldman et al. 2008; Ford et al. 2008; Forster et al. 2010). Both location and structure of the program are important considerations, particularly in resource poor settings.

In this study, the attrition rate of the intervention group was only 3.9 % which is similar to the literature (Jancey et al. 2006; Wongpiriyayothar et al. 2010). The findings are supported by the study of Dibartolo & McCrone (2003) and Provencher et al. (2014) who described strategies to facilitate participation and retention in older people. This includes providing the unique needs of older adults regarding establish convenient places, provide organising a quiet and relaxed atmosphere which is free of disturbances and interruptions for the completion of the research activities and providing transportation.

Affordability

The affordability dimension showed less affect to the intervention group participants in this study because researcher provided food, healthy drink and offered transportation for special needs during conducting the intervention program. Several previous studies suggested providing incentive such as voucher or cash enable to either easily recruit people to participate in the program or retain the participants to complete the program (Bunn et al. 2008; Dibartolo & McCrone 2003; Gonzalez, Gardner & Murasko 2007; Jancey et al. 2006; Provencher et al.

2014). In this study, the researcher also provided incentive as a food and drink instead of voucher or cash and also other special needs such as facilities and infrastructure. Given the model of the community health intervention it is likely that this model of intervention could be extrapolated through the training and engagement of health professionals and community health workers.

Another reason of willingness to participate in the program, was that individuals welcomed connecting with community members and this facilitated support not just in the present but the future (Rattanamongkolgul, Sritanyarat & Manderson 2012). This philosophical and community orientation is the common in the Thai culture. Therefore, participants may be willing to be involved in the intervention program without any incentives. However, the participants expressed that this intervention program provided not only they got incentives but also strategies and power to take care of themselves.

Appropriateness

The participants indicated that they appreciated the activities, strategies, methods of the intervention program and also the researcher's personal characteristics. As the researcher was Thai and understood the culture and provide appropriate respect and deference to the elderly. This enabled her to engage and empower the participants to engage in behaviour change. In accordance with the conceptual framework participants valued the potential to model and practice behaviour change. Once participants perceived their potential from other or themselves, they were then able to reflect and evaluate their views and behaviours as stated in the self-regulation mechanism of Bandura (Bandura 1991).

8.5 STRENGTHS AND LIMITATIONS

One of strengths of this study was the synthesis and elucidation of key findings of previous studies, an appraisal of evidence based strategies and the application of these findings within a socio-cultural context (Anuruang et al. 2013). This methodological approach can be used as a guideline to conduct activities for improving the outcomes in a target population. Population characteristics, cultural factors and the appropriateness of the intervention program should be considered. Cultural appropriateness and acceptability is likely a crucial element in optimising the success of the intervention program. As many disease management interventions are in essence complex interventions, undertaking substantial preparation and development is necessary (Campbell et al. 2000). This involves not only appraisal of evidence but also consideration of the sociocultural context.

Other strength of this study was the use of a mixed method approach to answer the research questions. Even though, mixed methods design is well recognized as more expensive and time consuming (Johnson & Onwuegbuzie 2004). Creswell & Clark (2007) argue that a mixed methods design is needed when one data source may be insufficient, to explain initial results, to generalize exploratory findings, to enhance a study with the second method, to best employ a theoretical stance, to understand a research objective through multiple research phases. In this study, the researcher employed a mixed methods design because this methodology was best suited to answer the research question through the quasi-experimental design and the focus group discussion design. Phase one, the quasi-experimental design as a quantitative approach demonstrated the effectiveness of the intervention program through the changes of health status outcomes, the adherence to high blood pressure therapy, and the quality of life. Although there are limitations to this approach in terms of external validity, this design was applicable to the study site in the first instance where applying the rigor of a randomised

controlled trial where not feasible. In research naïve sites, achieving blinding of study allocation within a community setting was challenging. In spite of this limitation every effort was made to achieve data integrity and intervention fidelity.

The use of the focus group discussion as a qualitative approach in phase two provided the opinions of the intervention group participants about the acceptability of the intervention program using semi-structure questionnaire considering 1) approachability, 2) acceptability, 3) availability and accommodation, 4) affordability, and 5) appropriateness. The findings of focus group discussion were analysed to assist in the process evaluation the effectiveness of the intervention program. Importantly, this collective approach of eliciting participants' views was conceptually congruent with the essence of the community program (Halcomb et al. 2007).

As emphasized by Johnson & Onwuegbuzie (2004), a mixed method design can provide stronger evidence for a conclusion through convergence and verification of findings. Moreover, mixed methods design can perform to address the complexity of research, enhance the quality of the research study in terms of offers the opportunity to compare findings in the spirit of triangulation (Bryman 2006), and overcome the limited of single method design and increase chance to support funding (O'Cathain, Murphy & Nicholl 2007). Therefore, the use of mixed method design in this study is appropriate for answering the research questions and improving range of findings explanation.

One further issue that is the one who conducted the intervention program and the facilitator who conducted the focus group discussion was the same person. This issue can be claimed as both the strength and the limitation of this study. The strength is that this person knew and familiar with the participants since conducting the quasi-experimental phase. Hence, it would

be easier and more comfortable to discuss about the acceptability of the program with the participants. This enables to retain the good relationship before conducting the focus group discussion. The participants would discuss in the positive way rather than blame in the negative way about the intervention program. The findings of focus group discussion may be biased but the results of the quasi-experimental study can be used to confirm the effectiveness of the intervention program.

The major limitation of this study was the use of SF-36 questionnaire to measure the quality of life in Thai older people. Many items of the questionnaire and evaluated 4 times within 6 months might be resulted in the findings of the SF-36 did not difference between groups and within subjects. Therefore, for further study, SF-36 might try out with older people before decision to use. If it really need to use should consider the frequency of the use.

A major limitation was the assignment participants into two-arms of the intervention and the control group. Researcher must be considered the contamination of the treatment between groups. Moreover for further research, randomised controlled trial design will mitigate the confounding factors and improve the strength of research design. In spite of this limitation, this study has been highly formative in establishing the conceptual, methodological and operational aspects of developing and evaluating nurse-led disease management interventions within a resource poor environment (Fairburn & Patel 2014). Moreover, the translation and validation of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale is an important product of this thesis and will allow future evaluation of strategies to improve management of hypertension.

8.6 IMPLICATIONS FOR NURSING CLINICAL PRACTICE, NURSING RESEARCH AND NURSING POLICY

This conceptually informed, evidence based intervention has implications for policy, practice education and research. Based on the findings of the study, the implications and recommendations are as follows:

1. To increase the effectiveness of the intervention program, the researcher should be well-planned and well-designed before developing the program by reviewing the effective strategies specific to the group of participants and the research setting. In this study, the researcher did an integrative review to identify the successful elements of culturally appropriate and effective community-based intervention for older people with hypertension in Thailand. This can help the researcher to conceptualize the theoretical framework of the study.

2. To recruit the participants into the study, the relationships between community and key person in the community enable to increase the number of the participants faster and more efficiency. Engaging key stakeholders is an important strategy for undertaking research and applying innovative practice mechanisms. This community-based program using the theoretical underpinning self-regulation of Bandura (Bandura 1991) has high utility for improving self-management of hypertension in both clinical and community settings. The findings of this study confirmed the self-regulation mechanism of Bandura in which sharing information and experiences among the participants positively influences self-management and improved health status.

3. As the findings of focus group discussion, the participants of the intervention group expressed this program was acceptable in terms of 1) approachability, 2) acceptability, 3) availability and accommodation, 4) affordability, and 5) appropriateness. The location of the program and accommodation of the setting was identified as important

in engaging participants. The program design and structure allowed participants to share their experiences with others who had the same situation. Moreover, the participants and the researcher set the goal to manage hypertension together, so that they were engaged in an active process rather than a passive manner. Therefore, to increase the effectiveness of the intervention program, appreciating socio-cultural factors is a key strategy that researchers must consider. In addition, researchers also need to consider the nature of participants and the culture of the setting before conducting the program.

4. Now the pragmatic aspects of the intervention are established, to reduce bias and increase reliability of research study, a randomised control trial design should be applied to evaluate the effectiveness of the intervention program. Ideally, this would be a multi-site intervention.

5. Motivation and empowerment were integral to improve the quality of health care service as noted by the participants in this study. Study findings underscore the needed for engagement and encouragement from health care professional. These findings have important clinical practice implications and point to the requirement for the health care professional policy. Engaging in person-centred models of health care intervention are important (Pongsupap 2014).   Traditionally, contemporary health care in Thailand has focussed on the hospital setting but the increasing burden of chronic condition increases the focus on the community. Developing effective models of community care particularly important as Thailand moves to universal health care coverage (Damrongplasit & Melnick 2015).

8.7 CONCLUSION

The burden of chronic disease is rising in Thailand and hypertension contributes significantly to a high burden of disease and both individual and societal costs. The program of research outlined in this thesis has made a novel and significant contribution to the scientific literature and nurse-led care. Firstly, it has systematically assessed the evidence and socio-cultural context of hypertension management; secondly it has contributed translation of a reliable and valid instrument to assess self-management of hypertension; thirdly the feasibility and acceptability of a nurse-led, evidence-based community based model has been demonstrated. Further studies should test this intervention in an adequately powered randomized controlled trial and other population groups, such as urban dwelling older people, or in other chronic conditions. Addressing the rising burden of hypertension should be a critical focus for policy, practice, education, and research in Thailand.

8.8 REFERENCES

Anuruang, S., Hickman, L.D., Jackson, D., Dharmendra, T., Balen, J. & Davidson, P.M. 2013, 'Community-based interventions to promote management for older people: an integrative review', *Journal of Clinical Nursing*, vol. 23, no. 15-16, pp. 2110-20.

Bandura, A. 1991, 'Social cognitive theory of self-regulation', *Organizational behavior and human decision processes*, vol. 50, no. 2, pp. 248-87.

Bardage, C. & Isacson, D.G. 2001, 'Hypertension and health-related quality of life: an epidemiological study in Sweden', *Journal of Clinical Epidemiology*, vol. 54, no. 2, pp. 172-81.

Bennett, G.G., Warner, E.T., Glasgow, R.E., Askew, S., Goldman, J., Ritzwoller, D.P., Emmons, K.M., Rosner, B.A. & Colditz, G.A. 2012, 'Obesity treatment for socioeconomically disadvantaged patients in primary care practice', *Archives of Internal Medicine*, vol. 172, no. 7, pp. 565-74.

Bouchonville, M., Armamento-Villareal, R., Shah, K., Napoli, N., Sinacore, D.R., Qualls, C. & Villareal, D.T. 2014, 'Weight loss, exercise or both and cardiometabolic risk factors in obese older adults: results of a randomized controlled trial', *International Journal of Obesity*, vol. 38, no. 3, pp. 423-31.

Bryman, A. 2006, 'Paradigm Peace and the Implications for Quality', *International Journal of Social Research Methodology*, vol. 9, no. 2, pp. 111-26.

Bunn, F., Dickinson, A., Barnett-Page, E., Mcinnes, E. & Horton, K. 2008, 'A systematic review of older people's perceptions of facilitators and barriers to participation in falls-prevention interventions', *Ageing and Society*, vol. 28, no. 4, pp. 449-72.

Burke, L., Lee, A.H., Pasalich, M., Jancey, J., Kerr, D. & Howat, P. 2012, 'Effects of a physical activity and nutrition program for seniors on body mass index and waist-to-hip ratio: A randomised controlled trial', *Preventive Medicine*, vol. 54, no. 6, pp. 397-401.

Campbell, M., Fitzpatrick, R., Haines, A., Kinmonth, A.L., Sandercock, P., Spiegelhalter, D. & Tyrer, P. 2000, 'Framework for design and evaluation of complex interventions to improve health', *BMJ*, vol. 321, no. 7262, pp. 694-6.

Coster, S. & Norman, I. 2009, 'Cochrane reviews of educational and self-management interventions to guide nursing practice: a review', *International Journal of Nursing Studies*, vol. 46, no. 4, pp. 508-28.

Coudin, G. & Alexopoulos, T. 2010, ''Help me! I'm old!' How negative aging stereotypes create dependency among older adults', *Aging & Mental Health*, vol. 14, no. 5, pp. 516-23.

Creswell, J.W. & Clark, V.L.P. 2007, 'Designing and conducting mixed methods research'.

Damrongplasit, K. & Melnick, G. 2015, 'Funding, Coverage, and Access Under Thailand's Universal Health Insurance Program: An Update After Ten Years', *Applied health economics and health policy*, vol. 13, no. 2, pp. 157-66.

Dibartolo, M.C. & McCrone, S. 2003, 'Recruitment of rural community-dwelling older adults: barriers, challenges, and strategies', *Aging & Mental Health*, vol. 7, no. 2, p. 75.

Dickinson, H.O., Mason, J.M., Nicolson, D.J., Campbell, F., Beyer, F.R., Cook, J.V., Williams, B. & Ford, G.A. 2006, 'Lifestyle interventions to reduce raised blood pressure: a systematic review of randomized controlled trials', *Journal of Hypertension*, vol. 24, no. 2, pp. 215-33.

Dodge, J.A., Clark, N.M., Janz, N.K., Lhang, J. & Schork, M.A. 1993, 'Nonparticipation of Older Adults in a Heart Disease Self-Management Project Factors Influencing Involvement', *Research on Aging*, vol. 15, no. 2, pp. 220-37.

Dombrowski, S.U., Knittle, K., Avenell, A., Araujo-Soares, V. & Sniehotta, F.F. 2014, 'Long term maintenance of weight loss with non-surgical interventions in obese adults: systematic review and meta-analyses of randomised controlled trials', *BMJ*, vol. 348, p. g2646.

Doris, S., Thompson, D.R. & Lee, D.T. 2006, 'Disease management programmes for older people with heart failure: crucial characteristics which improve post-discharge outcomes', *European Heart Journal*, vol. 27, no. 5, pp. 596-612.

Fahey, T., Schroeder, K. & Ebrahim, S. 2006, 'Interventions used to improve control of blood pressure in patients with hypertension', *The Cochrane Library*.

Fairburn, C.G. & Patel, V. 2014, 'The global dissemination of psychological treatments: a road map for research and practice', *American Journal of Psychiatry*, vol. 171, no. 5, pp. 495-8.

Feldman, S., Radermacher, H., Browning, C., Bird, S. & Thomas, S. 2008, 'Challenges of recruitment and retention of older people from culturally diverse communities in research', *Ageing and Society*, vol. 28, no. 4, pp. 473-94.

Ford, J.G., Howerton, M.W., Lai, G.Y., Gary, T.L., Bolen, S., Gibbons, M.C., Tilburt, J., Baffi, C., Tanpitukpongse, T.P. & Wilson, R.F. 2008, 'Barriers to recruiting underrepresented populations to cancer clinical trials: a systematic review', *Cancer*, vol. 112, no. 2, pp. 228-42.

Forster, S.E., Jones, L., Saxton, J.M., Flower, D.J., Foulds, G., Powers, H.J., Parker, S.G., Pockley, A.G. & Williams, E.A. 2010, 'Recruiting older people to a randomised controlled dietary intervention trial - how hard can it be?', *BMC Medical Research Methodology*, vol. 10, pp. 17-23.

Gonzalez, E.W., Gardner, E.M. & Murasko, D. 2007, 'Recruitment and retention of older adults in influenza immunization study', *Journal of Cultural Diversity*, vol. 14, no. 2, pp. 81-7.

Halcomb, E.J., Gholizadeh, L., DiGiacomo, M., Phillips, J. & Davidson, P.M. 2007, 'Literature review: considerations in undertaking focus group research with culturally and linguistically diverse groups', *Journal of Clinical Nursing*, vol. 16, no. 6, pp. 1000-11.

Ingersoll-Dayton, B., Saengtienchai, C., Kespichayawattana, J. & Aungsuroch, Y. 2001, 'Psychological well-being Asian style: The perspective of Thai elders', *Journal of Cross-Cultural Gerontology*, vol. 16, no. 3, pp. 283-302.

Jancey, J., Howat, P., Lee, A., Clarke, A., Shilton, T., Fisher, J. & Iredell, H. 2006, 'Effective recruitment and retention of older adults in physical activity research: PALS study', *American Journal of Health Behavior*, vol. 30, no. 6, pp. 626-35.

Johnson, R.B. & Onwuegbuzie, A.J. 2004, 'Mixed methods research: A research paradigm whose time has come', *Educational Researcher*, vol. 33, no. 7, pp. 14-26.

Kim, M.T., Han, H.R., Hedlin, H., Kim, J., Song, H.J., Kim, K.B. & Hill, M.N. 2011, 'Teletransmitted monitoring of blood pressure and bilingual nurse counseling–sustained improvements in blood pressure control during 12 months in hypertensive Korean Americans', *The Journal of Clinical Hypertension*, vol. 13, no. 8, pp. 605-12.

Knodel, J. & Chayovan, N. 2009, 'Older Persons in Thailand: A Demographic, Social and Economic Profile', *Ageing International*, vol. 33, no. 1-4, pp. 3-14.

Knodel, J. & Chayovan, N. 2011, 'Intergenerational Family Care for and by Older People in Thailand'.

Konerman, M., Weeks, K.R., Shands, J.R., Tilburt, J.C., Dy, S., Bone, L.R., Levine, D.M. & Young, J.H. 2011, 'Short Form (SF-36) Health Survey Measures Are Associated With Decreased Adherence Among Urban African Americans With Severe, Poorly Controlled Hypertension', *The Journal of Clinical Hypertension*, vol. 13, no. 5, pp. 385-90.

Kreuter, M.W., Lukwago, S.N., Bucholtz, D.C., Clark, E.M. & Sanders-Thompson, V. 2003, 'Achieving cultural appropriateness in health promotion programs: targeted and tailored approaches', *Health Education & Behavior*, vol. 30, no. 2, pp. 133-46.

Levesque, J.F., Harris, M.F. & Russell, G. 2013, 'Patient-centred access to health care: conceptualising access at the interface of health systems and populations', *International journal for equity in health*, vol. 12, no. 1, p. 18.

O'Cathain, A., Murphy, E. & Nicholl, J. 2007, 'Why, and how, mixed methods research is undertaken in health services research in England: a mixed methods study', *BMC health services research*, vol. 7, no. 1, pp. 1-11.

Ory, M.G., Ahn, S., Towne Jr, S.D. & Smith, M.L. 2015, 'Chronic disease self-management education: program success and future directions', *Geriatrics Models of Care*, Springer, pp. 147-53.

Parker, C.P., Cunningham, C.L., Carter, B.L., Vander Weg, M.W., Richardson, K.K. & Rosenthal, G.E. 2014, 'A Mixed-Method Approach to Evaluate a Pharmacist Intervention for Veterans With Hypertension', *The Journal of Clinical Hypertension*, vol. 16, no. 2, pp. 133-40.

Pongsupap, Y. 2014, 'Family Medicine and Community Orientation as a New Approach to Quality Primary and Person-centered Care in Thailand', *International Journal of Person Centered Medicine*, vol. 3, no. 3, pp. 243-7.

Provencher, V., Mortenson, W.B., Tanguay-Garneau, L., Bélanger, K. & Dagenais, M. 2014, 'Challenges and strategies pertaining to recruitment and retention of frail elderly in research studies: A systematic review', *Archives of gerontology and geriatrics*, vol. 59, no. 1, pp. 18-24.

Rattanamongkolgul, D., Sritanyarat, W. & Manderson, L. 2012, 'Preparing for aging among older villagers in northeastern Thailand', *Nursing & Health Sciences*, vol. 14, no. 4, pp. 446-51.

Tangtrakulwanich, B., Wiwatwongwana, S., Chongsuvivatwong, V. & Geater, A.F. 2006, 'Comparison of validity, and responsiveness between general and disease-specific quality of life instruments (Thai version) in knee osteoarthritis', *Journal of the Medical Association of Thailand*, vol. 89, no. 9, pp. 1454-9.

Thanakwang, K. & Soonthorndhada, K. 2011, 'Mechanisms by which social support networks influence healthy aging among Thai community-dwelling elderly', *Journal of Aging and Health*, vol. 23, no. 8, pp. 1352-78.

Tolan, P.H. 2014, 'More than afterthoughts and details: maintenance and booster effects as critical elements of intervention research', *Journal of abnormal child psychology*, vol. 42, no. 3, pp. 399-402.

Wongpiriyayothar, A., Pothiban, L., Liehr, P., Senaratana, W. & Sucumvang, K. 2010, 'Effects of home-based care program on symptom alleviation and well-being among persons with chronic heart failure'.

APPENDICES

APPENDIX A: INFORMATION SHEET

เอกสารชี้แจงผู้เข้าร่วมการวิจัย

(Participant Information Sheet)

ในเอกสารนี้อาจมีข้อความที่ท่านอ่านแล้วยังไม่เข้าใจ โปรดสอบถามหัวหน้าโครงการวิจัยหรือผู้แทน
ให้ช่วยอธิบายจนกว่าจะเข้าใจดี ท่านอาจจะขอเอกสารนี้กลับไปอ่านที่บ้านเพื่อปรึกษา หารือกับญาติพี่น้อง
เพื่อนสนิท แพทย์ประจำตัวของท่าน หรือแพทย์ท่านอื่น เพื่อช่วยในการตัดสินใจเข้าร่วมการวิจัย

ชื่อโครงการวิจัย โปรแกรมการพัฒนาการจัดการ โรคความดันโลหิตสูงในผู้สูงอายุไทยในชุมชน

ผู้วิจัย นางสาวศกุนตลา อนุเรือง นักศึกษาระดับปริญญาเอกที่มหาวิทยาลัยเทคโนโลยีซิดนีย์
(University of Technology, Sydney) ภายใต้การดูแลของศาสตราจารย์ แพทริเชีย แมรี่ เดวิสัน (Professor
Patricia Mary Davidson) มหาวิทยาลัยเทคโนโลยีซิดนีย์ (University of Technology, Sydney)

วัตถุประสงค์ของการศึกษานี้ คือ การพัฒนาการจัดการตนเองของผู้สูงอายุไทยที่มีภาวะความดัน
โลหิตสูง โดยส่งผลต่อการลดความดันโลหิต; รอบเอว; การบริโภคโซเดียมและการปฏิบัติตามแผนการรักษา
และการพฤติกรรมการรับประทานยาอย่างสม่ำเสมอ

วิธีการศึกษาวิจัยโดยสังเขป คือ การมีส่วนร่วมในการวิจัยนี้มีทั้งกิจกรรมเดี่ยวและกิจกรรมกลุ่ม ซึ่ง
จะใช้เวลา 4 สัปดาห์และมีการติดตามความคงทนของผล 3 เดือนและ 6 เดือน นอกจากนี้ผู้วิจัยจะถามคำถาม
บางอย่างเกี่ยวกับประสบการณ์ของคุณซึ่งเป็นส่วนหนึ่งของการศึกษาครั้งนี้ การสัมภาษณ์อาจจะมีการบันทึก
แถบเสียงหากได้รับการอนุญาตจากผู้เข้าร่วมวิจัย

ความเสี่ยงที่อาจจะเกิดขึ้นเมื่อเข้าร่วมการวิจัย

การวิจัยนี้มีความเสี่ยงที่อาจเกิดขึ้นได้แม้เพียงเล็กน้อย เช่น ความไม่สะดวกใจในการตอบคำถาม

หากท่านไม่เข้าร่วมในโครงการวิจัยนี้ ท่านก็จะได้รับการตรวจเพื่อการวินิจฉัยและรักษาโรคของท่าน
ตาม วิธีการที่เป็นมาตรฐาน คือ ท่านจะได้รับสิทธิในการใช้บริการสาธารณสุขตามมาตรฐานและเท่าเทียม
กับบุคคลอื่นๆทุกประการ ไม่มีเปลี่ยนแปลงไปจากเดิม

หากมีข้อข้องใจที่จะสอบถามเกี่ยวข้องกับการวิจัย หรือหากเกิดผลข้างเคียงที่ไม่พึงประสงค์จากการ
วิจัย ท่านสามารถติดต่อ ศกุนตลา อนุเรือง ผู้วิจัย สามารถติดต่อได้ที่บ้านเลขที่ 111 ถนนสืบศิริ ตำบลธงชัย
เหนือ อำเภอปักธงชัย จังหวัดนครราชสีมา 30150 หรือที่หมายเลขโทรศัพท์ ▬▬▬▬▬ ทาง email:
▬▬▬▬▬▬▬▬▬▬▬▬ หรือ Professor Patricia Mary Davidson ทาง email:
PatriciaMary.Davidson@uts.edu.au

183

ประโยชน์ที่คิดว่าจะได้รับจากการวิจัย คือ ได้รับการดูแลที่มีประสิทธิภาพมากยิ่งขึ้น

หากมีข้อมูลเพิ่มเติมทั้งด้านประโยชน์และโทษที่เกี่ยวข้องกับการวิจัยนี้ ผู้วิจัยจะแจ้งให้ทราบโดยรวดเร็วและไม่ปิดบัง

ข้อมูลส่วนตัวของผู้เข้าร่วมการวิจัย จะถูกเก็บรักษาไว้โดยไม่เปิดเผยต่อสาธารณะเป็นราย บุคคล แต่จะรายงานผลการวิจัยเป็นข้อมูลส่วนรวมโดยไม่สามารถระบุข้อมูลรายบุคคลได้ ข้อมูลของผู้เข้าร่วมการวิจัยเป็นรายบุคคลอาจมีคณะบุคคลบางกลุ่มเข้ามาตรวจสอบได้ เช่น ผู้ให้ทุนวิจัย สถาบัน หรือองค์กรของรัฐที่มีหน้าที่ตรวจสอบ รวมถึงคณะกรรมการจริยธรรมการวิจัยในมนุษย์ เป็นต้น

ผู้เข้าร่วมการวิจัยมีสิทธิ์ถอนตัวออกจากโครงการวิจัยเมื่อใดก็ได้ โดยไม่ต้องแจ้งให้ทราบล่วงหน้า และการไม่เข้าร่วมการวิจัยหรือถอนตัวออกจากโครงการวิจัยนี้ จะไม่มีผลกระทบต่อการบริการและการรักษาที่สมควรจะได้รับตามมาตรฐานแต่ประการใด

ตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงนี้ ท่านสามารถร้องเรียนได้ที่หากท่านได้รับการปฏิบัติที่ไม่คณะกรรมการจริยธรรมการวิจัยในมนุษย์ The Ethics Committee through the research Ethics Officer (P: +61 2 9514 9681 email: Research.Ethics@uts.edu.au)

ลงชื่อ .... ผู้เข้าร่วมโครงการวิจัย

(...)

วันที่...

APPENDIX B: CONSENT FORM

ใบยินยอมด้วยความสมัครใจ

(Consent form)

การวิจัยเรื่อง โปรแกรมการพัฒนาการจัดการ โรคความดันโลหิตสูงในผู้สูงอายุในชุมชน

Community based intervention to improve hypertension management among older people in Thailand

ข้าพเจ้า...ผู้เข้าร่วมโครงการ/หรือผู้แทนโดยชอบธรรม

ของ...ผู้เข้าร่วมโครงการ "โปรแกรมการพัฒนาการ

จัดการ โรคความดันโลหิตสูงในผู้สูงอายุในชุมชน" วันที่.........เดือน.............................พ.ศ. ....

     ก่อนที่จะลงนามในใบยินยอมให้ทำการวิจัยนี้ ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยถึงวัตถุประสงค์ ของการวิจัย วิธีการวิจัย อันตรายหรืออาการที่อาจเกิดขึ้นจากการวิจัยหรือจากยาที่ใช้ รวมทั้งประโยชน์ที่จะ เกิดขึ้นจากการวิจัยอย่างละเอียด และมีความเข้าใจดีแล้ว

     ผู้วิจัยรับรองว่าจะตอบคำถามต่างๆ ที่ข้าพเจ้าสงสัยด้วยความเต็มใจ ไม่ปิดบัง ซ่อนเร้นจนข้าพเจ้า พอใจ

     ข้าพเจ้ามีสิทธิที่จะบอกเลิกการเข้าร่วมในโครงการวิจัยนี้เมื่อใดก็ได้ และเข้าร่วมโครงการวิจัยนี้ โดย สมัครใจและการบอกเลิกการเข้าร่วมการวิจัยนี้ จะไม่มีผลต่อการรักษาโรคที่ข้าพเจ้าจะได้รับต่อไป

     ผู้วิจัยรับรองว่าจะเก็บข้อมูลเฉพาะเกี่ยวกับตัวข้าพเจ้าเป็นความลับและจะเปิดเผยได้เฉพาะสรุป ผลการวิจัยหรือการเปิดเผยข้อมูลต่อผู้มีหน้าที่ที่เกี่ยวข้องกับการสนับสนุนและกำกับดูแลการวิจัยเท่านั้น

     ผู้วิจัยรับรองว่าหากเกิดอันตรายใดๆ จากการวิจัยดังกล่าว ข้าพเจ้าสามารถติดต่อผู้วิจัยได้ที่นางสาว ศกุนตลา อนุเรือง บ้านเลขที่ 111 หมู่ 14 ถนนสืบศิริ ตำบลธงชัยเหนือ อำเภอปักธงชัย จังหวัดนครราชสีมา 30150 โดยบุคคลที่รับผิดชอบเรื่องนี้คือ นางสาวศกุนตลา อนุเรือง โทรศัพท์ที่สามารถติดต่อได้ 24 ชั่วโมง ░░░░░░ ทาง email: ░░░░░░ หรือ Professor Patricia Mary Davidson ทาง email: PatriciaMary.Davidson@uts.edu.au

ข้าพเจ้าได้อ่านข้อความข้างต้น และมีความเข้าใจดีทุกประการ และได้ลงนามในใบยินยอมนี้ด้วย
ความเต็มใจ และหลังจากลงนามแล้ว ข้าพเจ้าจะได้รับสำเนาของเอกสารฉบับนี้และใบยินยอมด้วยความ
สมัครใจเก็บไว้ 1 ชุด

*สำหรับพยาน ในฐานะของพยาน ข้าพเจ้าขอยืนยันว่า

    - ผู้เข้าร่วมโครงการได้รับการอธิบายถึงข้อมูลในเอกสารชี้แจงและเอกสารใบยินยอมอย่างชัดเจน

    - ผู้เข้าร่วมโครงการมีโอกาสได้ถามผู้วิจัย เกี่ยวกับโครงการวิจัย

    - ผู้เข้าร่วมโครงการได้ยินยอมเข้าร่วมโครงการโดยสมัครใจ

ลงนาม ....ผู้ยินยอม/หรือผู้แทน โดยชอบธรรม

(วันที่ .... เดือน .... พ.ศ..............)

ลงนาม .... ผู้วิจัย

(วันที่ .... เดือน .... พ.ศ..............)

ลงนาม .... พยาน

(วันที่ .... เดือน .... พ.ศ..............)

ลงนาม .... พยาน

(วันที่ .... เดือน .... พ.ศ..............)

APPENDIX C: ETHICAL APPROVAL

ETHICAL APPROVAL EXTENSION (Maharat Nakorn Ratchasima Hospital)

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน โรงพยาบาลมหาราชนครราชสีมา

สำนักงานสนับสนุนการศึกษาวิจัยทางคลินิก: ศูนย์แพทยศาสตรศึกษาชั้นคลินิก โรงพยาบาลมหาราชนครราชสีมา 49 ถ.ช้างเผือก ต.ในเมือง อ.เมือง จ.นครราชสีมา 30000

Maharat Nakhon Ratchasima Hospital Institutional Review Board (MNRH IRB)

Clinical Research Support Office: Medical Education Center. Maharat Nakhon Ratchasima Hospital 49 Chang Phueak Rd,. Mueang District, Nakhon Ratchasima Province, 30000, THAILAND Tel & Fax +66 44 295614-5 E-mail irb@mnrh.in.th

Number 053/2013

Certificate of Approval

Protocol title   :   Community based intervention to improve hypertension management in Thailand

Protocol no.   :   -

Document of approval/acceptance:

1   MNRH IRB Submission From

2.   Research Proposal Thai version

3.   Questionnaire

4.   Participation Information Sheet

5.   Inform consent from

6.   Investigator's Curriculum Vitae

7.   Budget

Principal investigator: Miss Sakuntala Anuruang

Research site: Maharat Nakhon Ratchasima Hospital

Date of meeting: 22 August 2013

Date of approval: 22 August 2013

This is to certify that Institutional Review Board, Maharat Nakhon Ratchasima Hospital Ethics Committee is in full compliance with Declaration of Helsinki and the International Conference on Harmonization in Good Clinical Practice (ICH-GCP), and approved the study above.

Expired date: 21 August 2014

(If available)

Signature:_____   Signature: _____

(Nipat Simakachorn, MD)   (Narong Aphikulvanich, MD)

Chairman of Institutional Review Board   Director of Maharat Nakhon Ratchasima Hospital

ETHICAL APPROVAL EXTENSION

บันทึกข้อความ

ส่วนราชการ ศูนย์แพทยศาสตรศึกษาชั้นคลินิก โรงพยาบาลมหาราชนครราชสีมา โทร.๕๒๒๒-๓

ที่ นม ๐๐๓๒.๑๒๔/ ๒๔๕๐   **วันที่** ๓๐ ตุลาคม ๒๕๕๗

เรื่อง   รับทราบการรายงานความก้าวหน้าและขอต่ออายุการรับรองโครงการวิจัย

เรียน   นางสาวกุนตลา อนุเรือง

        ตามที่ท่านได้รายงานความก้าวหน้าและขอต่ออายุการรับรอง โครงการวิจัยเรื่อง "Community based intervention to improve hypertension management among older people in Thailand" นั้น

        คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน โรงพยาบาลมหาราชนครราชสีมา ได้พิจารณาครั้งที่ ๙/๒๕๕๗ เมื่อวันที่ ๒๕ กันยายน ๒๕๕๗ มีมติรับทราบ และอนุมัติให้ต่ออายุโครงการวิจัย อีก ๑ ปี คือ ตั้งแต่วันที่ ๒๒ สิงหาคม ๒๕๕๗ ถึง ๒๑ สิงหาคม ๒๕๕๘

        จึงเรียนมาเพื่อทราบ

(นายนิพัทธ์ สีมาขจร)
ประธานคณะกรรมการพิจารณาจริยธรรมการวิจัยในคน

188

ETHICAL APPROVAL (University of Technology Sydney)

HREC Approval Granted

Research.Ethics@uts.edu.au

Fri 30/08/2013 7:33 PM

To:PatriciaMary.Davidson@uts.edu.au <PatriciaMary.Davidson@uts.edu.au>; Sakuntala Anuruang
    <   >; Research.Ethics@uts.edu.au <Research.Ethics@uts.edu.au>;
iec.rio@uts.edu.au <iec.rio@uts.edu.au>; postaward.grants@uts.edu.au <postaward.grants@uts.edu.au>;

Dear Applicant

Thank you for your response to the Committee's comments for your project titled, "Community based intervention to improve hypertension management among older people in Thailand". Your response satisfactorily addresses the concerns and questions raised by the Committee who agreed that the application now meets the requirements of the NHMRC National Statement on Ethical Conduct in Human Research (2007). I am pleased to inform you that ethics approval is now granted.

Your approval number is UTS HREC REF NO. 2013000310

Your approval is valid five years from the date of this email.

Please note that the ethical conduct of research is an on-going process. The National Statement on Ethical Conduct in Research Involving Humans requires us to obtain a report about the progress of the research, and in particular about any changes to the research which may have ethical implications. This report form must be completed at least annually, and at the end of the project (if it takes more than a year). The Ethics Secretariat will contact you when it is time to complete your first report.

I also refer you to the AVCC guidelines relating to the storage of data, which require that data be kept for a minimum of 5 years after publication of research. However, in NSW, longer retention requirements are required for research on human subjects with potential long-term effects, research with long-term environmental effects, or research considered of national or international significance, importance, or controversy. If the data from this research project falls into one of these categories, contact University Records for advice on long-term retention.

You should consider this your official letter of approval. If you require a hardcopy please contact Research.Ethics@uts.edu.au.

To access this application, please follow the URLs below:
* if accessing within the UTS network: http://rmprod.itd.uts.edu.au/RMENet/HOM001N.aspx
* if accessing outside of UTS network: https://remote.uts.edu.au , and click on "RMENet - ResearchMaster Enterprise" after logging in.

We value your feedback on the online ethics process. If you would like to provide feedback please go to: http://surveys.uts.edu.au/surveys/onlineethics/index.cfm

If you have any queries about your ethics approval, or require any amendments to your research in the future, please do not hesitate to contact Research.Ethics@uts.edu.au.

Yours sincerely,

Professor Marion Haas
Chairperson

https://pod51030.outlook.com/owa/   7/08/2014

APPENDIX D: PERMISSION LETTER FOR RESEARCH SETTING

UNIVERSITY OF TECHNOLOGY SYDNEY

Centre for Cardiovascular and Chronic Care
University of Technology, Sydney
PO Box 123
BROADWAY NSW 2007
Telephone: +61 2 9514 4822
Facsimile: +61 2 9514 4474
Email: patriciamary.davidson@uts.edu.au

6 สิงหาคม 2556

เรื่อง ขอความอนุเคราะห์ในการเก็บข้อมูล เพื่อประกอบการทำดุษฎีนิพนธ์
เรียน ผู้อำนวยการศูนย์แพทย์ชุมชนหัวทะเล อำเภอเมือง จังหวัดนครราชสีมา
สิ่งที่ส่งมาด้วย แบบสอบถาม จำนวน 2 ชุด

ด้วย นางสาวกุนตลา อนุเรือง นักศึกษาวิจัยของ Centre for Cardiovascular and Chronic Care มหาวิทยาลัยเทคโนโลยีซิดนีย์ ประเทศออสเตรเลีย หลักสูตรปริญญาเอก สาขาการพยาบาล กำลังทำดุษฎีนิพนธ์ เรื่อง "Community based intervention to improve hypertension management among older people in Thailand." อยู่ในความควบคุมของ Professor Patricia Mary Davidson ซึ่งในการศึกษาวิจัยครั้งนี้นักศึกษามีความประสงค์จะเก็บข้อมูลจากผู้ที่มีความดันโลหิตสูง อายุ 60 ปีขึ้นไป ที่เข้ารับบริการการดูแลจากคลินิกความดันโลหิตสูง ที่ศูนย์แพทย์หัวทะเล อำเภอเมือง จังหวัดนครราชสีมา โดยใช้แบบสอบถามและโปรแกรมการจัดการตนเอง ตั้งแต่เดือนสิงหาคม 2556 ถึงเดือนเมษายน 2557

มหาวิทยาลัยเทคโนโลยีซิดนีย์ จึงใคร่ขอความกรุณาจากท่านโปรดอนุเคราะห์ในการเก็บข้อมูล เพื่อประกอบการทำดุษฎีนิพนธ์ ตามที่เห็นสมควร จักเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(Professor Patricia Mary Davidson)
Professor of Cardiovascular & Chronic Care

ติดต่ออาจารย์ผู้ควบคุมดุษฎีนิพนธ์ Professor Patricia Mary Davidson
e-mail: patriciamary.davidson@uts.edu.au

190

APPENDIX E: SOCIO-DEMOGRAPHIC DATA COLLECTION TOOL

<table>
<tr><td colspan="2">Centre for Cardiovascular & Chronic Care / UNIVERSITY OF TECHNOLOGY SYDNEY</td><td>Office use only
Subject ID [ ][ ][ ][ ]   Subject initials [ ][ ][ ]</td></tr>
</table>

Instructions: Please answer all questions. Most questions require you to tick a box(es) to indicate your answer. Choose the box(es) that best matches your answer. Tick like this: ☑

Section A: Demographic Data

Base line assessment

General Information

1. Gender	Female ☐1		Male ☐0	

2. Age	☐☐☐

3. Marital Status

Single	☐1
Married	☐2
Separated	☐3
Divorced	☐4
Widowed	☐5
other	☐6

Living alone ☐1   Living with spouse, carer or relative(s) ☐2   Living with others ☐3

please specify_____

4. Occupation

Paid employment ☐1	Home duties ☐2	Retired/pensioner ☐3

5. Educational background

No school certificate or other qualifications	☐ 1
School or intermediate certificate (or equivalent)	☐ 2
Higher school or leaving certificate (or equivalent)	☐ 3
Trade/apprenticeship (e.g. hairdresser, chef)	☐ 4
Certificate/diploma (e.g. child care, technician)	☐ 5
University degree or higher	☐ 6

Health Information

1. Duration of Diagnosis of hypertension	☐☐ Years
2. Comorbid Disease	*please specify*_____ _____ _____ _____ _____ _____ _____
3. Blood Pressure	☐☐☐ / ☐☐☐ mmHg
4. Waist Circumference	☐☐☐ cm.

APPENDIX F: THE THAI HILL-BONE COMPLIANCE TO HIGH BLOOD PRESSURE THERAPY SCALE

Centre for Cardiovascular & Chronic Care

UNIVERSITY OF TECHNOLOGY SYDNEY

Office use only
Subject ID ☐☐☐☐☐   Subject initials ☐☐☐

Section B: The Hill-Bone Compliance to High Blood Pressure Therapy

- แบบประเมินความคงทนในแบบแผนการรักษาโรคความดันโลหิตสูง

ข้อที่	หัวข้อ	ไม่เคยเลย	เป็นบางครั้ง	บ่อยครั้ง	เป็นประจำ
1	คุณลืมรับประทานยาความดันโลหิตสูงบ่อยแค่ไหน	1	2	3	4
2	คุณตัดสินใจไม่รับประทานยาความดันโลหิตสูงบ่อยแค่ไหน	1	2	3	4
3	คุณรับประทานอาหารเค็มหรือที่มีเกลือมากบ่อยแค่ไหน	1	2	3	4
4	คุณเติมน้ำปลาลงในอาหารก่อนรับประทานบ่อยแค่ไหน	1	2	3	4
5	คุณรับประทานอาหารประเภทจานเดียวนอกบ้านบ่อยแค่ไหน	1	2	3	4
6	คุณได้รับบัตรนัดจากรพ.หรือคลินิกก่อนกลับบ้านบ่อยแค่ไหน	4	3	2	1
7	คุณไม่ได้ไปตามนัดของแพทย์บ่อยแค่ไหน	1	2	3	4
8	คุณกลับบ้านโดยลืม หรือตั้งใจไม่รับยาบ่อยแค่ไหน	1	2	3	4
9	ยาความดันโลหิตสูงของคุณหมดหรือไม่มีบ่อยแค่ไหน	1	2	3	4
10	คุณงดรับประทานยาความดันโลหิตสูง 1-3 วันก่อนที่จะไปพบแพทย์บ่อยแค่ไหน	1	2	3	4
11	คุณไม่รับประทานยาเมื่อคุณคิดว่ามีอาการดีขึ้น หรือไม่มีอาการอะไรบ่อยแค่ไหน	1	2	3	4
12	คุณไม่รับประทานยาเมื่อคุณคิดว่าอาการไม่ดีบ่อยแค่ไหน	1	2	3	4
13	คุณรับประทานยาความดันโลหิตสูงของผู้อื่นบ่อยแค่ไหน	1	2	3	4
14	เมื่อคุณใส่ใจตัวเองเกี่ยวกับ โรคความดันโลหิตสูงน้อยลง คุณจะ ไม่รับประทานยาความดันโลหิตสูงบ่อยแค่ไหน	1	2	3	4

ข้อเสนอแนะ

_____

_____

_____

APPENDIX G: THE THAI SF-36 V1 QUESTIONNAIRE

Section C: The Thai version of SF-36 health survey (revise 2005)

แนะนำการตอบคำถาม

กรุณาตอบแบบสอบถามให้ครบทุกข้อ คำถามบางข้ออาจมีความคล้ายคลึงกันแต่มีความแตกต่างกัน โปรดใช้เวลาประมาณ 10 นาทีอ่านและตอบคำถามแต่ละข้อให้ถูกต้องตามความเป็นจริง โดยขีดเครื่องหมายถูกในช่องที่ท่านเห็นว่าตรงกับลักษณะของท่านมากที่สุด

ส่วนที่ 1: สภาวะร่างกาย (Functional status)

การทำงานของร่างกาย (Physical function: PF)   รวมคะแนน PF ....

1. ท่านคิดว่าสุขภาพของท่านในปัจจุบันมีผลให้ท่านทำกิจกรรมต่างๆต่อไปนี้ลดลงหรือไม่เพียงใด

ข้อที่	กิจกรรม	ระดับ		
		ลดลง มาก	ลดลง เล็กน้อย	ไม่ลดลง เลย
1.1	กิจกรรมที่ออกแรงมาก เช่น วิ่ง ยกน้ำหนัก เล่นกีฬาที่ต้องใช้แรงมาก	1	2	3
1.2	กิจกรรมที่ออกแรงปานกลาง เช่น เลื่อนโต๊ะ กวาดถูบ้าน เล่นกีฬาเบา	1	2	3
1.3	ยกถือของเวลาไปซื้อของที่ตลาดสดหรือตลาดนัด	1	2	3
1.4	ขึ้นบันไดหลายชั้น (จากชั้น 1 ไปชั้น 3 หรือมากกว่า)	1	2	3
1.5	ขึ้นบันได 1 ชั้น (จากชั้น 1 ไปชั้น 2)	1	2	3
1.6	ก้มลงเก็บของคุกเข่างอตัว	1	2	3
1.7	เดินเป็นระยะทางมากกว่า 1 กิโลเมตร	1	2	3
1.8	เดินเป็นระยะทางหลายร้อยเมตร	1	2	3
1.9	เดินประมาณ 100 เมตร	1	2	3
1.10	อาบน้ำหรือแต่งตัว	1	2	3

194

การทำหน้าที่ทางสังคม (Social function: SF)   *รวมคะแนน SF* ....

2. ท่านคิดว่าสุขภาพของท่านในช่วง 1 เดือนที่ผ่านมาปัญหาสุขภาพมีผลรบกวนดังต่อไปนี้มากน้อยเพียงใด

ข้อที่	เนื้อหา	ระดับ				
		รบกวน มากๆ	รบกวน ค่อนข้างมาก	รบกวน ปานกลาง	รบกวน เล็กน้อย	ไม่ รบกวน เลย
2.1	ปัญหาสุขภาพของท่านมีผลรบกวน<u>ต่อ ความสัมพันธ์</u>ของท่านกับครอบครัว	1	2	3	4	5
2.2	ปัญหาสุขภาพของท่านมีผลรบกวน<u>ต่อ ความสัมพันธ์</u>ของท่านกับ<u>เพื่อน เพื่อนบ้าน หรือกลุ่ม</u>	1	2	3	4	5
2.3	ปัญหาสุขภาพของท่านมีผล<u>ต่อกิจกรรม ทางสังคม</u>ของท่านที่เกี่ยวข้องกับเพื่อนฝูง ครอบครัว เพื่อนบ้านหรือกลุ่มคนอื่นๆ	1	2	3	4	5

ข้อที่	เนื้อหา	ระดับ				
		ตลอดเวลา	เกือบตลอดเวลา	บ่อยๆ	บางเวลา	นานๆ ครั้ง
2.4	ปัญหาสุขภาพหรืออารมณ์ความรู้สึกของ ท่านมีผลรบกวน<u>ต่อเวลาการทำกิจกรรมทาง สังคม</u>ของท่าน (เช่นไปเยี่ยมญาติหรือเพื่อน)	1	2	3	4	5
2.5	ปัญหาสุขภาพหรืออารมณ์ความรู้สึกของ ท่านมีผลรบกวนต่อบทบาทความสำคัญของ ท่าน<u>กับครอบครัวและสังคม</u>	1	2	3	4	5

บทบาทที่ถูกจำกัดเนื่องจากปัญหาทางกาย *(Role limitations due to physical problems: RP)*

3. ในช่วง 1 เดือนที่ผ่านมา ท่านมีปัญหาการทำงานหรือทำกิจวัตรประจำวันซึ่งเป็นผลเนื่องจากสุขภาพร่างกายของท่าน หรือไม่   *รวมคะแนน RP ....*

ข้อที่	เนื้อหา	ระดับ	
		ใช่	ไม่ใช่
3.1	ต้องลดเวลาในการทำงานหรือทำกิจวัตร	1	2
3.2	ทำงานหรือทำกิจวัตรได้น้อยกว่าที่ต้องการ	1	2
3.3	ทำงานหรือทำกิจวัตรบางอย่างไม่ได้	1	2
3.4	ทำงานหรือทำกิจวัตรได้ลำบากกว่าเดิม	1	2

บทบาทที่ถูกจำกัดเนื่องจากปัญหาทางอารมณ์ *(Role limitations due to emotional problems: RE)*

4. ในช่วง 1 เดือนที่ผ่านมา ท่านประสบปัญหาในการทำงานหรือทำกิจวัตรประจำวันซึ่งเป็นผลสืบเนื่องจากปัญหาทาง อารมณ์หรือจิตใจ (เช่นรู้สึกซึมเศร้าหรือวิตกกังวล) หรือไม่   *รวมคะแนน RE ....*

ข้อที่	เนื้อหา	ระดับ	
		ใช่	ไม่ใช่
4.1	ต้องลดเวลาในการทำงานหรือทำกิจวัตร	1	2
4.2	ทำได้น้อยกว่าที่ต้องการ	1	2
4.3	ไม่สามารถทำได้อย่างระมัดระวังเหมือนปกติ	1	2

Demographic data   version 4 26th Nov, 2013

196

ส่วนที่ 2: สุขภาวะ (Well being)

สุขภาพจิต (Mental health: MH)   รวมคะแนน MH ....

5. คำถามต่อไปนี้เกี่ยวข้องกับอารมณ์ความรู้สึกที่เกิดขึ้นกับท่านในช่วง 1 เดือนที่ผ่านมา กรุณาให้คำตอบที่ตรงกับ
   ความรู้สึกของท่านมากที่สุดในแต่ละคำถามเกิดขึ้นบ่อยเพียงใด

ข้อที่	เนื้อหา	ระดับ					
		ตลอดเวลา	เกือบตลอดเวลา	บ่อยๆ	บางเวลา	นานๆ ครั้ง	ไม่มี เลย
5.1	รู้สึกสงบ	6	5	4	3	2	1
5.2	รู้สึกมีความสุขดี	6	5	4	3	2	1
5.3	รู้สึกหงุดหงิดกังวลมาก	1	2	3	4	5	6
5.4	รู้สึกซึมเศร้าไม่ร่าเริง	1	2	3	4	5	6
5.5	รู้สึกหมดกำลังใจ ซึมเศร้า	1	2	3	4	5	6

พละกำลัง (Vitality: VT)   รวมคะแนน VT ....

6. คำถามต่อไปนี้เกี่ยวข้องกับอารมณ์ความรู้สึกที่เกิดขึ้นกับท่านในช่วง 1 เดือนที่ผ่านมา กรุณาให้คำตอบที่ตรงกับ
   ความรู้สึกของท่านมากที่สุดในแต่ละคำถามเกิดขึ้นบ่อยเพียงใด

ข้อที่	เนื้อหา	ระดับ					
		ตลอดเวลา	เกือบตลอดเวลา	บ่อยๆ	บางเวลา	นานๆ ครั้ง	ไม่มี เลย
6.1	รู้สึกเต็มไปด้วยพลัง	6	5	4	3	2	1
6.2	รู้สึกกระปรี้กระเปร่ามาก	6	5	4	3	2	1
6.3	รู้สึกอ่อนเพลีย ไม่มีกำลัง	1	2	3	4	5	6
6.4	รู้สึกเบื่อหน่าย	1	2	3	4	5	6

ความเจ็บปวด (Bodily Pain: BP)   *รวมคะแนน BP* ....

7. ในช่วง 1 เดือนที่ผ่านมา ท่านมีอาการดังต่อไปนี้มากน้อยเพียงใด

ข้อที่	เนื้อหา	ระดับ					
		มีมากที่สุด	มีมาก	มีปานกลาง	มีน้อย	มีน้อยมาก	ไม่มีเลย
7.1	อาการเจ็บหรือปวดตามส่วนต่างๆ ของร่างกาย	1	2	3	4	5	6

ข้อที่	เนื้อหา	ระดับ				
		รบกวนมากๆ	รบกวนค่อนข้างมาก	รบกวนปานกลาง	รบกวนเล็กน้อย	ไม่รบกวนเลย
7.2	อาการปวดรบกวนการทำงาน (ทั้งที่ทำงานและที่บ้าน)	1	2	3	4	5

Demographic data   version 4 26th Nov, 2013

ส่วนที่ 3: การประเมินสุขภาพโดยรวม (Overall Evaluation of health)

การรับรู้สุขภาพทั่วไป (General health perception: GH)   รวมคะแนน *GH* ....

8. คำถามต่อไปนี้เกี่ยวข้องกับการรับรู้สุขภาพทั่วไปของท่าน

ข้อที่	เนื้อหา	ระดับ				
		ดีเยี่ยม	ดีมาก	ดี	พอใช้	แย่มาก
8.1	ท่านคิดว่าสุขภาพของท่านเป็นอย่างไร	5	4	3	2	1

ข้อที่	เนื้อหา	ระดับ				
		ถูกต้องที่สุด	ถูกต้องส่วนใหญ่	ไม่ทราบ	ไม่ค่อยถูก	ไม่ถูกเลย
8.2	ไม่สบายหรือเจ็บป่วยง่ายกว่าคนทั่วไป	1	2	3	4	5
8.3	มีสุขภาพดีเท่ากับคนอื่นๆ	5	4	3	2	1
8.4	คิดว่าสุขภาพจะแย่ลง	1	2	3	4	5
8.5	มีสุขภาพดีเยี่ยม	5	4	3	2	1

การเปลี่ยนแปลงด้านสุขภาพ (Health transition: HT)   รวมคะแนน *HT* ....

9. เมื่อเปรียบเทียบกับ 1 ปีก่อน ท่านคิดว่าสุขภาพของท่านปัจจุบันเป็นอย่างไร

5	ปัจจุบันดีกว่าปีที่แล้วมาก
4	ปัจจุบันดีกว่าเล็กน้อย
3	เท่าๆกับปีที่แล้ว
2	ปัจจุบันเลวกว่าปีที่แล้วเล็กน้อย
1	ปัจจุบันเลวกว่าปีที่แล้วมาก

Demographic data   version 4 26th Nov, 2013

199

APPENDIX H: THE SELF MANAGEMENT WEEKLY PLAN

แผนการปรับเปลี่ยนพฤติกรรมการจัดการตนเอง

ประจำสัปดาห์ที่...............................

วันที่...

ระดับความพึงพอใจโดยรวมในการจัดการตนเองเกี่ยวกับโรคความดันโลหิตสูง ประจำสัปดาห์

☐ พอใจอย่างยิ่ง

☐ พอใจมาก

☐ พอใจ

☐ ไม่พอใจ/ผิดหวัง

พฤติกรรมที่ดีอยู่แล้วหรือพฤติกรรมที่ดีขึ้น

พฤติกรรมที่ยังอยากปรับเปลี่ยน

APPENDIX I: THE SELF MANAGEMENT OUTCOMES RECORD BOOK

สมุดบันทึกภาวะสุขภาพ
สำหรับผู้ที่มีภาวะความดันโลหิตสูง

โดย

พยาบาลวิชาชีพ ศกุนตลา อนุเรือง
นักศึกษาปริญญาเอก สาขาพยาบาลศาสตร์
มหาวิทยาลัยเทคโนโลยีซิตนีย์ ออสเตรเลีย

ตารางบันทึกระดับความดันโลหิตและเส้นรอบเอว

อาทิตย์ที่	วันเดือนปี	ระดับความดันโลหิต						ขนาดเส้นรอบเอว (เซนติเมตร)	เป้าหมาย (เซนติเมตร)
		ครั้งที่ 1		ครั้งที่ 2		เป้าหมาย			
		ค่าบน	ค่าล่าง	ค่าบน	ค่าล่าง	ค่าบน	ค่าล่าง		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									

ขอแสดงความยินดีกับความสำเร็จ

ในการควบคุมความดันโลหิตสูงด้วยตัวท่านเอง

...ขอให้ท่านมีสุขภาพที่ดีตลอดไป ด้วยรักและปรารถนาดี...

พยาบาลวิชาชีพ ศกุนตลา อนุเรือง

APPENDIX J: THE SELF MANAGEMENT PROGRAM PROCEDURE

<div align="center">

โปรแกรมชุมชนเพื่อส่งเสริมการจัดการตนเอง

ของผู้สูงอายุที่มีโรคความดันโลหิตสูง

</div>

      โปรแกรมนี้ใช้เป็นคู่มือสำหรับพยาบาลที่ให้บริการในหน่วยบริการสุขภาพระดับปฐมภูมิ ใน การส่งเสริมพฤติกรรมการจัดการตนเองของผู้สูงอายุที่มีความดันโลหิตสูงซึ่งอาศัยอยู่ในชุมชน และ ชุมชนเขตเมือง โดยใช้ Bandura's theory of Social Cognitive Theory of Self-Regulation หรือทฤษฎีเชิงปัญญาสังคมในการกำกับตนเองของแบนดูรา (Bandura 1977) ซึ่งทฤษฎีนี้มีความ เหมาะสมอย่างยิ่งในการนำมาประยุกต์ใช้ในการพัฒนาระบบการดูแลผู้สูงอายุที่มีโรคเรื้อรัง เช่น โรค ความดันโลหิตสูง สำหรับโรคความดันโลหิตสูง ผู้สูงอายุจะเป็นบุคคลที่มีความสำคัญยิ่งต่อ การ ควบคุมระดับโลหิตของตนเอง นอกเหนือจากการรักษาด้วยยาหรือคำ แนะนำ จากบุคลากร ทาง สุขภาพ ดังนั้นแนวคิดการกำกับตนเองผนวกกับการสนับสนุนทางชุมชนซึ่งเป็นอีกหนึ่งใน วิธีการ เพิ่มประสิทธิภาพระบบการดูแลผู้สูงอายุที่มีโรคความดันโลหิตสูงโดยแนวคิดนี้จะสนับ- สนุน ให้ ผู้สูงอายุมีการจัดการและกำกับตนเองอย่างเป็นระบบ สามารถเชื่อมโยงทรัพยากรต่างๆ ที่มีอยู่ใน ชุมชนมาใช้ในการดูแลตนเอง เช่น แหล่งข้อมูลเกี่ยวกับโรคความดันโลหิตสูงบุคลากร ทางสุขภาพใน ชุมชน เพื่อนผู้ที่มีโรคเหมือนกัน เป็นต้น

      กิจกรรมในโปรแกรมชุมชนเพื่อส่งเสริมการจัดการตนเองของผู้สูงอายุที่มีโรคความดันโลหิต สูงนี้พัฒนาอ้างอิงจากกระบวนการการกำกับตนเองของแบนดูรา ซึ่งประกอบด้วย 3 ด้าน คือ 1) การ วิเคราะห์ตนเองหรือการสังเกตตนเอง 2) การสังเคราะห์ตนเองหรือการวินิจฉัย และ 3) ปฏิกิริยาทาง ร่างกายที่แสดงออก รายละเอียดดังนี้

ด้าน	กิจกรรม	แนวทางการปฏิบัติ

1. การสังเกตตนเอง (self-observation) กิจกรรม:
 	
 1) กิจกรรมกลุ่มแลกเปลี่ยนความรู้ เรื่องการจัดการตนเองเกี่ยวกับโร ความดันโลหิตสูง 2 วัน
	ผู้วิจัยและ ผู้เข้าร่วม โครงการ วิจัย	1) จัดกลุ่มย่อย กลุ่มละ 8 คน เพื่อแลกเปลี่ยน เรียนรู้ การจัดการตนเองเกี่ยวกับโรคความดัน โลหิตสูงที่ ปฏิบัติในปัจจุบัน 5 เรื่อง ดังนี้
		    1.เรื่องอาหารที่เหมาะสมสำหรับ ผู้ป่วยความดันโลหิตสูง
		    2.เรื่องการออกกำลังกาย
		    3.เรื่องการจัดการกับความเครียด

ด้าน	กิจกรรม	แนวทางการปฏิบัติ
		4.เรื่องการรับประทานยาความดันโลหิตสูง 5.เรื่องการรับการรักษาอย่างต่อเนื่อง
		2) ผู้วิจัยสรุปกิจกรรมกลุ่มย่อยเพื่อสะท้อนพฤติกรรมการจัดการตนเองเกี่ยวกับโรคความดันโลหิตสูงภาวะอารมณ์และแรงจูงใจในการปฏิบัติพฤติกรรมการดูแลตนเองและให้ข้อมูลเพิ่มเติมในการจัดการตนเองร่วมกับแพทย์หรือเภสัชกร
		3) ผู้วิจัยสอบถามข้อมูลผลการตรวจสุขภาพที่ผ่านมาของผู้เข้าร่วมโครงการวิจัยและสะท้อนผลการตรวจสุขภาพ ณ ปัจจุบันเพื่อเป็นข้อมูลในการวางแผนการจัดการตนเองต่อไป
		4) ผู้วิจัยมอบสมุดบันทึกประจำวันเกี่ยวกับภาวะสุขภาพพฤติกรรมการจัดการตนเองเกี่ยวกับโรคความดันโลหิตสูงแก่ผู้เข้าร่วมโครงการวิจัย
2. การวินิจฉัย (Judgement Process) กิจกรรม:		1) จัดกลุ่มย่อยกลุ่มละ 8 คนร่วมกันวินิจฉัยข้อมูลเกี่ยวกับการจัดการตนเองประจำวันเพื่อการกำหนดเป้าหมายและกิจกรรมในการควบคุมระดับความดันโลหิต ขนาดเส้นรอบเอวของตนเองพร้อมทั้งร่วมกันคิดขั้นตอนในการประเมินเป้าหมายที่ตั้งไว้ร่วมกัน
1) กิจกรรมกลุ่ม 2 ชั่วโมง	ผู้วิจัยและผู้เข้าร่วมโครงการวิจัย	
2) กิจกรรมเพื่อนคู่คิด	ผู้เข้าร่วมโครงการวิจัย	2) ผู้วิจัยจัดกิจกรรมการค้นหาปัจจัยสนับสนุนและปัจจัยที่เป็นอุปสรรคต่อการจัดการตนเองของผู้เข้าร่วมโครงการวิจัย
3) จดหมายสนับสนุนให้กำลังใจ 1 ฉบับ	ผู้วิจัย	3) ผู้วิจัยจัดกิจกรรมหาเพื่อนคู่คิด จำนวน 1 คน สำหรับการแลกเปลี่ยนความรู้เกี่ยวกับโรคความดันโลหิตสูงประสบการณ์ในการจัดการและกำกับตนเองประจำวันและเพื่อเปรียบเทียบอ้างอิงผลการตรวจสุขภาพร่วมกัน
		4) ผู้วิจัยจัดทำจดหมายเพื่อติดตามและสนับสนุนให้กำลังใจในการจัดการตนเองตามเป้าหมายที่กำหนดไว้ร่วมกันระหว่างผู้วิจัยและผู้เข้าร่วมโครงการวิจัย (สัปดาห์ที่ 2)

ด้าน	กิจกรรม	แนวทางการปฏิบัติ
3. ปฏิกิริยาทางร่างกายที่แสดงออก (Self-reaction) กิจกรรมหลัก: 1) กิจกรรมเยี่ยมบ้าน อย่างน้อย 2 ครั้ง 2) กิจกรรมให้คำปรึกษาตัวต่อตัว 3) จดหมายรายงานผลภาวะสุขภาพ และให้กำลังใจ 1 ฉบับ	 ผู้วิจัย ผู้วิจัย ผู้วิจัย	1) ผู้วิจัยติดตามเยี่ยมบ้านผู้เข้าร่วมโครงการวิจัย เพื่อ ชื่นชมสนับสนุนให้กำลังใจให้คำปรึกษา และ/ หรือให้ข้อมูลที่จำเป็นสำหรับการจัดการตน เองที่ เกี่ยวกับโรคความดันโลหิตสูง 2) ผู้วิจัยและผู้เข้าร่วมโครงการวิจัยร่วมกันประเมิน ผลการปฏิบัติตัวตามเป้าหมายที่ผู้เข้าร่วม โครงการวิจัยตั้งไว้ 3) ผู้วิจัยสังเกตพฤติกรรมการจัดการตนเองของ ผู้เข้าร่วมโครงการวิจัยที่บ้าน 4) ผู้วิจัยจัดทำจดหมายสรุปรายงานผลการตรวจ สุขภาพและให้กำลังใจแก่ผู้เข้าร่วมโครงการวิจัย (สัปดาห์ที่ 4)

ขั้นตอนการดำเนินการในกลุ่มทดลอง

สัปดาห์ที่ 1 (ใช้เวลา 2 วัน วันละ 1 ชั่วโมง 30 นาที)

วันดำเนินการวันที่ 1

วัตถุประสงค์

1. เพื่อสร้างสัมพันธภาพที่ดีระหว่างผู้วิจัยและผู้เข้าร่วมโครงการวิจัย

2. เพื่อรวบรวมข้อมูลเกี่ยวกับโรคความดันโลหิตสูง โรคร่วม และยาที่ได้รับ

3. เพื่อตรวจร่างกาย วัดระดับความดันโลหิต วัดขนาดเส้นรอบเอว

4. เพื่อสอบถามความคงทนในแบบแผนการรักษาโรคความดันโลหิตสูง

5. เพื่อสอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพชีวิต

6. เพื่ออธิบายการใช้สมุดบันทึกประจำวันเกี่ยวกับภาวะสุขภาพพฤติกรรมการจัดการ ตนเองเกี่ยวกับโรคความดันโลหิตสูงที่ผู้วิจัยมอบให้

ผลที่คาดหวังของกิจกรรม

1. ผู้เข้าร่วมโครงการวิจัยรู้สึกคุ้นเคย ผ่อนคลาย เป็นกันเองกับผู้วิจัยและกลุ่ม

2. ผู้เข้าร่วมโครงการวิจัยเข้าใจการใช้สมุดบันทึกประจำวันเกี่ยวกับภาวะสุขภาพ พฤติกรรมการจัดการตนเองเกี่ยวกับโรคความดันโลหิตสูงที่ผู้วิจัยมอบให้

อุปกรณ์ในการทำกลุ่ม

1. ป้ายชื่อ 81 อัน

2. เครื่องขยายเสียงและไมโครโฟน 1 ชุด

3. แบบสอบถามข้อมูลเกี่ยวกับโรคความดันโลหิตสูง โรคร่วม และยาที่ได้รับ 1 ชุด

4. สอบถามความคงทนในแบบแผนการรักษาโรคความดันโลหิตสูง 1 ชุด

5. สอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพชีวิต 1 ชุด

6. เครื่องวัดความดันโลหิตแบบปรอท หูฟัง 1 ชุด

7. สายเทปวัดขนาดของรอบเอว 1 สาย

8. ชุดกระเป๋าเพื่อการกำกับติดตามการจัดการตนเองในผู้สูงอายุที่มีโรคความดัน
โลหิตสูง ประกอบด้วย

     1) กระเป๋าพลาสติกสีสดใส ขนาด 13.5 X 14.5 นิ้ว 1 ใบ

     2) สมุดบันทึกประจำวันเกี่ยวกับภาวะสุขภาพ และพฤติกรรมการจัดการ
ตนเองเกี่ยวกับโรคความดันโลหิตสูง 1 เล่ม

     3) สายวัดขนาดรอบเอว 1 สาย

     4) กล่องแบ่งใส่ยาจำนวน 7 ช่อง 1 กล่อง

     5) ปากกาลูกลื่น 1 ด้าม

แนวทางการปฏิบัติ

1. ผู้วิจัยกล่าวทักทายผู้เข้าร่วมโครงการวิจัย แนะนำตัว แจ้งวัตถุประสงค์ของการวิจัย
ขอบเขต ระยะเวลา ขั้นตอนการดำเนินการ ประโยชน์ที่ผู้เข้าร่วมการวิจัยจะได้รับ
รวมทั้งสิทธิในการถอนตัวจากการวิจัย

2. ผู้วิจัยสอบถามข้อมูลเกี่ยวกับโรคความดันโลหิตสูง โรคร่วม และยาที่ได้รับ ตรวจ
ร่างกาย วัดระดับความดันโลหิต วัดขนาดเส้นรอบเอว สอบถามความคงทนในแบบ
แผนการรักษาโรคความดันโลหิตสูง และสอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพ
ชีวิต (Pre-test)

3. ผู้วิจัยมอบสมุดบันทึกประจำวันเกี่ยวกับภาวะสุขภาพ และพฤติกรรมการจัดการ
ตนเองเกี่ยวกับโรคความดันโลหิตสูงแก่ผู้เข้าร่วมโครงการวิจัย พร้อมทั้งอธิบาย
วิธีการใช้สมุด และการใช้อุปกรณ์ที่ผู้วิจัยมอบให้

4. ผู้วิจัยกล่าวขอบคุณ และปิดกิจกรรม พร้อมทั้งนัดหมายครั้งต่อไป

วันดำเนินการวันที่ 2
วัตถุประสงค์

1. เพื่อแลกเปลี่ยนความรู้ และประสบการณ์เกี่ยวกับการจัดการตนเองประจำวันของ
ผู้สูงอายุที่มีโรคความดันโลหิตสูง 5 เรื่อง ดังนี้

    1) เรื่องอาหารที่เหมาะสมสำหรับผู้ป่วยความดันโลหิตสูง

    2) เรื่องการออกกำลังกาย

3) เรื่องการจัดการกับความเครียด

4) เรื่องการรับประทานยาความดันโลหิตสูง

5) เรื่องการรับการรักษาอย่างต่อเนื่อง

2. เพื่อให้ผู้สูงอายุสามารถสังเกตตนเองและวิเคราะห์ตนเองจากข้อมูลที่มีได้

ผลที่คาดหวังของกิจกรรม

    ผู้เข้าร่วมโครงการวิจัยทราบถึงพฤติกรรมการจัดการตนเองประจำวันเกี่ยวกับโรค
ความดันโลหิตสูงที่ผ่านมา

อุปกรณ์ในการทำกลุ่ม

1. เครื่องขยายเสียงและไมโครโฟน 1 ชุด

2. เครื่องบันทึกเสียง กล้องบันทึกภาพ

3. กระดาษเปล่า 100 แผ่น ปากกา 81 ด้าม

4. กระดาษชาร์ตใหญ่ เพื่อนำเสนอ 20 แผ่น

5. เทปกาวใส ม้วนเล็ก จำนวน 10 ม้วน

6. ปากกาเคมีสีน้ำเงินจำนวน 10 ด้าม และสีแดงจำนวน 10 ด้าม กลุ่มละ 2 ด้าม

แนวทางการปฏิบัติ

1. จัดกลุ่มย่อย 10 กลุ่ม กลุ่มละ 8 คน

2. จัดกิจกรรมกลุ่มสัมพันธ์ เพื่อให้ผู้เข้าร่วมโครงการวิจัย แนะนำตนเองต่อกลุ่ม
   และให้ผู้เข้าร่วมโครงการวิจัยติดป้ายชื่อทุกท่าน

3. จัดกิจกรรมแลกเปลี่ยนความรู้ ประสบการณ์การจัดการตนเองเกี่ยวกับโรคความ
   ดันโลหิตสูงที่ปฏิบัติในปัจจุบัน โดยกิจกรรมนี้จะส่งเสริมการติดตามตนเอง (self-
   observation) ใน 5 เรื่องดังต่อไปนี้

    1)เรื่องอาหารที่เหมาะสมสำหรับผู้สูงอายุที่มีความดันโลหิตสูงโดยใช้ แนว
คำถามดังนี้

      • ท่านคิดว่าอาหารที่เหมาะสมสำหรับผู้สูงอายุที่มีความดันโลหิตสูง
      เป็นอย่างไร?

      • ปัจจุบันท่านมีวิธีการปฏิบัติการจัดการตนเองเรื่องอาหารเพื่อ
      ควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่าบนน้อยกว่า
      130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า 80 มิลลิเมตร

ปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

• ท่านคิดว่าอาหารมีความสำคัญมากน้อยเพียงใดการควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า 80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง)?

2) เรื่องการออกกำลังกาย โดยใช้แนวคำถามดังนี้

• ท่านคิดว่าการออกกำลังกายที่เหมาะสมสำหรับผู้สูงอายุที่มีความดันโลหิตสูงเป็นอย่างไร?

• ปัจจุบันท่านมีวิธีการปฏิบัติการจัดการตนเองเรื่องการออกกำลังกายเพื่อควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า 80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

• ท่านคิดว่าการออกกำลังกายมีความสำคัญมากน้อยเพียงใดการควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า 80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง)?

3) เรื่องการจัดการกับความเครียด โดยใช้แนวคำถามดังนี้

• ท่านคิดว่าการจัดการกับความเครียดที่เหมาะสมสำหรับผู้สูงอายุที่มีความดันโลหิตสูงเป็นอย่างไร?
ปัจจุบันท่านมีวิธีการปฏิบัติการจัดการตนเองเรื่องความเครียดเพื่อควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า 80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

• ท่านคิดว่าการจัดการกับความเครียดมีความสำคัญมากน้อยเพียงใดการควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า 80 มิลลิเมตร

ปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร (สำหรับ
ผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง)?

4) เรื่องการรับประทานยาความดันโลหิตสูง โดยใช้แนวคำถามดังนี้

• ท่านคิดว่าการรับประทานยาความดันโลหิตสูงที่เหมาะสม
สำหรับผู้สูงอายุที่มีความดันโลหิตสูงเป็นอย่างไร?

• ปัจจุบันท่านมีวิธีการปฏิบัติการจัดการตนเองเรื่องการรับประทาน
ยาความดันโลหิตสูงเพื่อควบคุมระดับความดันโลหิตให้ระดับความดัน
โลหิตค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่าง
น้อยกว่า 80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90
เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

• ท่านคิดว่าการรับประทานยาความดันโลหิตสูงมีความสำคัญมาก
น้อยเพียงใดการควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่า
บนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า
80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร
(สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง)?

5) เรื่องการรับการรักษาอย่างต่อเนื่อง โดยใช้แนวคำถามดังนี้

• ปัจจุบันท่านมีวิธีการปฏิบัติการจัดการตนเองเรื่องการรับการรักษา
อย่างต่อเนื่องเพื่อควบคุมระดับความดันโลหิตให้ระดับความดันโลหิต
ค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อย
กว่า 80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90
เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

• ท่านคิดว่าการรับการรักษาอย่างต่อเนื่องมีความสำคัญมากน้อย
เพียงใดการควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่าบน
น้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า 80
มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร
(สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง)?

3. ผู้เข้าร่วมโครงการวิจัยส่งตัวแทนกลุ่มละ 1 คน เพื่อนำเสนอผลการแลกเปลี่ยน
เรียนรู้ประสบการณ์การจัดการตนเองประจำวันเกี่ยวกับโรคความดันโลหิตสูงที่
ปฏิบัติในปัจจุบัน

4. ผู้วิจัยสรุปกิจกรรมกลุ่มย่อย เพื่อสะท้อนพฤติกรรมการจัดการตนเองเกี่ยวกับโรค
ความดันโลหิตสูง และให้ข้อมูลเพิ่มเติมในการจัดการตนเองร่วมกับแพทย์หรือ
เภสัชกร

5. ผู้วิจัยกล่าวขอบคุณ และปิดกิจกรรม พร้อมทั้งนัดหมายครั้งต่อไป

สัปดาห์ที่ 2 (ใช้เวลา 2 ชั่วโมง จำนวน 1 วัน)
วัตถุประสงค์
1. เพื่อรายงานผลการตรวจสุขภาพ ระดับความดันโลหิต และขนาดเส้นรอบเอวใน ปัจจุบันเปรียบเทียบกับผลการตรวจสุขภาพย้อนหลัง 3 ครั้งที่ผ่านมาของผู้เข้าร่วม โครงการวิจัย
2. เพื่อให้ผู้เข้าร่วมโครงการวิจัยสามารถวินิจฉัยสภาวะสุขภาพร่างกายที่เกี่ยวข้อง กับโรคความดันโลหิตสูงของตนเองและเพื่อนได้
3. เพื่อให้ผู้เข้าร่วมโครงการวิจัยสามารถกำหนดเป้าหมาย กำหนดกิจกรรมการจัดการ ตนเอง กำหนดขั้นตอนการประเมินเป้าหมายที่เกี่ยวข้องกับโรคความดันโลหิตสูง ได้
4. เพื่อให้ผู้เข้าร่วมโครงการวิจัยสามารถค้นหาปัจจัยสนับสนุนและปัจจัยที่เป็น อุปสรรคในการจัดการตนเอง พร้อมทั้งหาแนวทางการแก้ไขได้
5. เพื่อให้ผู้เข้าร่วมโครงการวิจัยมีการเสริมแรงระหว่างเพื่อนผู้มีประสบการณ์การ จัดการโรคเดียวกัน
6. เพื่อเสริมแรงผู้เข้าร่วมโครงการวิจัยโดยผู้วิจัย และร่วมกันวางแผนการปฏิบัติตัว ในการจัดการตนเองต่อไป

ผลที่คาดหวังของกิจกรรม
1. ผู้เข้าร่วมโครงการวิจัยเห็นถึงสภาวะสุขภาพของตนเองในปัจจุบัน
2. ผู้เข้าร่วมโครงการวิจัยมีการวินิจฉัยสภาวะสุขภาพของตนเองและเพื่อนจากค่า ปกติได้ถูกต้อง
3. ผู้เข้าร่วมโครงการวิจัยมีการกำหนดเป้าหมาย กำหนดกิจกรรมการจัดการตนเอง กำหนดขั้นตอนการประเมินเป้าหมายของตนเองได้ชัดเจน
4. ผู้เข้าร่วมโครงการวิจัยสามารถวิเคราะห์ปัจจัยสนับสนุนและปัจจัยที่เป็นอุปสรรค ในการจัดการตนเอง พร้อมมีแนวทางการแก้ไขให้เหมาะสมยิ่งขึ้น
5. ผู้เข้าร่วมโครงการวิจัยและเพื่อนมีการเสริมแรงในการจัดการตนเองระหว่างกัน

อุปกรณ์ในการทำกลุ่ม
1. เครื่องขยายเสียงและไมโครโฟน 1 ชุด

2. เครื่องบันทึกเสียง กล้องบันทึกภาพ

3. กระดาษเปล่า 100 แผ่น ปากกา 81 ด้าม

4. กระดาษชาร์ตใหญ่เพื่อนำเสนอ 10 แผ่น

5. ปากกาเคมี สีน้ำเงินและสีแดง อย่างละ 5 ด้าม

6. จดหมายในการติดตาม และให้กำลังใจการในจัดการตนเองแก่ผู้เข้าร่วม
โครงการวิจัย

แนวทางการปฏิบัติ
1. ผู้วิจัยจัดผู้เข้าร่วมโครงการวิจัยออกกลุ่มย่อย กลุ่มละ 8 คน

2. ผู้วิจัยรายงานผลการตรวจร่างกายปัจจุบันและผลการตวจร่างกายย้อนหลัง 3 ครั้ง เพื่อ
เป็นข้อมูลในการวางแผนปฏิบัติในการจัดการตนเองต่อไป

3. ผู้วิจัยกระตุ้นผู้เข้าร่วมโครงการวิจัยให้สังเคราะห์ข้อมูลสภาวะผลการตรวจร่างกาย
ของตนเองในปัจจุบันและย้อนหลัง   สัมพันธ์กับวิธีการปฏิบัติการจัดการตนเอง
เกี่ยวกับการจัดการตนเองใน 5 เรื่องที่ ผ่านมา พร้อมทั้งเชื่อมโยงปัจจัยที่สนับสนุน
และปัจจัยที่เป็นอุปสรรคต่อการจัดการตนเอง โดยใช้คำถามนำดังนี้

    1) ท่านคิดว่าผลการตรวจร่างกายของท่านในปัจจุบันและย้อนหลังเป็น
อย่างไร?

    2) ท่านคิดว่าพฤติกรรมการจัดการตนเองที่ผ่านมาเป็นอย่างไร และมีปัจจัยใด
ที่สนับสนุนหรือปัจจัยใดที่เป็นอุปสรรคต่อการจัดการ ตนเอง?

    3) ท่านพอใจผลการตรวจร่างกายในปัจจุบันและย้อนหลัง 3 ครั้งหรือไม่ เมื่อ
เทียบกับความตั้งใจในปฏิบัติการจัดการตนเองเพื่อควบคุมภาวะ ความดัน
โลหิตสูงของตัวเอง?

4. ผู้วิจัยกระตุ้นผู้เข้าร่วมโครงการวิจัย   ให้กำหนดเป้าหมายที่ชัดเจนในการควบคุม
ระดับความดันโลหิตของตนเอง   พร้อมทั้งร่วมกันคิดขั้นตอนในการประเมิน
เป้าหมายที่ตั้งไว้ด้วย โดยใช้คำถามนำดังนี้

    1) ท่านเคยมีการตั้งเป้าหมายในการจัดการตนเองเพื่อควบคุมระดับความดัน
โลหิตให้ระดับความดันโลหิตค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับ
ความดันโลหิตตัวล่างน้อยกว่า 80 มิลลิเมตรปรอท และขนาดเส้นรอบเอว
ให้อยู่น้อยกว่า 90 เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับ
ผู้หญิง) หรือไม่ อย่างไร?

    2) สำหรับสัปดาห์หน้าท่านกำหนดเป้าหมายของระดับความความดัน โลหิต
ค่าบน ค่าล่าง และขนาดเส้นรอบเอวไว้เท่าใด?

3) เรื่องใดบ้างที่ท่านคิดว่ายังต้องปรับเปลี่ยน   เพื่อการควบคุมระดับความ
ความดันโลหิตค่าบนค่าล่าง   และขนาดเส้น   รอบเอวให้เป็นไปตาม
เป้าหมายที่ท่านกำหนดไว้?

4) ท่านมีวิธีการติดตามผลการปฏิบัติการจัดการตนเองเพื่อควบคุมระดับ
ความโลหิตค่าบน ค่าล่าง และขนาดเส้นรอบเอวอย่างไร?

5. ผู้วิจัยกระตุ้นให้ผู้เข้าร่วมโครงการวิจัย   ตั้งเป้าหมายของการปรับเปลี่ยนพฤติกรรม
ใน 5 เรื่องดังนี้

1)   เรื่องอาหารที่เหมาะสมสำหรับผู้ป่วยความดันโลหิตสูง   โดยใช้แนว
คำถามดังต่อไปนี้

• ท่านมีเป้าหมายในการปรับเปลี่ยนพฤติกรรมเรื่องอาหารเพื่อ
ควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่าบนน้อยกว่า
130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า 80 มิลลิเมตร
ปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร (สำหรับ
ผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

2) เรื่องการออกกำลังกาย

• ท่านมีเป้าหมายในการปรับเปลี่ยนพฤติกรรมเรื่องการออกกำลัง
กายเพื่อควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่าบน
น้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า 80
มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร
(สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

3) เรื่องการจัดการกับความเครียด

• ท่านมีเป้าหมายในการปรับเปลี่ยนพฤติกรรมเรื่องการจัดการกับ
ความเครียดเพื่อควบคุมระดับความดันโลหิตให้ระดับความดันโลหิตค่า
บนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อยกว่า
80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90 เซนติเมตร
(สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

4) เรื่องการรับประทานยาความดันโลหิตสูง

• ท่านมีเป้าหมายในการปรับเปลี่ยนพฤติกรรมเรื่องการรับประทาน
ยาความดันโลหิตสูงเพื่อควบคุมระดับความดันโลหิตให้ระดับความ ดัน
โลหิตค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่าง
น้อยกว่า 80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90
เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

5) เรื่องการรับการรักษาอย่างต่อเนื่อง

• ท่านมีเป้าหมายในการปรับเปลี่ยนพฤติกรรมเรื่องการรับการรักษา
อย่างต่อเนื่องเพื่อควบคุมระดับความดันโลหิตให้ระดับความดัน โลหิต
ค่าบนน้อยกว่า 130 มิลลิเมตรปรอท ระดับความดันโลหิตตัวล่างน้อย
กว่า 80 มิลลิเมตรปรอท และขนาดเส้นรอบเอวให้อยู่น้อยกว่า 90
เซนติเมตร (สำหรับผู้ชาย) 80 เซนติเมตร (สำหรับผู้หญิง) อย่างไร?

6. ผู้วิจัยจัดกิจกรรมหาเพื่อนคู่คิดจำนวน 1 คน โดยเลือกคนที่บ้านใกล้กัน ไปมาหาสู่
กัน หรือเป็นเพื่อนกัน เพื่อเพิ่มประสิทธิภาพในการจัดการ กำกับตนเอง และเพื่อ
เปรียบเทียบ อ้างอิงภาวะสุขภาพของตนเองร่วมกัน โดยกิจกรรมนี้จะส่งเสริมการ
ติดตามตนเอง (self-observation) และส่งเสริมขั้นตอนการวินิจฉัยตนเอง (Judgement
Process)

7. ผู้วิจัยจัดทำกราฟแสดงภาวะสุขภาพของผู้เข้าร่วมโครงการวิจัยทั้งหมด เพื่อใช้
สะท้อนความสำเร็จในการจัดการตนเอง เพื่อเปรียบเทียบกับผู้อื่น และส่งเสริม
ขั้นตอนการวินิจฉัยตนเอง (Judgement Process)

8. ผู้วิจัยจัดทำจดหมายเพื่อติดตาม และให้กำลังใจการในจัดการตนเองของผู้เข้าร่วม
โครงการวิจัย ในสัปดาห์ที่ 2 ภายหลังการตั้งเป้าหมายที่ชัดเจน

สัปดาห์ที่ 3-4
วัตถุประสงค์

1. เพื่อติดตามการปฏิบัติการจัดการตนเอง และติดตามความต่อเนื่อง
2. เพื่อสนับสนุนให้กำลังใจในการปฏิบัติการจัดการตนเอง

ผลที่คาดหวังของกิจกรรม

1. ผู้เข้าร่วมโครงการวิจัยมีความต่อเนื่องในการจัดการตนเอง
2. ผู้เข้าร่วมโครงการวิจัยมีพลังใจในการปฏิบัติอย่างต่อเนื่อง

อุปกรณ์ในการทำกลุ่ม

จดหมายในการติดตาม และให้กำลังใจการในจัดการตนเองแก่ผู้เข้าร่วมโครงการวิจัย

แนวทางการปฏิบัติ

1. ผู้วิจัยเยี่ยมบ้านผู้เข้าร่วมโครงการวิจัย เพื่อชื่นชม สนับสนุนให้กำลังใจ ให้คำปรึกษา และให้ข้อมูลเพิ่มเติมสำหรับการจัดการตนเอง สัปดาห์ละครั้ง ครั้งละ 1 ชั่วโมง

2. ผู้วิจัยและผู้เข้าร่วมโครงการวิจัยร่วมกันประเมินผลตามเป้าหมายที่ผู้เข้าร่วม โครงการวิจัยตั้งไว้ โดยดูจากสมุดบันทึกประจำวัน และจากการสังเกตผู้เข้าร่วม โครงการวิจัยที่บ้าน ในเรื่องการปฏิบัติตัวในการจัดการตนเองประจำวันของ ผู้สูงอายุที่มีโรคความดันโลหิตสูง 5 เรื่อง ดังนี้
    1) เรื่องอาหารที่เหมาะสมสำหรับผู้ป่วยความดันโลหิตสูง
    2) เรื่องการออกกำลังกาย
    3) เรื่องการจัดการกับความเครียด
    4) เรื่องการรับประทานยาความดันโลหิตสูง
    5) เรื่องการรับการรักษาอย่างต่อเนื่อง

3. ผู้วิจัยจัดทำจดหมายเพื่อติดตาม และให้กำลังใจการในจัดการตนเองของผู้เข้าร่วม โครงการวิจัย ในสัปดาห์ที่ 4

4. ผู้วิจัยแจ้งขั้นตอนการติดตามผลภายหลังการสิ้นสุดโปรแกรม 3 ครั้ง ได้แก่ ทันทีที่ สิ้นสุดโปรแกรม ภายหลังสิ้นสุดโปรแกรม 3 เดือน และภายหลังสิ้นสุดโปรแกรม 6 เดือน กล่าวขอบคุณผู้เข้าร่วมโครงการวิจัย และปิดกิจกรรม

สัปดาห์ที่ 5 16 และ 28 (ผู้เข้าร่วมโครงการวิจัย รับการดูแล รักษาตามแบบแผนปกติ)
วัตถุประสงค์
เพื่อติดตามผลการปฏิบัติการจัดการตนเอง และติดตามความต่อเนื่อง
ผลที่คาดหวังของกิจกรรม
ผู้เข้าร่วมโครงการวิจัยมีความต่อเนื่องในการจัดการตนเอง

อุปกรณ์ในการทำกลุ่ม
1. แบบสอบถามข้อมูลเกี่ยวกับโรคความดันโลหิตสูง โรคร่วม และยาที่ได้รับ 1 ชุด
2. สอบถามความคงทนในแบบแผนการรักษาโรคความดันโลหิตสูง 1 ชุด
3. สอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพชีวิต 1 ชุด
4. เครื่องวัดความดันโลหิตแบบปรอท หูฟัง 1 ชุด
5. สายเทปวัดขนาดของรอบเอว 1 สาย

แนวทางการปฏิบัติ

1. ตรวจร่างกาย วัดระดับความดันโลหิต วัดขนาดเส้นรอบเอว
2. สอบถามความคงทนในแบบแผนการรักษาโรคความดันโลหิตสูง
3. สอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพชีวิต (Post-test and follow up-test)

ขั้นตอนการดำเนินการในกลุ่มควบคุม

สัปดาห์ที่ 1

วัตถุประสงค์

1. เพื่อสร้างสัมพันธภาพที่ดีระหว่างผู้วิจัยและผู้เข้าร่วมโครงการวิจัย
2. เพื่อรวบรวมข้อมูลเกี่ยวกับโรคความดันโลหิตสูง โรคร่วม และยาที่ได้รับ
3. เพื่อตรวจร่างกาย วัดระดับความดันโลหิต วัดขนาดเส้นรอบเอว
4. เพื่อสอบถามความคงทนในแบบแผนการรักษาโรคความดันโลหิตสูง
5. เพื่อสอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพชีวิต

ผลที่คาดหวังของกิจกรรม

ผู้เข้าร่วมโครงการวิจัยรู้สึกคุ้นเคย ผ่อนคลาย เป็นกันเองกับผู้วิจัยและกลุ่ม

อุปกรณ์ในการทำกลุ่ม

1. แบบสอบถามข้อมูลเกี่ยวกับโรคความดันโลหิตสูง โรคร่วม และยาที่ได้รับ 1 ชุด
2. สอบถามความคงทนในแบบแผนการรักษาโรคความดันโลหิตสูง 1 ชุด
3. สอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพชีวิต 1 ชุด
4. เครื่องวัดความดันโลหิตแบบปรอท หูฟัง 1 ชุด
5. สายเทปวัดขนาดของรอบเอว 1 สาย

แนวทางการปฏิบัติ

1. ผู้วิจัยกล่าวทักทายผู้เข้าร่วมโครงการวิจัย แนะนำตัว แจ้งวัตถุประสงค์ของการวิจัย ขอบเขต ระยะเวลา ขั้นตอนการดำเนินการ ประโยชน์ที่ผู้เข้าร่วมการวิจัยจะได้รับ รวมทั้งสิทธิในการถอนตัวจากการวิจัย
2. ผู้วิจัยสอบถามข้อมูลเกี่ยวกับโรคความดันโลหิตสูง โรคร่วม และยาที่ได้รับ ตรวจ ร่างกาย วัดระดับความดันโลหิต วัดขนาดเส้นรอบเอว สอบถามความคงทนในแบบ แผนการรักษาโรคความดันโลหิตสูง และสอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพ ชีวิต (Pre-test)

สัปดาห์ที่ 2-4

รับการดูแล รักษาตามปกติจากบุคลากรทางสุขภาพที่หน่วยบริการสุขภาพปฐมภูมิ

สัปดาห์ที่ 5 16 และ 28 (ผู้เข้าร่วมโครงการวิจัย รับการดูแล รักษาตามแบบแผนปกติ)

วัตถุประสงค์

เพื่อติดตามผลการปฏิบัติการจัดการตนเอง

อุปกรณ์ในการทำกลุ่ม

1. แบบสอบถามข้อมูลเกี่ยวกับโรคความดันโลหิตสูง โรคร่วม และยาที่ได้รับ 1 ชุด
2. สอบถามความคงทนในแบบแผนการรักษาโรคความดันโลหิตสูง 1 ชุด
3. สอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพชีวิต 1 ชุด
4. เครื่องวัดความดันโลหิตแบบปรอท หูฟัง 1 ชุด
5. สายเทปวัดขนาดของรอบเอว 1 สาย

แนวทางการปฏิบัติ

1. ตรวจร่างกาย วัดระดับความดันโลหิต วัดขนาดเส้นรอบเอว
2. สอบถามความคงทนในแบบแผนการรักษาโรคความดันโลหิตสูง
3. สอบถามเกี่ยวกับภาวะสุขภาพและคุณภาพชีวิต (Post-test and follow up-test)

หมายเหตุ

ผู้เข้าร่วมโครงการวิจัยในกลุ่มควบคุมจะได้รับชุดกระเป๋าเพื่อการกำกับติดตามการจัดการตนเองในผู้สูงอายุที่มีโรคความดันโลหิตสูง ประกอบด้วย

1) กระเป๋าพลาสติกสีสดใส ขนาด 13.5 X 14.5 นิ้ว 1 ใบ
2) สมุดบันทึกประจำวันเกี่ยวกับภาวะสุขภาพ และพฤติกรรมการจัดการตนเอง
    เกี่ยวกับโรคความดันโลหิตสูง 1 เล่ม
3) สายวัดขนาดรอบเอว 1 สาย
4) กล่องแบ่งใส่ยาจำนวน 7 ช่อง 1 กล่อง
5) ปากกาลูกลื่น 1 ด้าม

APPENDIX K: COPY PERMISSION TO TRANSLATE THE HILL-BONE COMPLIANCE TO HIGH BLOOD PRESSURE THERAPY SCALE

&Centre for Cardiovascular & Chronic Care

UNIVERSITY OF TECHNOLOGY SYDNEY

Centre for Cardiovascular and Chronic Care
University of Technology, Sydney
PO Box 123
BROADWAY NSW, Australia. 2007

Telephone: +61 2 9514 4819
Facsimile: +61 2 9514 4835

13 February 2013

To   Dr Martha Hill et al,

Re: Permission to translate Hill-Bone Scale and publish the report of adaptation, translation and validation of the Thai Hill-Bone Scale

My name is Sakuntala Anuruang a PhD candidate at Centre for Cardiovascular and Chronic Care, Faculty of Health, University of Technology, Sydney, Australia. I am supervised by Professor Patricia Mary Davidson, Dr Louise Hickman, Professor Debra Jackson and Dr Michelle DiGiacomo. My research project is a community-based intervention to improve hypertension management among older people in Thailand. Therefore, I am writing to request permission to use and translate 'the Hill-Bone Compliance to High Blood Pressure Therapy Scale' questionnaire.

If you are willing to grant this permission, please indicate how you would like the instrument to be acknowledged. If you do not indicate otherwise, we will use the usual scholarly form of acknowledgment, including publisher, author, title, etc:

_____

Please indicate your agreement by signing and returning this letter.

Thank you for consideration of this request.

Yours sincerely,

Sakuntala Anuruang
PhD Candidate
Centre for Cardiovascular and Chronic Care
Faulty of Health, University of Technology, Sydney

The above request is hereby approved on the understanding that full credit will be given to the source.

Approved by: _____   Date: 2/10/15

Print name: MARTHA N. HILL

Conditions: N/A

APPENDIX L: COPY PERMISSION FROM JOURNAL OF CLINICAL NURSING

**JOHN WILEY AND SONS LICENSE
TERMS AND CONDITIONS**

Mar 23, 2015

This Agreement between Sakuntala Anuruang ("You") and John Wiley and Sons ("John Wiley and Sons") consists of your license details and the terms and conditions provided by John Wiley and Sons and Copyright Clearance Center.

License Number	3594581417117
License date	Mar 23, 2015
Licensed Content Publisher	John Wiley and Sons
Licensed Content Publication	Journal of Clinical Nursing
Licensed Content Title	Community-based interventions to promote management for older people: an integrative review
Licensed Content Author	Sakuntala Anuruang,Louise D Hickman,Debra Jackson,Tessa Dharmendra,Jane Balen,Patricia M Davidson
Licensed Content Date	Dec 20, 2013
Pages	11
Type of use	Dissertation/Thesis
Requestor type	Author of this Wiley article
Format	Print and electronic
Portion	Full article
Will you be translating?	No
Title of your thesis / dissertation	Community based intervention to improve hypertension management among older people in Thailand
Expected completion date	Jun 2015
Expected size (number of pages)	200
Requestor Location	Sakuntala Anuruang 15 Broadway UTS CCCC Ultimo, Australia 2007 Attn: Sakuntala Anuruang
Billing Type	Invoice
Billing Address	Sakuntala Anuruang 15 Broadway Ultimo, Australia 2007 Attn: Sakuntala Anuruang
Total	0.00 AUD

Terms and Conditions

TERMS AND CONDITIONS

This copyrighted material is owned by or exclusively licensed to John Wiley & Sons, Inc. or one of its group companies (each a"Wiley Company") or handled on behalf of a society with

APPENDIX M: COPY PERMISSION FROM NURSE RESEARCHER

RCNi

Reproduction for PhD

Journal: Nurse Researcher

Author(s):   Sakuntala Anuruang, Patricia Mary Davidson, Debra Jackson, Louise Hickman
Title: Strategies to enhance recruitment rural dwelling older people into community-based randomised controlled trials study

Published: Awaiting publication

Permission to reproduce the above article for the author's PhD dissertation

Please note: The article should be fully acknowledged with name of the author and the relevant *Nurse Researcher* details.

COPYRIGHT FEES/ROYALTIES

The fee required for copyright will be discretionary but all copyright release for commercial purposes will be charged at £100 per 1,000 words minimum.
The fee will be waived at the editor's discretion where copyright clearance is requested for educational or charitable purposes.
The fee charged where appropriate will appear on the bottom section of this form once copyright release has been granted and the signed form has been returned to you. Payment should be made within 14 days of receipt.

SIGNED: BY EMAIL   DATE: 20 May 2015
NAME: Sakuntala Anuruang   DESIGNATION: University of Technology, Sydney

RCNi hereby agrees to release copyright for the purposes specified above. There will be no fee/a fee of £..........,which is payable within 14 days of receipt of this copyright clearance.

Signed:...

Date:.........20/5/1........

Gary Bell, Senior Editor, RCNi

RCNi, The Heights, 59-65 Lowlands Road, Harrow-on-the-Hill, Middlesex, HA1 3AW
Telephone 0208 423 1066
Registered Office: 20 Cavendish Square, London W1M 0AB. Registered in England No. 2119155

APPENDIX N: PUBLICATION (Strategies to enhance recruitment of rural dwelling older people with hypertension into community-based randomised controlled trials study)

Strategies to enhance recruitment rural dwelling older people into community-based randomised controlled trials study
Nurse Researcher

Dear Miss Anuruang,

Thank you for your article, which I am pleased to accept for a future edition of Nurse Researcher.

It was accepted on 04/03/2015

Please note that in common with all professional publications your article will undergo editorial changes before going to print, which may include text changes, as well as changes to headlines and summaries.

We will send you a copy of the magazine in which your article is published and would be pleased to consider any further articles you feel might be suitable for publication.

Nurse Researcher offers authors the option to pre-pay to make the final version of their article freely available on publication through our Open Choice model. Details here:
http://rcnpublishing.com/page/authors/open-access-frequently-asked-questions

If you would like your article published under Open Choice please email the administration manager:
helen.hyland@rcni.com

Yours sincerely,

Dr Elizabeth Halcomb RN BN(Hons) PhD FACN
Editor, Nurse Researcher
Professor of Primary Health Care Nursing, University of Wollongong, Australia
Email: ehalcomb@uow.edu.au

PLEASE NOTE: REPLIES TO THE ADDRESS FROM WHICH THIS E-MAIL WAS SENT ARE NOT MONITORED.
To reply: Please log in to Editorial Manager, click on the Send E-mail link associated with this submission and choose the "Au to Ed - Customisable for numbered submission"

Nurse Researcher

Strategies to enhance recruitment rural dwelling older people into community-based randomised controlled trials study
--Manuscript Draft--

Manuscript Number:	NR1345R2
Article Type:	Article - if in doubt use this one
Full Title:	Strategies to enhance recruitment rural dwelling older people into community-based randomised controlled trials study
Corresponding Author:	Sakuntala Anuruang, PhD candidate Centre for Cardiovascular and Chronic Care Ultimo, Sydney, NSW AUSTRALIA
Other Authors:	Patricia Mary Davidson, MEd, PhD
	Debra Jackson, PhD
	Louise Hickman, MPH PhD
Abstract:	Aim To describe strategies that can enhance opportunity in recruitment rural dwelling older people into a clinical trial. Background Recruitment processes can be time consuming and challenging in a clinical research study. Despite the challenges, an adequate sample size is crucial to randomised controlled trials (RCTs). Moreover, previous studies identify the challenges associated with recruiting older people into clinical trial research studies, in particular rural dwelling older people. Data Sources In this paper we draw on the available literature and personal experiences, to present a range of flexible and inclusive strategies that have been successful to engage older people into a clinical trial. Discussion To enhance opportunity in recruitment participants, therefore, the researchers should be considered to minimise burden from the research study and maximise more any benefit or convenience for attracting potential participants. Conclusion This paper has described strategies to enhance recruitment of rural dwelling older individuals into a clinical study. Experiences of participant recruitment are supported by literature that highlights the three influential factors that may influence the participation rates: personal participant factors, researcher attributes and protocol factors. In addition, three important strategies contribute to enhancing recruitment: 1) understanding the culture of the research setting, 2) identifying the key gatekeepers in the setting and 3) building trust. Implications for practice/ research Even though, this study was limited in that it did not recruit a large number of participants. However, these understandings were crucial in the recruitment process and enabled recruitment of a sufficient number of participants within a reasonable timeframe. These strategies may also be of use beyond the rural setting, with different communities including urban communities.
Keywords:	community-based intervention culturally appropriate gatekeepers randomised control trial recruitment rural dwelling older people trust
Additional Information:	
Question	Response
Please confirm that you have read and agree to our Publisher's Agreement that is available here	Yes
Have you submitted this manuscript elsewhere?	No

Has this manuscript already been published?	No
Do you have copyright for all the images, graphics and figures included with your submission?	No
What is the word count of your document including references but excluding the abstract?	3345
What is the word count of your document excluding both references and the abstract?	2339
Author Comments:	To: Nurse Researcher Dear Editors We would like to resubmit this manuscript for your kind review for publishing in the Nurse Researcher. The title of the article is strategies to enhance recruitment rural dwelling older people into community-based randomised controlled trials study. The document has been extensively edited and re-written where necessary to improve flow and improve clarity. We appreciate your effort and support for getting our article published in the highly accredited Nurse Researcher. Sincerely Yours Sakuntala Anuruang The Author

Introduction

Evidence is contingent upon well-conducted research studies which are inclusive and representative of the target population. Recruitment processes can be time consuming and challenging in a clinical research study (Gul & Ali 2010; Tramm, Daws & Schadewaldt 2013). Despite the challenges, an adequate sample size is crucial to randomised controlled trials (RCTs). The CONSORT (Consolidated Standards of Reporting Trials) statement should guide RCTs researchers to improve the quality of clinical research, especially the need to carefully describe sample selection, randomization and attrition (Schulz, Altman & Moher 2010). However, pragmatic recruitment strategies are often required with strategies that promote adherence to the study protocol.

Some population groups may present researchers with particular challenges. Older people tend to be underrepresented in research studies and the literature suggests that they are also more likely to withdraw (Crome et al. 2011; Mody et al. 2008). Indeed, many of the difficulties in the recruitment of older people into RCT studies have been documented (Dibartolo & McCrone 2003; Kolanowski et al. 2013; Mody et al. 2008). The ability of older people to participate in research may be complicated by multiple complex comorbid conditions; and conversely, this can also mean they are excluded from studies (Crome et al. 2011; Forster et al. 2010; Jitapunkul et al. 1999; Patel, Doku & Tennakoon 2003; Townsley, Selby & Siu 2005; Xuan 2011; Ylli 2010). The situation may be exacerbated by challenges in communication, cognitive impairment, mistrust of authoritative figures and reluctance to participate in clinical trials (Jacelon 2007; Kolanowski et al. 2013; McMurdo et al. 2011; Ridda et al. 2010).

Confirming that planned interventions are appropriate and acceptable to older people is important. Implicit in this statement is the need for improving engagement with a target population. This article aims to describe the experiences to improve the recruitment strategies of rural dwelling Thai older people into a clinical trial study. The results of this study may have implications for researchers working in other settings with similar characteristics and seeking to engage older people into clinical trials.

Recruitment of older people in clinical trials

A review of the literature identified influential factors affecting recruiting older people's participation into clinical trials studies. These are 1) personal participant factors, 2) protocol factors, and 3) researcher attributes. These factors are discussed below.

<u>Personal participant factors:</u>

The literature suggests that many who live in rural areas are willing to participate in research projects, even though those who are over 70 years old have high reported dropout rates (Warren-Findlow, Prohaska & Freedman 2003; Witham & McMurdo 2007). Participation rates and program attrition rates among older people may be influenced by personal characteristics, socioeconomic status as well as actual health condition, functional status, perception of health condition and the use of health care services (Patel, Doku & Tennakoon 2003; Witham & McMurdo 2007). Previous studies in Western countries have demonstrated that older people may themselves identify with a negative ageing stereotype, and declare themselves to be in poor health (Coudin & Alexopoulos 2010; Sindi et al. 2012). Chronic conditions may cause older people to feel uncomfortable or unwilling to participate in clinical research (Mody et al. 2008). Moreover, a lack of awareness of the existence of diseases can also influence agreement or refusal to participate in clinical research (Wilson & Rose 1998).

Protocol factors:

The research protocol is an important factor which can impact the decision of potential participants to participate in a research study. All randomised control trials should adhere to minimum reporting standards such as the CONSORT statement to improve congruence in reporting (Armstrong et al. 2008; Schulz, Altman & Moher 2010). Several studies mentioned many reasons for refusal to participate in or withdraw from research study, these are ambiguous information or instruction of the study protocol (Wilson & Rose 1998), a complex protocol that does not provide participants with confidence (Mody et al. 2008; Reed et al. 2013; Townsley, Selby & Siu 2005), invasive method (Warren-Findlow, Prohaska & Freedman 2003) and a lack of culturally appropriate intervention protocols (Ford et al. 2008). Showing cultural sensitivity through strategies such as culturally adapted interventions, having shared language and cultural background between the research team and the potential participants are all issues to carefully consider when recruiting and retaining participants in research studies (Gul & Ali 2010; Nary, Froehlich-Grobe & Aaronson 2011). Researchers need sociocultural-specific interventions to enhance the successful recruitment of research participants (Watson & Torgerson 2006). Implications for participants such as the need for travel to a specific research location for the proposes of participating in the study as a subject/participant is identified as one of the common barriers for the participations, and a key reason for older people refusal to engage in clinical research studies (Ford et al. 2008; Gonzalez, Gardner & Murasko 2007; Townsley, Selby & Siu 2005). Therefore, to enhance recruitment opportunities, the research setting and transportation provision needs to be considered and should also be mentioned in the information consent form.

<u>Researcher attributes:</u>

Several articles and systematic reviews have highlighted additional researcher attributes that can impact on the success of a clinical study, whilst always adhering to the ethical rules for research conduct, it is important to build trust with key people in the research environment or potential participants where appropriate (Bunn et al. 2008; Dibartolo & McCrone 2003; Forster et al. 2010; Gellad, Grenard & Marcum 2011; Harris & Dyson 2001; Jacelon 2007; Kolanowski et al. 2013; McMurdo et al. 2011; Mody et al. 2008; Ridda et al. 2010; Townsley, Selby & Siu 2005; Witham & McMurdo 2007). Researcher attributes such as general appearance, skills, and knowledge can affect any potential participants' decision and relate to the success of recruiting participants into a clinical study (Tait, Voepel-Lewis & Malviya 2003). One effective strategy to improve recruitment is the importance of the researcher establishing a good relationship with community leaders to ensure the study and its protocols are appropriate to the needs of that community (Dibartolo & McCrone 2003). In addition, the researchers or the clinical trials nurses availability to answer questions and visibility to the gatekeepers and potential participants are also important strategies to enhance trust and to create a positive impression (Jacelon 2007). Trust is another important factor in recruitment of potential participants. Studies illustrated that potential participants are willing to participate in the program when they feel trust in clinical trials recruitment nurse, researchers and the research itself (Gorelick et al. 1998; Shavers, Lynch & Burmeister 2002; Yancey, Ortega & Kumanyika 2006).

Engaging older individuals in clinical studies Thailand

A clinical trial study was developed grounded on evidence-based interventions with an emphasis on culturally appropriate methods to improve self-management of hypertension among rural dwelling older people in the Northeast region of Thailand (Anuruang et al. 2013). Specific variables under investigation were blood pressure measurements, waist circumference, sodium intake, adherence to appointment keeping, and improve medication adherence behaviours. The study involved group and individual activities delivered over a four week period, and data collection was conducted within the rural community in Thailand. Participants were recruited after receiving ethics approval from the relevant Human Research Ethics Committees.

 Participants recruited met specific criteria. Inclusion criteria required that participants be, rural dwelling older people aged 60 years and above with diagnosed hypertension, defined as systolic blood pressure equal to or higher than 140 mmHg and/or diastolic equal to or

higher than 90 mmHg. The potential participants were excluded if they had systolic blood pressure higher than 200 mmHg and/or diastolic blood pressure equal to or higher than 120 mmHg, and a documented history of cognitive impairment precluding consent, and/or unwillingness or inability to participate.

Following three months of recruitment, 156 Thai rural dwelling older people were enrolled into the study. Review of the factors that affected participants' recruitment, revealed three strategies that facilitated participant recruitment. These were: 1) understanding the culture of the research setting; 2) identifying the key gatekeepers in the setting; and 3) building trust with the key gatekeepers. These strategies are discussed below.

1. Understanding the nature of the research participants

A tailored, targeted and culturally appropriated intervention was developed. Given many intervention studies face a high rate of refusal, or high attrition, consideration of the factors that may affect an intervention program was essential. These factors can be communication issues (such as one way communication), the difficulty and complexity of research procedures, such as time requirements, procedural rigidity, inconvenient times and location, and provision of insufficient inaccessible information about the research study. These are the types of factors that can have a significant effect on participant engagement or attrition. These factors also can influence participants' feelings in terms of their inability, unwillingness, discomfort in enrolling, or ability to complete the intervention program of the research study (Gul & Ali 2010; Witham & McMurdo 2007). In this community-based RCT study, effective and clear communication was considered to be crucial to mitigate any potential issues. Furthermore, the communication in the program was two–way communication, designed to reinforce the potential benefits of increased self-efficacy that could assist these older people in this community to better manage their condition. In addition, the location and time requirements were carefully considered, with data-collection being conducted within a community-based clinic that was central for participants. A time commitment of two hours was required for the initial group activity, and later encounters were timed to be in accordance with the regular standing appointment dates each older person had at the community clinic.

2. Identifying the key gatekeepers in the setting

In this study, health care volunteer workers were one of the key gate keepers, they were a core component of the recruitment process. The health care workforce inclusive of volunteers facilitated entry of the research team into the community, which simplified the process required to identify and build relationships with potential key gatekeepers. Undoubtedly, identifying gatekeepers in community setting can improve opportunity to recruit potential

participants. In this Thai community, health care volunteer workers fundamentally help health care staff to promote, prevent, screen and recover the health of the local people. In this study, the local health ministry required that health care volunteer workers should meet the following criteria: 1) aged at least 18 years, 2) at least six months living in the community, 3) ability to read and write in official language, 4) a desire to help the public, 5) willingness to attend or being interested in the public health and to improve the community, 6) behaving in a moral framework, 7) gaining the trust and respecting of the people, 8) being healthy both physically and mentally, and 9) being a good role model in health behaviors. Some health care volunteer workers are leaders of their communities and some are respected persons who are well-known within that community. Several studies have also highlighted the efficacy of community health care volunteer workers or community leaders in achieving successful recruitment (Akhtar & Gladson 2013; Bower et al. 2009; Gul & Ali 2010; Jacelon 2007; Mody et al. 2008).

3. Building trust with the key gatekeepers

Trust development with key stakeholders is crucial for enhancing the recruitment rate, especially for an 'outsider' researcher (Blythe, Grabill & Riley 2008). Researchers should be knowledgeable about the culture of the community and routines to help them connect with the community (Kolanowski et al. 2013). Participation in formal and informal meetings is a strategy that has been used in several studies to increase understanding of the overall research project, enhance coordination with internal staff, and gain more opportunities to recruit potential participants (Jacelon 2007; Jancey et al. 2006; Kolanowski et al. 2013; Mody et al. 2008; Nary, Froehlich-Grobe & Aaronson 2011; Patel, Doku & Tennakoon 2003; Yancey, Ortega & Kumanyika 2006). Furthermore, enhancing positive attitudes to researcher is a crucial issue to improve participant recruitment (Bower et al. 2009) and also provide opportunities to efficiently identify potential eligible research study participants (McMurdo et al. 2011).

Even though, this study was limited in that it did not recruit a large number of participants. However, these understandings were crucial in the recruitment process and enabled recruitment of a sufficient number of participants within a reasonable timeframe. These strategies may also be of use beyond the rural setting, with different communities including urban communities.

Implications for research or practice

Previous studies identify the challenges associated with recruiting older people into clinical trial research studies, in particular rural dwelling older people (Forster et al. 2010; Kolanowski et al. 2013; Warren-Findlow, Prohaska & Freedman 2003). Although this is a challenging area that is multifaceted, it is also essential that researcher gain accurate data to represent this population group and their specific needs. Understanding culture aspects of a research setting and the nature of potential participant is essential for the research team and staff who will be recruiting participants. If the research team is considered an outsider this can be amplified and have an impact on effective recruitment of participants if there is not a clear protocol that takes into account the needs of the specific environment. To enhance opportunity in recruitment participants, therefore, the researchers should be considered to minimise burden from the research study and maximise more any benefit or convenience for attracting potential participants.

The researchers spent three months recruiting 156 Thai rural dwelling older people with hypertension into the community-based RCT. This paper has described strategies to enhance recruitment of rural dwelling older individuals into a clinical study. Experiences of participant recruitment are supported by literature that highlights the three influential factors that may influence the participation rates: personal participant factors, researcher attributes and protocol factors (Kolanowski et al. 2013; Reed et al. 2013).

The most important finding from the literature and the experiences in undertaking this study is the need to understand the nature of participants and the nature of the setting. Recruiting older people into clinical trial study can be challenging, especially rural dwelling older people. In this paper we have described three strategies to enhance recruitment of this population. These are 1) understanding the culture of the research setting, 2) identifying the key gatekeepers in the setting and 3) building trust with the key gatekeepers. The factors may provide guidance for further studies to recruit older people into clinical study.

References

Akhtar, S. & Gladson, B. 2013, 'Type 2 Diabetes Community Based Recruitment Strategies', *Applied Clinical Trials*, vol. 22, no. 6, pp. 38-43.

Anuruang, S., Hickman, L.D., Jackson, D., Dharmendra, T., Balen, J. & Davidson, P.M. 2013, 'Community-based interventions to promote management for older people: an integrative review', *Journal of clinical nursing*, vol. 23, no. 15-16, pp. 2110-20.

Bower, P., Wallace, P., Ward, E., Graffy, J., Miller, J., Delaney, B. & Kinmonth, A.L. 2009, 'Improving recruitment to health research in primary care', *Family practice*, vol. 26, no. 5, pp. 391-7.

Bunn, F., Dickinson, A., Barnett-Page, E., Mcinnes, E. & Horton, K. 2008, 'A systematic review of older people's perceptions of facilitators and barriers to participation in falls-prevention interventions', *Ageing and Society*, vol. 28, no. 4, pp. 449-72.

Coudin, G. & Alexopoulos, T. 2010, ''Help me! I'm old!' How negative aging stereotypes create dependency among older adults', *Aging & Mental Health*, vol. 14, no. 5, pp. 516-23.

Crome, P., Lally, P., Cherubini, A., Oristrell, J., Beswick, A.D., Mark Clarfield, A., Hertogh, C., Lesauskaite, V., Prada, G.I., Szczerbiñska, K., Eva, T., Sinclair-Cohen, u., Edbrooke, D. & Mills, G. 2011, 'Exclusion of Older People from Clinical Trials', *Drugs & Aging*, vol. 28, no. 8, pp. 667-77.

Dibartolo, M.C. & McCrone, S. 2003, 'Recruitment of rural community-dwelling older adults: barriers, challenges, and strategies', *Aging & Mental Health*, vol. 7, no. 2, p. 75.

Dodge, J.A., Clark, N.M., Janz, N.K., Lhang, J. & Schork, M.A. 1993, 'Nonparticipation of Older Adults in a Heart Disease Self-Management Project Factors Influencing Involvement', *Research on Aging*, vol. 15, no. 2, pp. 220-37.

Familoni, B.O., Ogun, S.A. & Aina, A.O. 2004, 'Knowledge and awareness of hypertension among patients with systemic hypertension', *Journal of the National Medical Association*, vol. 96, no. 5, p. 620.

Ford, J.G., Howerton, M.W., Lai, G.Y., Gary, T.L., Bolen, S., Gibbons, M.C., Tilburt, J., Baffi, C., Tanpitukpongse, T.P. & Wilson, R.F. 2008, 'Barriers to recruiting underrepresented populations to cancer clinical trials: a systematic review', *Cancer*, vol. 112, no. 2, pp. 228-42.

Forster, S.E., Jones, L., Saxton, J.M., Flower, D.J., Foulds, G., Powers, H.J., Parker, S.G., Pockley, A.G. & Williams, E.A. 2010, 'Recruiting older people to a randomised controlled dietary intervention trial - how hard can it be?', *BMC Medical Research Methodology*, vol. 10, pp. 17-23.

Gellad, W.F., Grenard, J.L. & Marcum, Z.A. 2011, 'A systematic review of barriers to medication adherence in the elderly: looking beyond cost and regimen complexity', *The American journal of geriatric pharmacotherapy*, vol. 9, no. 1, pp. 11-23.

Giang, K.W., Björck, L., Novak, M., Lappas, G., Wilhelmsen, L., Torén, K. & Rosengren, A. 2013, 'Stroke and coronary heart disease: predictive power of standard risk factors into old age long-term cumulative risk study among men in Gothenburg, Sweden', *European Heart Journal*.

Gonzalez, E.W., Gardner, E.M. & Murasko, D. 2007, 'RECRUITMENT AND RETENTION OF OLDER ADULTS IN INFLUENZA IMMUNIZATION STUDY', *Journal of Cultural Diversity*, vol. 14, no. 2, pp. 81-7.

Gorelick, P.B., Harris, Y., Burnett, B. & Bonecutter, F.J. 1998, 'The recruitment triangle: reasons why African Americans enroll, refuse to enroll, or voluntarily withdraw from a clinical trial. An interim report from the African-American Antiplatelet Stroke Prevention Study (AAASPS)', *Journal of the National Medical Association*, vol. 90, no. 3, p. 141.

Gul, R.B. & Ali, P.A. 2010, 'Clinical trials: the challenge of recruitment and retention of participants', *Journal of clinical nursing*, vol. 19, no. 1-2, pp. 227-33.

Harris, R. & Dyson, E. 2001, 'Recruitment of frail older people to research: lessons learnt through experience', *Journal of Advanced Nursing*, vol. 36, no. 5, pp. 643-51.

Jacelon, C. 2007, 'Older adults' participation in research', *Nurse researcher*, vol. 14, no. 4, p. 64.

Jancey, J., Howat, P., Lee, A., Clarke, A., Shilton, T., Fisher, J. & Iredell, H. 2006, 'Effective recruitment and retention of older adults in physical activity research: PALS study', *American Journal of Health Behavior*, vol. 30, no. 6, pp. 626-35.

Jitapunkul, S., Songkhla, M.N., Chayovan, N., Chirawatkul, A., Choprapawon, C., Kachondham, Y. & Buasai, S. 1999, 'A national survey of health-service use in Thai elders', *Age and ageing*, vol. 28, no. 1, pp. 67-71.

Kolanowski, A., Mulhall, P., Yevchak, A., Hill, N. & Fick, D. 2013, 'The Triple Challenge of Recruiting Older Adults With Dementia and High Medical Acuity in Skilled Nursing Facilities', *Journal of Nursing Scholarship*, vol. 45, no. 4, pp. 397-404.

Korhonen, P.E., Kivelä, S.-L., Kautiainen, H., Järvenpää, S. & Kantola, I. 2011, 'Health-related quality of life and awareness of hypertension', *Journal of hypertension*, vol. 29, no. 11, pp. 2070-4.

Levy, B.R. 2003, 'Mind matters: Cognitive and physical effects of aging self-stereotypes', *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, vol. 58, no. 4, pp. P203-P11.

McMurdo, M.E., Roberts, H., Parker, S., Wyatt, N., May, H., Goodman, C., Jackson, S., Gladman, J., O'Mahony, S. & Ali, K. 2011, 'Improving recruitment of older people to research through good practice', *Age and ageing*, vol. 40, no. 6, pp. 659-65.

Méndez-Chacón, E., Santamaría-Ulloa, C. & Rosero-Bixby, L. 2008, 'Factors associated with hypertension prevalence, unawareness and treatment among Costa Rican elderly', *BMC Public Health*, vol. 8, pp. 275-85.

Mody, L., Miller, D.K., McGloin, J.M., Freeman, M., Marcantonio, E.R., Magaziner, J. & Studenski, S. 2008, 'Recruitment and retention of older adults in aging research', *Journal of the American Geriatrics Society*, vol. 56, no. 12, pp. 2340-8.

Moore, J. 2005, 'Hypertension: catching the silent killer', *The Nurse Practitioner*, vol. 30, no. 10, pp. 16-35.

Nary, D.E., Froehlich-Grobe, K. & Aaronson, L. 2011, 'Recruitment issues in a randomized controlled exercise trial targeting wheelchair users', *Contemporary clinical trials*, vol. 32, no. 2, pp. 188-95.

Patel, M.X., Doku, V. & Tennakoon, L. 2003, 'Challenges in recruitment of research participants', *Advances in Psychiatric Treatment*, vol. 9, no. 3, pp. 229-38.

Provencher, V., Mortenson, W.B., Tanguay-Garneau, L., Bélanger, K. & Dagenais, M. 2014, 'Challenges and strategies pertaining to recruitment and retention of frail elderly in research studies: A systematic review', *Archives of gerontology and geriatrics*, vol. 59, no. 1, pp. 18-24.

Reed, R.L., Barton, C.A., Isherwood, L.M., Oliver Baxter, J.M. & Roeger, L. 2013, 'Recruitment for a clinical trial of chronic disease self-management for older adults with multimorbidity: a successful approach within general practice', *BMC Family Practice*, vol. 14, no. 1, pp. 125-31.

Ridda, I., MacIntyre, C., Lindley, R. & Tan, T. 2010, 'Difficulties in recruiting older people in clinical trials: an examination of barriers and solutions', *Vaccine*, vol. 28, no. 4, pp. 901-6.

Schulz, K.F., Altman, D.G. & Moher, D. 2010, 'CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials', *BMC medicine*, vol. 8, no. 1, p. 18.

Shavers, V.L., Lynch, C.F. & Burmeister, L.F. 2002, 'Racial differences in factors that influence the willingness to participate in medical research studies', *Annals of epidemiology*, vol. 12, no. 4, pp. 248-56.

Sindi, S., Juster, R.P., Wan, N., Nair, N.P.V., Ying Kin, N. & Lupien, S.J. 2012, 'Depressive symptoms, cortisol, and cognition during human aging: The role of negative aging perceptions', *Stress: The International Journal on the Biology of Stress*, vol. 15, no. 2, pp. 130-7.

Tait, A.R., Voepel-Lewis, T. & Malviya, S. 2003, 'Participation of children in clinical research: factors that influence a parent's decision to consent', *Anesthesiology*, vol. 99, no. 4, pp. 819-25.

Townsley, C.A., Selby, R. & Siu, L.L. 2005, 'Systematic review of barriers to the recruitment of older patients with cancer onto clinical trials', *Journal of Clinical Oncology*, vol. 23, no. 13, pp. 3112-24.

Tramm, R., Daws, K. & Schadewaldt, V. 2013, 'Clinical trial recruitment–a complex intervention?', *Journal of clinical nursing*, vol. 22, no. 17-18, pp. 2436-43.

Warren-Findlow, J., Prohaska, T.R. & Freedman, D. 2003, 'Challenges and opportunities in recruiting and retaining underrepresented populations into health promotion research', *The Gerontologist*, vol. 43, no. suppl 1, pp. 37-46.

Watson, J.M. & Torgerson, D.J. 2006, 'Increasing recruitment to randomised trials: a review of randomised controlled trials', *BMC medical research methodology*, vol. 6, no. 1, p. 34.

Wilson, K. & Rose, K. 1998, 'Patient recruitment and retention strategies in randomised controlled trials', *Nurse Researcher*, vol. 6, no. 1, pp. 35-46.

Witham, M.D. & McMurdo, M.E.T. 2007, 'How to Get Older People Included in Clinical Studies', *Drugs & Aging*, vol. 24, no. 3, pp. 187-96.

Xuan, C. 2011, 'Survey and Research on Physical Health Condition of Senior Citizens in Qingdao under the Social Background of Aging', *Asian Social Science*, vol. 7, no. 10, pp. 161-5.

Yancey, A.K., Ortega, A.N. & Kumanyika, S.K. 2006, 'Effective recruitment and retention of minority research participants', *Annu. Rev. Public Health*, vol. 27, pp. 1-28.

Ylli, A. 2010, 'Health and Social Conditions of Older People in Albania: Baseline Data from a National Survey', *Public Health Reviews (2107-6952)*, vol. 32, no. 2, pp. 549-60.