ผลของโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตใน ผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง

พันตำรวจโทหญิง สุขฤดี ธัชศฤงคารสกุล

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาพยาบาลศาสตรดุษฎีบัณฑิต
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ปีการศึกษา 2554

THE EFFECT OF SELF-MANAGEMENT PROGRAM ON BLOOD PRESSURE CONTROL IN HYPERTENSIVE PATIENTS AT RISK FOR STROKE

Police Lieutenant Colonel Sookruadee Thutsaringkarnsakul

A Dissertation Submitted in Partial Fulfillment of the Requirements

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สุขฤดี ธัชศฤงคารสกุล : ผลของโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง (THE EFFECT OF SELF-MANAGEMENT PROGRAM ON BLOOD PRESSURE CONTROL IN HYPERTENSIVE PATIENTS AT RISK FOR STROKE) อ. ที่ปรึกษาวิทยานิพนธ์หลัก: รศ. ร.ต.อ. หญิง ดร. ยุพิน อังสุโรจน์, อ. ที่ปรึกษาวิทยานิพนธ์ร่วม: ผศ.ดร. ชนกพร จิตปัญญา, 216 หน้า

การศึกษาวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาประสิทธิผลของโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง การวิจัยนี้เป็นแบบการทดลองมีกลุ่มควบคุมทดสอบก่อนและหลัง กลุ่มตัวอย่างเป็นผู้ป่วยที่ได้รับการวินิจฉัยโรคความดันโลหิตสูงและมีความเสี่ยงต่อโรคหลอดเลือดสมอง จำนวน 100 ราย แบ่งเป็นกลุ่มทดลองและกลุ่มควบคุมด้วยวิธีการสุ่มแบบเป็นระบบ จำนวนกลุ่มละ 50 ราย ผู้ป่วยในกลุ่มควบคุมได้รับการดูแลตามปกติ ผู้ป่วยในกลุ่มทดลองได้รับการดูแลตามปกติร่วมกับโปรแกรมการจัดการตนเองเป็นเวลา 3 เดือน โปรแกรมการจัดการตนเองถูกพัฒนาขึ้นจากแนวคิดการจัดการตนเองของ Kanfer และ Goelick (1991) โดยมุ่งเน้นให้ผู้ป่วยมีความสามารถในการจัดการพฤติกรรมสุขภาพเพื่อลดปัจจัยเสี่ยงของโรคหลอดเลือดสมอง ได้แก่ การจัดการด้านอาหาร การจัดการด้านการออกกำลังกาย และการจัดการด้านการรับประทานยาลดความดันโลหิตและองค์ความรู้ที่ได้จากการทบทวนวรรณกรรม การดำเนินการตามโปรแกรมนี้แบ่งออกเป็น 4 ระยะ ได้แก่ 1) ระยะการประเมินปัญหาและความต้องการ 2) ระยะเตรียมการ 3) ระยะปฏิบัติการและ 4) ระยะประเมินผลในการจัดการตนเอง การวิเคราะห์ข้อมูลใช้สถิติ independent *t*-test and paired *t*-test และ χ^2-test

ผลการศึกษาพบว่าภายหลังการเข้าร่วมโปรแกรมการจัดการตนเองผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมองในกลุ่มทดลองมีค่าเฉลี่ยของความดันโลหิตซีสโตลิกและความดันไดแอสโตลิกภายหลังการทดลอง 3 เดือน ต่ำกว่า และมีความแตกต่างระหว่างทั้งสองกลุ่มอย่างมีนัยสำคัญทางสถิติ ($p < 05$).

สัดส่วนของผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมองในกลุ่มทดลองสามารถควบคุมความดันโลหิตได้ตามเกณฑ์สูงกว่าผู้ป่วยในกลุ่มควบคุม ภายหลังการทดลอง 3 เดือน แตกต่างกันอย่างมีนัยสำคัญทางสถิติ ($p < 05$).

สาขาวิชา พยาบาลศาสตร์ ลายมือชื่อนิสิต.....

ปีการศึกษา 2554 ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.....

ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์ร่วม.....

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SOOKRUADEE THUTSARINGKARNSAKUL: THE EFFECT OF SELF-MANAGEMENT PROGRAM ON BLOOD PRESSURE CONTROL IN HYPERTENSIVE PATIENTS AT RISK FOR STROKE.
ADVISOR: ASSOC. PROF. POL. CAPT. YUPIN AUNGSUROCH, Ph.D.
CO-ADVISOR: ASST. PROF. CHANOKPORN JITPANYA, Ph.D.,
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Hypertension is an internationally common disease and inadequate control of blood pressure and poor follow-up is associated with a significant risk of stroke and avoidable vascular deaths. The purpose of this research was to examine the effect of self-management program on blood pressure control in hypertensive patients at risk for stroke.

This study was randomized controlled trial two groups pretest and posttest research design. The sample, 100 hypertensive patients at risk for stroke were randomly assigned to the experimental or control group using systemic randomization consisted of 50 participants in each group. The participants in the control group received usual care, whereas the participants in the experimental group received the self management program together with usual care within 12 weeks. The program was developed based on the self-management model of Kanfer and Goelick (1991). The self-management program emphasized patients' health behavior management including DASH diet management, exercise management, and medication taking management, and existing knowledge. The experimental group underwent 4 phases: 1) the problem and needs assessment, 2) the preparation phase, 3) the practice phase, and 4) the evaluation phase. Blood pressure was measured on both experimental and control groups at baseline and the 3rd month, analyzed by independent *t*-test and paired *t*-test and χ^2 were used for data analysis.

The result revealed that means of SBP and DBP of the experimental group at posttest were significantly lower than the pretest and the control group ($p<.05$).

The findings indicated that the self-management program effectively improved the blood pressure control. Therefore, implementing this program at general hospital is recommended.

Field of Study : Nursing Science ..... Student's Signature .....

Academic Year : 2011 ..... Advisor's Signature .....

Co-advisor's Signature .....

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CHAPTER I

INTRODUCTION

Background and significance of the Study

Hypertension is an internationally common disease (Arauz- Pacheco, Parrott, and Raskin, 2002) and is also an important health problem in terms of risk for stroke (Glynn et al., 2010). Moreover, hypertension is a powerful risk factor for cardiovascular morbidity and mortality that is reflected in a higher prevalence of hypertension (Balarajan, 1991; Bos et al., 2004). Data from the National Health and Nutrition Examination Survey (NHANES) 2005-2006 revealed that 29% of US adults, ≥ 18 years of age, are hypertensive. The prevalence of hypertension was nearly equal between men and women; 7% of adults had high blood pressure but had never been told that they had hypertension. Among hypertensive adults, 78% were aware of their condition, 68% were using antihypertensive medication, and 64% of those treated had their hypertension controlled (Roger et al., 2012) Further, inadequate control of hypertension has been suggested as one of the most likely causes of stroke (Cushman et al., 2008; Goldstein et al., 2006; Killilea, 2002; Howard et al., 2005).

The projected direct cost of hypertension for 2010-2030 was $ 69.9-200.3 billion in the U.S. (Heidenreich, 2011). Almost half of this expenditure can be attributed to drugs and other medical durables. Despite the enormous costs of managing hypertension, the rate of blood pressure (BP) control continues to be poor (Chobanian et al., 2003). Only 50% of patients with hypertension achieve their blood pressure goal (Bosworth et al., 2011). The proportion of persons with hypertension

that have their BP controlled (defined as systolic/diastolic BP<140/90 mm Hg) has increased dramatically during the past several decades (Agyemang et al., 2005). Community-based studies throughout the world have shown that blood pressure goals are achieved in only 25 to 40% of the patients that take antihypertensive drug treatment (Burnier, 2006; Chobanian, Bakris, and Black, 2003; Hyman and Pavlik, 2001; Smith et al., 1990) and this situation has remained unchanged for the last 30 years (Wilber and Barrow, 1972). The quality of care for hypertensive patients received from health professionals has a clear impact on their risks of suffering a cardiovascular event. Observational studies in the UK have shown that inadequate control of blood pressure and poor follow-up were associated with a significant risk of stroke and avoidable vascular deaths (Payne et al., 1993). Treating hypertension by lowering blood pressure has been associated with a 40 percent reduction in the risk of stroke (Roger et al., 2012).

In Thailand, the prevalence of hypertension was 390 per a population of 100,000 in 2003. The morbidity rate of hypertensive patients in 2004-2007 was reported to have risen of morbidity rate to 477.35, 544.08, 659.57, and 782.38 per 100,000 population, respectively (Wiboon Polprasert, 2006). In addition, the Ministry of Public Health (2006) reported that it occurred 23.3% in men and 20.9% in women and estimated that 30.2% of the population had inappropriate blood pressure control. Moreover, the group of treated and controlled hypertensive patients had only 8.6%, whereas the group of uncontrolled hypertensive patients had 15% (Wiboon Polprasert, 2006). If left untreated, such patients remain at increase risk for stroke (Kannel, 2000) and this often leads to lethal complications. Indeed, mortality from stroke doubles for every 20 mmHg increase in systolic blood pressure and 10 mmHg increase in diastolic

blood pressure (Lewington et al., 2002), with the former representing the more potent cardiovascular risk factor in the growing population of those aged ≥ 40 years (Franklin et al., 2001; Rothwell et al., 2005).

The classification of people at risk for stroke of the Bureau of Non-Communicable Disease, Department of Disease Control, Ministry of Public Health (Wiboon Polprasert, 2007) can be categorized into three levels: 1) patients at high risk, 2) patients at moderate high risk, and 3) patients at very high risk. Regarding the hypertensive patients at risk for stroke in this study, they can be described as the patients with hypertension who had criteria for stroke risk assessment at the first level; patients at high risk (Ministry of Public Health, 2007). This mean that people that have had 2 criteria or people that have had type 2 diabetes and are older than 10 years or people with a family history of ischemic stroke or premature coronary heart disease or controllable diabetes are the patients at high risk of stroke.

The blood pressure control among this group of patients also can cause problems. The major problem of hypertensive patients at risk for stroke is inadequate control of blood pressure. Previous studies have shown that the reasons for poor blood pressure control even in concern with health behaviors e.g., dietary of sodium and caloric intake, alcohol consumption, overweight, stress and non-adherence with prescribed medical regimen (Elmer et al., 2006; Gohar et al., 2008). These reasons caused by age, knowledge deficit, medication cost, complicated regimens, side effects, poor physician-patient communication, and lack of social support (Wang and Vasan, 2005). In addition, various studies have stated that outpatient clinics in hospitals continue to face this problem (Lawes et al., 2003; Peera Buranakitjaroen, 2006). Factors contributing to the failure to achieve goal blood pressure can be classified as

patient related, provider related, and system related. Regarding patient related factors comprised of medication side effects, drug regimen complexity, and unawareness of the need for long term therapy (Miller, 1997). Provider related factors underline on physician-linked issues that may involve timely access to relevant clinical data, and ignorance of evidence-based management guideline. The system-related factors included any attention or resources to design, implement, evaluate, and refine systems for guiding individual and groups of patients (Rudd et al., 2004). Nevertheless, some studies suggest that many healthcare providers, nurses included not delivering health promotion/disease prevention oriented care, lack of training or skills to provide or promote lifestyle change and lack of confidence in health care provider skills in usual care (Burke and Fair, 2003; Casey, 2007; Phillips et al., 2001). Moreover, blood pressure control in hypertensive patients at risk for stroke is complex and need more effective and specific strategies to facilitating their ability to control blood pressure and prevent complications in order to manage the symptoms, treatment, physical and psychological consequences and lifestyle changes (Bodenheimer et al., 2002; Department of Health England, 2005). Prior studies have not demonstrated that provider education by itself is an effective strategy (Glynn et al., 2010).

The National Statistical Office (2007) found that 59.9 percent of Thai persons did not exercise, 36.9 percent did not eat fresh vegetables and fruit, 12.6 percent still smoked, and 3 percent frequently drink alcohol. Various patient characteristics have been associated with inadequate control of blood pressure, including age (Ornstein et al., 2004; Hyman and Pavlik, 2001; Alexander et al., 1999; Lloyd-Jones et al, 1999), obesity (Lloyd-Jones et al., 1999), and lack of exercise (He and MacGregor, 2003). These factors increased susceptibility to hypertension and developing for stroke.

The primary goal of blood pressure control is to achieve the maximum reduction, in the long term, of total risk of cardiovascular morbidity and mortality. Although current blood pressure control rates, i.e. systolic blood pressure (SBP) < 140 mmHg, and diastolic blood pressure (DBP) < 90 mmHg, have been improved, they are generally far below the goal of treatment (Kearney et al., 2005). Despite effective available treatment strategies, the lack of adherence to and persistence in medication regimens and lifestyle changes have contributed to inadequate blood pressure control. It was found that more than 90 percent of patients that were treated with antihypertensive drugs still had elevated blood pressure (Lexin and Tiemin, 2006).

Numerous interventions have been developed with the goal of improving blood pressure among patients with hypertension. A Cochrane review included 38 randomized controlled trials (RCTs) of 58 various types of interventions (some tested in factorial trials) designed to improve patient blood pressure in ambulatory settings (Schroeder, Fahey, and Ebrahim, 2004). The quality of the studies was generally low due to inadequate allocation concealment, lack of blinding of outcome assessors, loss to follow-up, and the small number of participants in the trials. Moreover, educational strategy alone was largely ineffective in improving blood pressure.

Effective delivery of hypertension care in the hospital requires a rigorous approach in terms of identification, and follow-up and treatment with antihypertensive drugs (Davis and Ford, 2001). Meanwhile the mechanisms for achieving control by implementing interventions on diet, exercise, and medications are well known and accepted (Bosworth et al., 2010).

Based on the literature review regarding a survey of experimental and quasi-experimental nursing research among hypertensive patients in Thailand

(Netnarongporn, 2008), most of these studies were focused on changing patients' health behaviors. However, the variables on disease control conditions, such as blood pressure, were not significant. This might be due to the limited follow-up period. Although many studies have been found to have conducted many interventions aiming at achieving patients' good blood pressure control by integrating various methods to be implemented in their programs, few studies have actually focused on the design, implementation, and testing of interventions to improve adherence to self-management behaviors in hypertensive patients at risk for stroke.

One of the most widely-accepted programs is the self-management program known as the chronic disease self-management program, which people with chronic conditions can learn to take responsibility for day-to-day management of their diseases and lifestyle changes inherent in living with a long-term condition.

Self-management is widely recognized as an important method to maintain and improve clients' behaviors and health status (Dongbo et al., 2003). Self-management in relation to chronic disease has been defined as a cluster of daily behaviors that individuals perform in order to manage a chronic illness such as hypertension (Glasgow and Anderson, 1999). The concept of self-management in chronic disease does not solely address adherence to prescribed medical orders but rather is broader and encompasses the need to manage the chronic illness in the context of an individual's life.

One significant goal of self-management is to enhance the belief that one can perform effective self-management skills, which is known as self-efficacy (Holroyd and Creer, 1986). According to Bandura (1984), self-efficacy is one's belief in the ability to perform a desired health outcome and has been shown to be a significant

variable in improving health behaviors (Clark and Dodge, 1999; Moens, Grypdonck, and van der Bijl, 2001). Previous studies have reported that people with high self-efficacy achieved better outcomes than those that had less self-efficacy (Hickey, Owen, and Froman, 1992). Therefore, self-efficacy is advocated for self-management, particularly in controlling and improving health behaviors.

Self-management programs are aimed at helping patients with their medical management; in maintaining life roles; managing negative emotions such as fear and depression; providing the necessary knowledge, skills, and confidence to deal with disease-related problems; and preparing patients to collaborate with their health-care provider and health-care system (Lorig and Holman, 2003).

Over the past 10 years there has been growing interest in self-management training for arthritic patients and patients with chronic conditions, since it has been shown to reduce pain and disability, improve health status, and reduce health utilization and has been proven cost beneficial (Lorig et al., 1985). Though there is general agreement that self-management is required for control of chronic disease and for the prevention of disease complications, patients across chronic diseases generally do not adhere well to self-management recommendations. Further, barriers and adherence seem more problematic for lifestyle behaviors such as eating patterns, exercise, and smoking cessation than for medication adherence (Osterberg and Blaschke, 2005).

Self-management interventions have been seen to decrease systolic blood pressure by 5 mm Hg (effect size, -0.39 [CI, -0.51 to -0.28]) and to decrease diastolic blood pressure by 4.3 mm Hg (effect size, -0.51 [CI, -0.73 to -0.30]) (Chodosh et al., 2005). Self-management programs for hypertension also produce clinically-important

benefits. The elements of the programs most responsible for these benefits cannot be determined from existing data, and this inhibits specification of optimally-effective or cost-effective programs (Chodosh et al., 2005).

The literature reviewed from Thailand from 1980 to 2005 revealed that various interventions implemented in hospitals aimed at improving blood pressure control among adults and the elderly (Netnarongporn, 2008). Nurses had a crucial role in delivering effective intervention to improve patient outcomes (Bosworth et al., 2005) and blood pressure control, but these interventions require further evaluation (Glynn, Murphy, Smith, Schroeder and Fahey, 2010).

Managing chronic illness includes using guidelines, closer follow up, and patients need identification in terms of behavioral change. Delivering hypertension management requires a self-management intervention in order to achieve the desired goal of long-term blood pressure control. Thus, nurses should implement this kind of intervention with usual care service.

As mentioned above, there are few studies on this matter and the enhancement of the effectiveness of self-management programs on hypertensive patients at risk for stroke in the tertiary care setting is still limited. Therefore, this current research provides support for nursing research among hypertensive patients especially at risk for stroke, so this knowledge can be applied to nursing practice to ensure good control of patients' blood pressure.

Research questions

Does a self-management program improve blood pressure control in hypertensive patients at risk for stroke?

Research objectives

To examine the effect of a self-management program on blood pressure control among hypertensive patients at risk for stroke

Theoretical framework

The self-management concept will be used as conceptual framework in this study. Self-management refers to those processes internal or transactional that enable individuals to guide goal-directed activities over time and across settings. Self-management entails modulation of thought, affect, behavior, or attention through use of specific mechanisms and skills (Kanfer and Goelick, 1991). The processes of self-management include; 1) goal setting; 2) education and skill training; 3) action and self-regulation; 4) telephone follow-up; and 5) evaluation. These processes as well as skills required to execute given processes successfully that served as the framework.

1) Goal setting

Goal setting is a collaboration between patients and health care professionals after discussions, negotiations, and determination. It is the responsibility of people to perform whatever self-management skills are necessary to attain the goal. Individual must acquire knowledge of the health problem or condition that is to be prevented or managed and how risk factor or the disorder itself can be managed. Patient education provides the basis for self-management actions later performed by patients. After individuals have been provided with relevant health information and taught the skills they can perform to help prevent or control a disorder, specific individual goals must be identified that, if achieved, are likely to enhance the health and well-being of the individual.

2) Education and skills training

Patients must primarily acquire knowledge of their chronic illness and of "how" it can be managed. When patients learn about their illness and their roles in its management, specific goals can be set to improve their health and well-being. action and self-regulation

3) Action and self-regulation

Patients' action provide very important indications of self-management after making appropriate decisions. Self-regulation is composed of three aspects; self-monitoring, self-evaluation, and self-reinforcement.

Self-monitoring not only provides a foundation but is a necessary condition to determine if goals are to be achieved, as well as heightening self-awareness. Having the baseline awareness of the frequency of habits or symptom, it offers patients the opportunities to define measures in order to determine change and success.

Self-evaluation refers to how individuals evaluate their performance. Patients can then establish realistic expectations about their performance and assess whether they need more training. They also should acquire realistic expectations about the limitation of self-management in helping to control their condition. They should recognize that they are unlikely to be able to use their self-management strategies to control every aspect of either behavior or their illness that they wish to manage.

Self-reinforcement is evident whenever individuals set criteria of performance to achieve and proceed to the self-reward of attainment, exceeding their own expectations (Yates, 1986).

4) Telephone follow-up

Telephone follow-up is a part of social support that stimulates and follows up on the progression of self-management action affecting, for example, blood

pressure control. The telephone follow-up after the visit to medical outpatient clinic helps to enhance adherence to a healthy lifestyle, including eating the DASH diet and exercise.

5) Evaluation

The final step is the evaluation of the program and termination. In this way, patients can evaluate their self-management behaviors at home by using assessment form for self-monitoring.

The program is composed of four phases to improve blood pressure control. There are: 1) The Problem Assessment and Needs Identification Phase, 2) The Preparation for the Self-management Phase, 3) The Practice for the Self-Management Phase, and 4) The Evaluation for Self-management Phase. These are dynamic processes and details of these processes are shown in Figure 1.

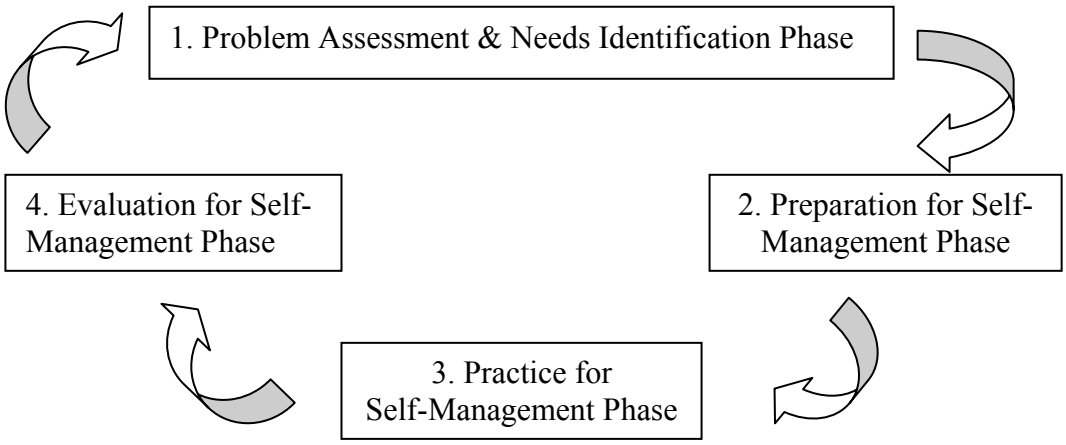

Figure 1 The Process of Self-Management Program

The first phase of the program will be initiated with problem assessment and identifying needs regarding blood pressure control that they experienced. This phase is an important step for the nurse to understand the patients' condition.

After the patient can clearly identify the problems and needs, establishing the goals to solve the problems, the nurse will proceed to prepare for self-management phase. The second phase involves enhancing the patients' knowledge and skills through hypertension and self-management skills.

In the practice for the self-management phase, the third step, the researcher should encourage the patients to practice while they live at home. This phase will implement the self-management process as follows:

1. Self-monitoring refers to the patient's observation and recording of blood pressure and health problems (diet, exercise, and medication taking behaviors) that influence their health. As for the management of health problems, setting goals may increase the likelihood of self-monitoring. Vigorous self-monitoring is an important aspect for individuals with certain health problems. Monitoring can be important in the management of health problems in which the individuals have control over some aspect of their illness.

2. Self-evaluation refers to obtaining information from self-monitoring, learning and practicing the management strategies to appropriate behaviors and goals. Self-evaluation can affect physical and psychological health. Individuals that appraised themselves as ineffective problem solvers were found to report more psychological distress. Evaluating is an important step in self-regulation. If hypertensive patients at risk for stroke supposed to monitor their diet, they must evaluate simultaneously whether their food intake is consistent with the treatment protocol. If there is a discrepancy between the actual food intake and the desired food intake, a change in eating habits should take place. Thus, it is important to make a change in behaviors upon the discovery of discrepancy between behaviors and goals.

3. Self-reinforcement refers to the reward that hypertensive patients at risk for stroke plan to give themselves, based on successful performance in managing behaviors or achieving goals. Reinforcement for taking medication has been shown to be effective in increasing in chronic disease individuals that engaged in self-reinforcement for adhering to the diet, exercise, and medication taking program. Reinforcement may involve an activity that can be engaged in or simply may be thinking positive thoughts.

The telephone follow-up is also in this phase. While patients practice self-management at their homes, they can evaluate why they cannot control their blood pressure and they use the self-management strategies at home by using an assessment form for self-monitoring. Then they discuss the situation with the researcher by telephone follow-up. If the desirable outcome cannot be achieved, then the whole processes will be solved. If the evaluation is positive, the patients will be reinforced to continue the self-management behaviors.

The final step is the evaluation for self-management phase which included outcome evaluation and terminate the program. The conceptual framework of this study is summarized in figure 2.

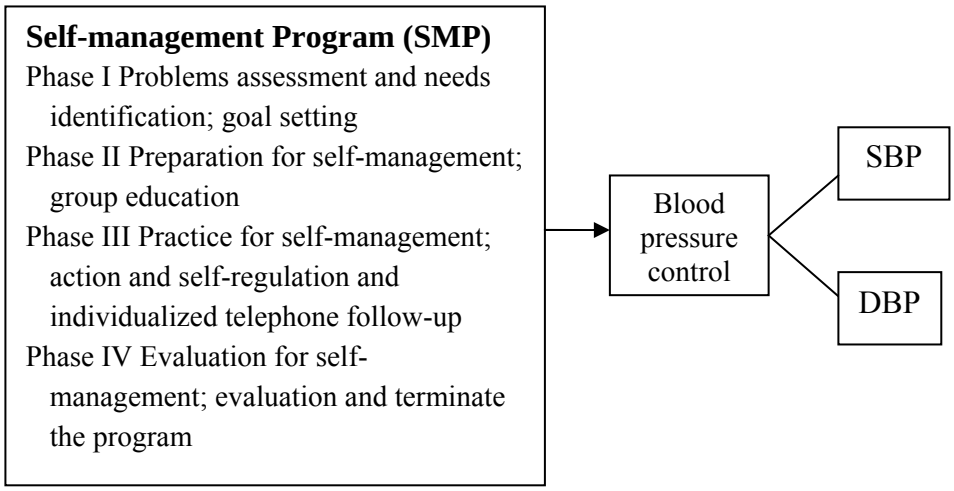

Figure 2 Conceptual framework of the effects of self-management program on blood pressure control in hypertensive patients at risk for stroke

Research hypotheses

1. Hypertensive patients at risk for stroke in the experimental group would have significant higher proportion of achieving blood pressure control than those in the control group at the third month after the interventions.

2. Hypertensive patients at risk for stroke in the experimental group would have significantly lower mean differences of SBP and DBP at the third months after the interventions and significantly lower mean differences of SBP and DBP at the third month than those in the control group.

According to the self-management model proposed by Clark and Starr (1994), self-management is based on three assumptions. The first assumption is that several factors predispose one to manage disease, predisposing factors are composed of intrapersonal factors, such as knowledge, attitude, feelings, and beliefs, and external resources such as social support, finance, role models, and technical advice and service. The second assumption is that patient management is the conscious use of strategies to manipulate situations to reduce the impact of disease on daily life. People

learn which strategies are effective or ineffective through a process of self-regulation. The third assumption is that illness management is not an end in itself but the means to other ends. These ends include improving physiologic status, reduction of symptoms and other clinical manifestations of disease, improving functioning, reducing side effects, using appropriate healthcare providers, and having better quality of life as perceived by the patients.

To develop self-management, a person needs to use self-regulation processes. The processes are described in several sources (Tobin et al., 1986; Kanfer, 1980; Kanfer, 1991; Karoly, 1993) with various terminologies.

Self-management presents five self-management skills (Kanfer and Goelick, 1991), composed of goal setting, education and skills training, action and self-regulation, telephone follow-up, and evaluation. Compliance or adherence has been an important component of education programs. Compliance is most simply getting patients do what they are told. Self-management education makes a difference in terms of changes in behavior, health status, and health care utilization.

Scope of the study

1. The study was conducted among hypertensive patients at risk for stroke that had attended the medical outpatient clinic at Police General Hospital in Bangkok. All participants in the control group and the intervention group received the usual care from the clinic. In addition, the participants in the intervention group attended the self-management program during the three-month period.

2. The independent variable was the self-management program. The dependent variable was blood pressure control.

Operational definition

Self-management program (SMP) is defined as a nursing intervention that includes the process of self-control and monitoring of changed behavior. The program was developed to improve the cognitive process and skill abilities in hypertensive patients at risk for stroke. The self-management program composed of four phases: phase 1; the problem assessment and needs identification, phase 2; preparation for self-management, phase 3; the practice for self-management, phase 4; the evaluation for self-management. Additionally, this program included five processes. Each process consisted of goal setting, education and skills training, action and self-regulation, telephone follow-up, and evaluation.

The patients in this program learned to direct and control their own behaviors in both their cognitive domain and skills training.

1) Goal setting is the process to establish a set of criteria for developing goals and measuring success. The criteria for measuring successful behavior or activities should be set as the goals of the individuals. This will reduce unclear standards, or conflicting that lead to less effective self-management (Yates, 1986). Establishment of criteria and individual goal setting should be shaped only after careful preparation.

2) Education and skills training is the process whereby patients must primarily acquire knowledge of their chronic illness and of "how" it can be managed. When patients learn about their illness and their roles in its management, specific goals can be set to improve their health and well-being. Individuals should take full responsibility to perform whatever self-management skills will help them to attain theirs goals, whereas health care providers should strictly track patients' behavior (Creer and Halroyd, 1997).

3) Action and self-regulation are the processes in which patients' actions provides a very important indication of self-management after making appropriate decisions. These actions involve the performance of self-management strategies to control chronic illness or a health-related condition. Self-regulation is composed of three aspects; self-monitoring, self-evaluation, and self-reinforcement.

4) Telephone follow-up is a part of social support that stimulates and follows up on the progression of self-management action affecting blood pressure control. The telephone follow-up after the visit to medical outpatient clinic helped to enhance adherence to a healthy lifestyle, including eating the DASH diet, exercise, and, medication taking.

Finally, 5) evaluation refers to how individuals evaluate their performance (Bandura, 1986). This step is included the outcome evaluation and terminatation the program.

Blood pressure control is defined as the blood pressure value of each patient that was measured and recorded in the medical record. The criterion of good blood pressure control based on JNC-7 guideline is to keep systolic blood pressure ≤140 mmHg and diastolic blood pressure ≤ 90 mmHg in general hypertension, for diabetic or chronic kidney disease of blood pressure less than 130/80 mmHg. Blood pressure was measured in millimeters (mm Hg) by using an automatic blood pressure monitor device and each person is measured on the both arms after he or she has rested for at least 5 minutes in accordance with the standardized protocol of the JNC-7 guidelines using an automatic Omron calibrated cuff.

Conventional care is defined as the usual nursing care normally providing by professional nurse to hypertensive patients at risk for stroke at medical outpatient

clinic. The conventional care included monthly follow-up appointment and given individualized health information by professional nurse.

Expected benefit

1. Hypertensive patients at risk for stroke had better management in appropriate dietary, exercise, and medication taking by their own care through monitoring health behaviors.

2. Developing a self-management program to improve blood pressure control in hypertensive patients at risk for stroke.

3. Integrating successful strategies into nursing practice guidelines by using knowledge from this study.

CHEPTER II

LITERATURE REVIEW

In order to develop the self-management program and examine the effects of this program on blood pressure control in hypertensive patients at risk for stroke, this chapter provides an integrative research review of empirical finding with the state of the summarization that related to the concepts of interest. The literature reviews are included as the following;

1. People with Hypertension
    - 1.1 Definition of blood pressure
    - 1.2 Definition of hypertension
    - 1.3 Pathophysiology of hypertension
    - 1.4 Complications of hypertension
    - 1.5 Stroke risk factor
    - 1.6 Hypertensive as a significant stroke risk factor
    - 1.7 Hypertensive patients at risk for stroke
    - 1.8 Treatment of hypertension
    - 1.9 Goal of therapy
2. Blood pressure control
    - 2.1 Definition of blood pressure control
    - 2.2 Problems with blood pressure control
    - 2.3 Literature Reviews of blood pressure control
3. Measurement of blood pressure
4. Self-management model

4.1 Definition of self-management

4.2 Theoretical underpinning self-management model

4.3 Kanfer and Goelick-Buy's self-management model

4.4 Self-management intervention in chronic patients

4.5 Self-management intervention for improving blood pressure control

5. Hypertensive self-management program

5.1 Hypertensive self-management researches

5.2 Telephone follow-up

6. Developing self-management program on blood pressure control in hypertensive patients at risk for stroke

1. People with Hypertension

Hypertension is a chronic disease that is incurable, and has a high morbidity rate. It is a health problem leading to death and deformity in patients who are unable to control their high blood pressure. Hypertension is sometimes called the silent disease, because at the early stage of the disease it is asymptomatic until complication are involved.

1.1 Definition of blood pressure

Blood pressure is defined as the pressure of the circulating blood against the wall of the blood; results from the systole of the left ventricle of the heart. Blood pressure is not always consistent. Blood pressure can increase sometimes but it will become to normal level. There are two kinds of blood pressure as follow:

1.1.1 The systolic pressure results from contraction of the left

ventricle of the heart, forcing blood into the aorta and out into its branches that form the systemic arterial circulation. The pressure wave of this contraction is measured peripherally.

1.1.2 The diastolic pressure results from relaxation of the left ventricle of the heart, and the pressure diminishes to a level sustained by the residual pressure retained by the elasticity of the arterial system.

1.2 Definition of Hypertension

Blood pressure is a continuous and variable parameter, and whatever number or numbers might be used as a "threshold value" for a diagnosis of hypertension are arbitrary (Lewington, Clarke, Qizilbash, 2002). In the US, the most recent national guidelines promulgated by the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) have simplified the classification of hypertension and related conditions (Table 1). The four categories of blood pressure ("normal, pre-hypertension, Stage 1 hypertension, and Stage 2 hypertension") are associated with progressively increasing CVD risk, which is essentially independent of any other risk factor (including age). Traditionally, the diagnosis of hypertension is based on properly measured office BP readings, although home and ambulatory measurements have similar, but lower, threshold values (discussed in detail below) (Chobanian, Bakris, Black, 2003).

Table 1 "Traditional" cut points of blood pressure for hypertension and its related diagnoses*

Condition	Systolic blood pressure (mm Hg)		Diastolic blood pressure (mm Hg)
Normal	≤120	and	<80
Pre-hypertension	120–139	or	80–89
Stage 1 hypertension	140–159	or	90–99
Stage 2 hypertension	≥160	or	≥100

*If the systolic and diastolic blood pressures fall into two different diagnostic categories, the higher category is used (eg, 162/92 mm Hg is stage 2 hypertension; 122/72 mm Hg is pre-hypertension). These definitions are those of the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7). (Chobanian, Bakris, Black et al., 2003).

Although home or ambulatory measurements are sometimes useful, it is not routinely necessary to use these techniques to diagnose most individuals, for which office readings remain the standard. In certain situations, especially when an individual claims to have multiple "normal" readings outside the physician's office, it may be reasonable to rely more on out-of-office measurements (Pickering et al., 2005).

Hypertension was labeled in those patients who had a previous history of hypertension and were not lifestyle modification or antihypertensive drugs, or those with records of SBP > 140 mm Hg and DBP of > 90 mm Hg (Peera Buranakitjaroen, 2006).

Hypertension was defined as having high BP or using BP lowering medication during the previous two weeks (Porapakkham, Pattaraarchachai, and Aekplakorn, 2008).

1.3 Types of Hypertension

Hypertension can be categorized into two types according to its causes: primary and secondary hypertension (JNC-7, 2003).

1.3.1 Primary or Essential Hypertension

Approximately 90% of hypertension results from an unknown cause (Beare and Myers, 1990, cited in Hanucharurnkul and Malatham, 2002: 134). Although the causes of essential hypertension are largely unknown, several constitutional factors have been implicated as contributing to its development, such as genetic factors, excessive intake of sodium, abnormal renin secretion, thickened blood vessel wall, hyperinsulinemia, inadequate vasodilatation substance, congenital abnormality of blood vessels, obesity, and increased vascular growth factor (Oparil, 1992 cited in Hanucharurnkul and Malatham, 2002: 134). Moreover, this type of hypertension is also associated with many risk factors including age, race, stress, occupation, and lifestyle (Tanchai, 2004: 166-168). These factors affect the blood pressure level by increasing cardiac output (CO) and/or peripheral resistance; therefore, the blood pressure level increases because blood pressure (BP) = cardiac output (CO) × peripheral resistance (PR) (Kaplan, 2002: 63).

1.3.2 Secondary Hypertension

Only 10% of hypertensive patients are classified as secondary hypertension. Among the most common causes of secondary hypertension are kidney disease, such as nephritis, diabetic nephropathy, Systemic Lupus Erythematosus (SLE), and nephrolithiasis. Abnormal endocrine system also plays an important role in the pathogenesis of this defect such as parathyroid diseases (e.g. hyperparathyroidism and acromegaly). Furthermore, drug and its activity such as antidepressant, asthmatic

drug, and contraceptive are believed to contribute to this disease. However, the effect of contraceptive is not consistent because it may cause hypertension in some women but not in others. Other causes of secondary hypertension are abnormality of the nervous system, such as anxiety and increased intracranial pressure, and pregnancy (Hanucharurnkul and Malatham, 2002: 132-134).

1.4 Pathophysiology of hypertension

The pathogenesis of essential hypertension is multifactorial and highly complex. Multiple factors modulate the blood pressure (BP) for adequate tissue perfusion and include humoral mediators, vascular reactivity, circulating blood volume, vascular caliber, blood viscosity, cardiac output, blood vessel elasticity, and neural stimulation. A possible pathogenesis of essential hypertension has been proposed in which multiple factors, including genetic predisposition, excess dietary salt intake, and adrenergic tone, may interact to produce hypertension. Although genetics appears to contribute to essential hypertension, the exact mechanism has not been established.

The natural history of essential hypertension evolves from occasional to established hypertension. After a long invariable asymptomatic period, persistent hypertension develops into complicated hypertension, in which target organ damage to the aorta and small arteries, heart, kidneys, retina, and central nervous system is evident. The progression begins with pre-hypertension in persons aged 10-30 years (by increased cardiac output) to early hypertension in persons aged 20-40 years (in which increased peripheral resistance is prominent) to established hypertension in persons aged 30-50 years, and, finally, to complicated hypertension in persons aged 40-60 years.

One mechanism of hypertension has been described as high-output hypertension. High-output hypertension results from decreased peripheral vascular resistance and concomitant cardiac stimulation by adrenergic hyperactivity and altered calcium homeostasis. A second mechanism manifests with normal or reduced cardiac output and elevated systemic vascular resistance due to increased vaso-reactivity. Another (and overlapping) mechanism is increased salt and water re-absorption (salt sensitivity) by the kidney, which increases circulating blood volume.

1.5 Complication of hypertension

Complications of hypertension, which deteriorated the target organ, are a consequence from degenerative change of vascular that affects several organs such as heart, brain, and renal. Patients who are uncontrolled hypertension and nonadherence of antihypertensive have risk to these complications. Uncontrolled hypertension and nonadherence of antihypertensive lead to complications as follows:

1. Heart failure, myocardial ischemia, and myocardial infarction, are usually occurred complications of hypertension. Hypertension precedes the development of heart failure in approximately 90% of patients and makes left ventricular work hard by increasing the resistance in the vascular. In the first stage, the heart is hypertrophic and this leads to an increase in left ventricular diameter. In the long term, the myocardium will lose flexibility, which causes the expansion of the left ventricular, and becomes dysfunctional. The myocardium will finally be dilated and chronic heart failure occurs at this stage. This is one of the major causes of mortality and high incidence: (JNC-7, 2003)

2. Stroke, chronic increased vascular of brain’s blood vessel resistance,

leads to aneurysm at the wall of the vascular causing the vascular to lose its flexibility.

When blood pressure increases, aneurysm may break out. Intracerebral hemorrhage is a high incidence in the western countries and is associated with high blood pressure level which causes mortality unless the patients have immediate treatment

3. Renal failure, is proportional to blood pressure level and the rate of glomorulus filter rate (GFR) deterioration. GFR can accelerate to 4 to 8 ml/min per year if systolic blood pressure remains uncontrolled. Uncontrolled blood pressure induced arteriosclerosis including the renal artery leading to the failure of kidney function which causes of uremia. Urea retention is the most poisonous to the body. If uremia is severe, the patient will lose consciousness and die: (JNC-7, 2003).

4. Vascular: hypertension causes embolism, thrombosis or hemorrhage. The presence of plaques leads to ineffective blood circulation leading to lack of blood in the same organ. Eventually, these result in organ dysfunction. The other high-risk organs are the heart, brain and kidney.

5. Blind: increase in the thickening of retinal arteries may cause the vascular break out. Blood leaks out and attacks optic nerves. These may cause impaired vision and finally blindness.

1.6 Hypertensive as a significant stroke risk factor

Hypertension is a major risk factor for the development of stroke, congestive heart failure, coronary heart disease, peripheral vascular disease and renal failure. The risk to develop these conditions is increased proportional to the increase in the level of blood pressure (Wolf, 1991). Cardiovascular diseases are the leading cause of death

and a major cause of hospitalization in Canada (Heart and Stroke Foundation of Canada, 2003; Manuel, 2003). Adequate treatment and control of hypertension in individuals over 60 is associated with a significant reduction in strokes and cardiovascular events. It is estimated that treating blood pressure to the target will result in a 36% reduction in the risk of stroke and 25% reduction in the risk of coronary events (Ezzati, 2003; Moser, 1998; Staessen, 1997). The most recent and convincing evidence regarding the benefits of blood pressure reduction, particularly in very old individuals, was made public in August, 2007 by United Kingdom researchers who led an international trial of drugs to lower blood pressure in individuals over 80 years of age. The HYVET trial involving 3,845 patients showed significant reduction in strokes and heart-related deaths in treated patients compared to controls (Backett, 2008).

1.7 Hypertensive patients at risk for stroke

The hypertensive patients at risk for stroke were described in various dimensions. Some authors scoped this population as who were hypertension and had some risk factors e.g. diabetes mellitus, heart disease, lipid disorder, obesity, and smoking up to each authors use which guideline to classification on their population., Regarding the hypertensive patients at risk for stroke in the present study were named as the patients with hypertension had criteria of stroke risk assessment in the first level; patients at high risk (Wiboon, 2007). The classification of people at risk for stroke of the Bureau of non-communicable disease, Department of Disease Control, Ministry of Public Health (Wiboon, 2007) was categorized into three levels:

1) patients at high risk, 2) patients at moderate high risk, and 3) patients at very high risk. The explanation of these three levels was in the following in table 2.

Table 2 The Classification of People at Risk for Stroke (Wiboon, 2007)

Level of risk for stroke	Criteria
Patients at very high risk (third level)	-who have had more than 5 criteria or -people who have had a previous cardiovascular event or -people with diabetes and overt diabetic nephropathy or -people with certain genetic lipid disorders (FH, FDB, FCH)
Patients at moderate high risk (second level)	-who have had 3-5 criteria or -blood pressure consistently equal or greater than 170/100 mmHg twice time of coming to treatment or -cholesterol equal or greater than 309 mg%
Patients at high risk (first level)	-who have had 2 criteria or -people who have had type2 diabetes for more than 10 years or -people with a family history of ischemic stroke or premature coronary heart disease or controllable diabetes

(These people will have one or more of the following risk factors)

Criteria for risk assessment

1. People with a family history of premature coronary heart disease or ischemic stroke in a first-degree male relative before the age of 55 years or a first-degree female relative before the age of 65 years.
2. Personal history of heart disease
3. Personal history of ischemic stroke
4. Personal history of current or recent smoking

5. Personal history of hypertension
6. Personal history of diabetes
7. Personal history of lipid disorder
8. Personal history of obesity

1.8 Treatment of hypertension

Hypertension can be prevented and treated with lifestyle modification and pharmacological treatment. High blood pressure can be controlled to the safety level to achieve goal of hypertension by lifestyle modification alone or with pharmacological treatment.

1.8.1 Pharmacological Treatment

When used pharmacological treatment, antihypertensive drugs will be used as a sequence – step by step. Firstly, if there is no indication of specific drug need (such as heart failure, diabetes mellitus, and renal disease), diuretic drug is the first drug chosen for hypertensive patients stage I as monotherapy. Combined antihypertensive drugs are recommended for hypertensive patients stage II, if there is no indication of specific drug need: diuretic drug with other drug groups is habitually used as the first choice of drug. Secondly, if the first drug group is no effective for control blood pressure in normal level, adding other antihypertensive drug groups or adding higher dosage as hypertensive patient can tolerate (Chobanian et al., 2003). The major classes of antihypertensive agents are diuretics, β-blocking agents, calcium antagonists and angiotensin converting enzyme (ACE) inhibitors. The other classes include α1- receptor antagonists, peripheral adrenergic neuronal inhibitors, central α2-adrenergic agonists and direct vasodilators.

1.8.2 Non-pharmacological treatment

The Seven Report of Joint Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure of the National Institutes of Health (JNC-7, 2003) recommends that individuals who have normal (high) blood pressure or nearly hypertensive or the blood pressure no higher than 140/90 mmHg should use nonpharmacological treatment or lifestyle modification until pharmacological treatment becomes necessary. Non-pharmacological treatment or lifestyle modification includes dietary behavior modifications, exercise, weight control, and stress management.

Findings from numerous studies in the literature demonstrate that a variety of nonpharmacologic interventions are successful in controlling hypertension. Most interventions involve lifestyle modifications, such as adopting a healthy diet, increasing physical activities, weight reduction, and limiting alcohol consumption. Other nonpharmacologic interventions may also include health education programs, unit-of-use drug packaging, aromatherapy, and self-measurement of blood pressure.

The Dietary Approaches to Stop Hypertension (DASH)

The Dietary Approaches to Stop Hypertension eating plan. In 1993, a trial for the Dietary Approaches to Stop Hypertension (DASH) program was initiated to assess the effects of the eating plan on reduction of blood pressure (Craddick et al., 2003). The DASH eating plan focuses on fruits, vegetables, and low-fat dairy products without a content of saturated fat. Based on empirical evidence, the DASH eating plan causes a reduction of SBP by 8–14 mmHg (Chobanian et al., 2003). In a study by Azadbakht, Mirmiran, Esmaillzadeh, Azizi, and Azizi (2005), participants in a DASH group ate high fiber diets and low fat foods such vegetables, yogurt, low-fat milk, and whole grains.

Each day, participants received calories lower than their caloric needs, about 500 kcal, and 2,400 mg of sodium. They received higher amounts of calcium, potassium, and magnesium than a regular meal provides. In the study‘s results, participants had the reduction of SBP (–12 and –11mmHg) and DBP (–6 and –7mmHg), increasing HDL by 7 and 10 mg/dl, decreasing triglyceride by 14 and 18 mg/dl, the reduction of blood glucose by 8 and 15 mg/dl, and weight lost about 15 and 16 kg. The PREMIER clinical trial conducted the DASH diet as an intervention. Participants who attended the DASH diet intervention aimed for an intake of 9–12 servings of fruits and vegetables per day and 2–3 servings of low-fat dairy products per day. They also reduced 7% of energy from their intake of saturated fat and 25% of energy from their intake of total fat. The participants received instruction and counseling on the DASH diet. Their intake of the eating plan program was recorded daily. The participants also had four individual counseling sessions and 14 group meetings during the trial‘s initial 6-month period. After following the initial treatment, the participants’ mean (SD) of SBP/DBP was reduced by 11.1 (9.9)/6.4(6.8) mm Hg from baseline (Appel et al., 2003).

The subsequent trial conducted by Craddick et al. (2003) used the DASH dietary pattern to reduce the participants‘ high blood pressure. The participants‘ intake of the DASH diet was higher than the average intake of the U.S. population. Because the DASH diet contains fruits, vegetables, and low-fat dairy products, the dietary pattern was effective in reducing the participants‘ blood pressure (11.4/5.5 mmHg), especially in patients with Stage 1 hypertension. Furthermore, the DASH diet in Craddick et al.‘s study was combined with three sodium levels. The highest level of sodium intake was greater than the average U.S. consumption. The

intermediate level of sodium intake was equal to the upper limit of U.S. recommendations. The lowest sodium intake was a level beneficial for reducing blood pressure. The findings showed that the participants‘ blood pressure decreased after eating the DASH diet with each of the three sodium levels. The DASH diet consumption and the lowest level of sodium intake were the most effective in reducing the participants‘ high blood pressure. Sacks et al. (2001) tested the effectiveness of combining a DASH diet with a sodium control diet to reduce blood pressure. Some participant groups consumed a DASH diet with three different levels of sodium intake: 150 mmol per day in the highest level, 100 mmol per day in the medium level, and 50 mmol per day in the lowest level. The consumption of a DASH diet with the lowest level of sodium was effective in reducing the SBP in hypertensive participants (–11.5 mmHg) and in participants without hypertension (7.1 mmHg). The SBP and DBP levels of the participants who consumed the low-sodium DASH diet were lower than the participants who had only a DASH diet or only a sodium reduction.

Dietary sodium. According to the JNC 7 report, hypertensive patients' daily intake should contain less than 100 mmol of dietary sodium, 6 gram of sodium chloride, or 12.4 gram of sodium. This recommended dietary sodium restriction can decrease SBP by 2–8 mmHg among hypertensive patients (Chobanian, et al., 2003). In a trial study on the prevention of hypertension, researchers recruited overweight adults to attend a comprehensive education and counseling session. The researchers advised how to condense sodium consumption for the participants. The incidence of hypertension among the participants was reduced 18% ($p < 0.048$) when they participated in the program. The reduction of their SBP was statistically significant

(2.9 mmHg at 6 months, 2.0 mmHg at 18 months, and 1.3 mmHg at 36 months), after they were compared with overweight adults who received usual care (Kumanyika et al., 2005). He, Whelton, Appel, Charleston, and Klag (2000) found that sodium reduction affected the long-term incidence of hypertension among adults aged 30 to 54 years old. Over the 7 years of follow-up, the incidence of hypertension in the control group (32.9%) was higher than the sodium-reduction group (22.4%). After adjusting for some variables such as baseline physical activity, knowledge background, body weight, SBP, and the value of sodium excretion in urinary, the sodium-reduction group had reduction of their blood pressure when they were compared with their control groups.

Additional studies have further demonstrated the effectiveness of reducing sodium intake as a means to control high blood pressure, especially among older adults. In a randomized controlled trial, nutritionists advised older adults aged 60 to 80 years and provided core knowledge and behavior skills necessary to achieve sodium reduction. The nutritionists assisted the participants to resolve problems during changing behaviors and helped them to prevent relapse. The study‘s findings presented that the reduction of sodium intake allowed the participants to stop using antihypertensive drugs by 92.6%.

Also, their SBP and DBP levels were less than the baseline by 3 mm Hg and 2 mm Hg, respectively (Whelton et al., 1998). In a separate study involving older adults with systolic hypertension, a dietary sodium intake of 57 mmol/d reduced SBP by 12 mm Hg (Gates, Tanaka, Hiatt, & Seal, 2004).

Exercise

Patients with high blood pressure should participate in exercise for at

least 30 minutes each day. Based on strong evidence, physical activity can decrease SBP by 4–9 mmHg (Chobanian et al., 2003). Exercise used to reduce blood pressure are aerobic exercise, yoga, tai chi, and brisk walking (Khui-apai, 2005; McCaffrey, Ruknui, Hatthakit, and Kasetsomboon, 2005; Thuree, 2004; Whelton, Chin, Xin, and He, 2003; Young, Appel, Jee, and Miller, 1999). In a randomized controlled trial, Young et al. (1999) examined the effects of an aerobic exercise program on the reduction of blood pressure. The intensity of aerobic exercise was set at moderate-intensity physical activity, and the pattern of exercise started with warm-up exercises in the form of walking, low-impact aerobic dance, and cool-down exercises. The duration of aerobic exercise began at 20 minutes and gradually expanded to 40 minutes. The intervention reduced the study participants' mean values of SBP by 8.4 mm Hg and their mean values of DBP by 3.2 mm Hg.

The results of Young et al.'s study supported earlier findings from a meta-analysis of randomized, controlled trials. Whelton et al. (2002) reviewed 51 trials that employed aerobic exercise programs to reduce high blood pressure. The length of the exercise programs varied from 3 weeks to 2 years. Most of the programs used the interventions for 12 weeks. Whelton et al.(2002) reported that, after taking part in the aerobic exercise programs, the participants' mean values of SBP and DBP were reduced by 3.84 mm Hg and 2.58 mm Hg, respectively.

Furthermore, Young et al. (1999) included tai chi, an ancient Chinese exercise, in their intervention. Tai chi is made up of slow, smooth, and continuous movements, along with frequent deep breathing and changing of direction that help control balance of movement. The findings from Young et al.'s study showed that tai chi reduced the mean values of SBP and DBP (-7.0 mm Hg and -2.4 mm Hg,

respectively). Khui-apai (2005) also recommended that tai chi should be performed about 60 minutes per session. In a week, participants should perform tai chi three times, and this activity should continue for 8 weeks. Based on this recommended program, Khui-apai reported that the SPB and DBP in an experimental group of participants who performed tai chi exercise were statistically and significantly lower than before the participants performed the exercise program ($p < .001$).

Brisk walking is categorized as a moderately intense physical activity and is the most common aerobic training modality used in cardiac rehabilitation. Brisk walking is beneficial when performed regularly at least 30 minutes on most or every day (American Heart Assocation, 2009). A few Thai researchers have investigated brisk walking as an antihypertensive intervention. For example, Thuree (2004) studied the application of a brisk-walking intervention to decrease values of high blood pressure among hypertensive patients in Thailand. For 6 weeks, study participants walked between 20 and 40 minutes at least three days per week. At the last week of program, the participants in the experimental group had the significant reduction of their mean blood pressure when the mean blood pressure was compared with their baseline. Wongsapan (2006) reported that a walking program for Thai patients with hypertension improved participants' perceptions about self-care behavior. In a study involving another Asian population, Nemoto, Gen-no, Masuki, Okazaki, and Nose (2007) developed a high-intensity interval walking program. The researchers conducted the intervention to reduce blood pressure in older people in Japan. The training program not only reduced the participants' SBP levels but also increased their physical capacities such as higher isometric knee flexion, greater isometric knee extension, enhancing capacity for walking, and cycling.

Weight loss is modified as a reducing blood pressure intervention. Several guidelines recommend using weight loss as a standard nonpharmacologic intervention to prevent and manage hypertension. A reduction of 20 lbs may decrease SBP by 5 to 20 mm Hg, and the risk of hypertension and high blood pressure are reduced when there is a reduction of 10 lb can (Chobanian, et al., 2003). In current trials, researchers reported that a weight loss of 8 kg influenced the reduction of SBP by approximately 8.5 mmHg and the reduction of DBP by approximately 6.5 mmHg. The researchers also reported that combining weight loss with an exercise program can reduce participants' SBP and DBP by 12.5 mm Hg and 7.9 mmHg, respectively (Bacon et al., 2004; Blumenthal et al., 2000). Blumenthal et al. (2000) compared blood pressure levels between participants in a weight-management group and participants in an aerobic-exercise group. Participants in the weight-management group had lower blood pressure (-7/-5 mmHg). Among participants in the aerobic-exercise group, blood pressure levels decreased approximately 4 mmHg in SBP and DBP. To examine blood pressure control among overweight persons, Stevens et al. (2001) recruited 1,191 overweight adults with 30 to 54 years into their weight-loss program. The overweight participants had average of body mass index for 31 kg/m^2.

After the participants' weight loss, they had a mean reduction of 5 mm Hg in SBP and 7 mm Hg in DBP from baseline. In the intervention group, the reductions-of-risk ratio for hypertension were 0.58, 0.78, and 0.81 at 6, 18, and 36 months, respectively. Concerning the effects of weight loss in a long-term, He et al. (2000) reported that an 18-month weight loss intervention program was significantly effective to decrease the incidence of hypertension among adults aged 30 to 54 years

old. Whelton et al. (1998) reported that weight loss through increased physical activity reduced elderly persons‘ use of antihypertensive drugs by 93.2%.

Avoidance of cigarette smoking.

Cigarette smoking is a major risk factor for cardiovascular disease. Patients should be strongly advised not to smoking. Smoking cessation is perhaps the single most powerful lifestyle measure for the prevention of both cardiovascular and non-cardiovascular diseases in hypertensive patients. A significant rise in blood pressure accompanies the smoking of each cigarette all hypertensive patients who smoking cessation. Nicotine replacement therapy should also be considered, since it appears to augment other interventions for smoking cessation.

Modification of alcohol intake

Alcoholic consumption is strongly associated with hypertension. Hypertensive patients who drink alcohol should be advised to limit their consumption to more than 20-30 gms ethanol per day for men and no more than 10-20 gms ethanol per day for women. They should be warned against the heightened risks of stoke associated with binge drinking. Alcohol attenuates the effects of antihypertensive drug therapy. Hypertensive patients who drink alcohol should be advised to limit their consumption to no more than 10-20 gms ethanol per day for women. They should be warned against the heightened risks of stroke associated with binge drinking.

Physiological factors and stress

Physiological factors, personality factors and stress are associated with the adoption of many less healthy lifestyle patterns associated with hypertension and increased risk of cardiovascular disease. In this sense, helping individuals to cope with stress may have an important impact on their blood pressure and on compliant

with antihypertensive medications. Whether there are more direct effects of sustained stress on long-term blood pressure levels is a subject requiring on going research. To date, trails of various stress management procedures for blood pressure control have been unconvincing.

In summary, lifestyle modification offer the potential for preventing hypertension, have been shown to be effective in lowering blood pressure, and reduce stroke risk at little cost and with minimal risk. Patient should be strongly encouraged risk factors for premature cardiovascular disease, such as dyslipidemia or diabetes mellitus. Even when lifestyle modifications alone are not adequate in controlling hypertension, they may reduce the number and dosage of antihypertensive medications to manage the condition.

1.9 Goal of therapy

The ultimate goal of antihypertensive therapy is to reduce cardiovascular and renal morbidity and mortality. Since most persons with hypertension, especially those over 50 years old, can reach the diastolic blood pressure goal, the primary focus should be on attaining the systolic blood pressure goal once the systolic blood pressure goal is achieved. Treating systolic blood pressure and diastolic blood pressure to targets that are <140/90 mmHg is associated with decrease in cardiovascular disease complications. In patients with hypertension and diabetes or renal disease, the blood pressure goal is <130/80 mm Hg (JNC-7, 2003).

2. Blood pressure control

2.1 Definition of blood pressure control

The definition of high blood pressure has changed over time and differs

Between guidelines proposed by expert bodies. Variation in the definition of hypertension influences the number of people classified as having uncontrolled hypertension (Burt et al., 1995).

The Health Plan Employer Data and Information Set (HEDIS) 2000 criteria; defined blood pressure control as absolute BP at one year <140/90 mm Hg without regard to age (Nisha et al., 2003).

In addition, the JNC-7 (Chobanian et al., 2003) recommended a goal blood pressure of less than 140/90 mm Hg in general population, and in patients with diabetes mellitus and chronic kidney disease (CKD), a lower goal of less than 130/80 mm Hg is recommended.

As mentioned above, BP control definition of this study can be defined as the recommendation as below 140/90 mm Hg in all hypertensive patients and below 130/80 mm Hg in diabetic patients and chronic kidney disease.

2.2 Factors influencing blood pressure control

Many studies have examined factors influencing blood pressure control. The following was described.

Gender

Findings on the association of gender with blood pressure control have not been consistent. Data from the 1960-1991 NHANES I, found that men are more likely to have high blood pressure than women (Burt et al., 1995). Data from the 1988 to 1994 survey (NHANES III) demonstrated that a higher percentage of women have controlled of blood pressure than men (Burt et al., 1995; Hajjar and Kotchen, 2003). Most studies have found that females have better BP control than men (He et al., 2002; Hicks et al., 2004; Majernick et al., 2004; Jackson et al., 2002). The researchers

reported that male gender and postmenopausal status are risk factors for uncontrolled of blood pressure (Jackson et al., 2002). Several studies found that when women reach menopause, they have a steeper increase in blood pressure than men (Hernandez Schulman and Raij, 2006; Kannel et al., 1981; Staessen, Celis, and Fagard, 1998).

In contrast, Ong and colleagues (2007) found that there was no significant difference in blood pressure control rate by gender among treated groups. Other studies have found that there is no association between gender and BP control (Bansal et al., 2003; Knight et al., 2001). In conclusion, the association between gender and blood pressure control is not conclusive.

Age

Age has been identified as an important factor in blood pressure control. Numerous studies have identified that the incidence of hypertension is consistently higher among middle-aged persons than among younger aged persons (Vargas et al., 2000). Moreover, increasing age has also been found to be strongly associated with uncontrolled of blood pressure (Borzecki et al., 2006; Greenberg et al., 2006; Hyman and Pavlik, 2000; Lloyd-Jones et al., 2000; Morris et al., 2006).

The criterion for BP control was BP < 140/90 mmHg. The researchers explored that a lower prevalence of BP control occurs with increasing age. The highest controlled of blood pressure rate was in subjects aged 40 to 49 years (45.6%). The lowest rates of controlled of blood pressure were found in subjects 70 to 79 years of age (38.7%) and ≥ 80 years of age (39.6%). The researchers also stated that "from age 50-59 years onward, the proportion of subjects in which BP was controlled dropped significantly compared to the prior decade, with each subsequent decade of age, except for those ≥ 80 years" Borzecki et al. (2006). The younger age groups had

significantly better BP control than older age groups. Several studies have shown that increasing age is a significant predictor of uncontrolled of blood pressure (Borzecki et al., 2006; Greenberg et al., 2006; Hyman and Pavlik, 2000; Lloyd-Jones et al., 2000; Morris et al., 2006). Blood pressure control is predominantly poorer with increasing age, medication use/optimal treatment, and the number of medications is important covariates that can affect blood pressure control at any age. When the age was more than 65, more aggressive treatment to control blood pressure may be needed.

Marital status

The relationship between marital status and BP control may vary by gender. Married women have greater BP control with treatment for hypertension than unmarried women (William et al., 1985). Knight et al. (2001) found that, relative to the married group, single, widowed, and divorced or separated subjects had a similar probability of poor BP control (OR = 1.59, CI95 = 0.86 to 2.94). Marital status was not significantly associated with odds for of blood pressure control in non-Hispanic blacks. For Mexican Americans, currently married subjects had greater odds for controlled of blood pressure (OR = 5.76, CI95 = 1.35 to 24.6, $p < .05$), while formerly married Mexican-American subjects had similar odds for controlled of blood pressure (He et al., 2002).

Education

The demographic data of the NHANES I Epidemiologic Follow-up Study (NHEFS) data from 1971 to 1984 showed that persons with less than 12 years of education tended to have a higher incidence of hypertension than those with more than 12 years of education. Moreover, the results showed no significant association between incidence of hypertension and years of education (RR = .97, CI 95 = .93 to

1.02). When education was categorized into three categories (0-7, 8-11, and 12 or more) there was still no association between hypertension incidence and education in non-Hispanic blacks or older non-Hispanic whites. The researchers concluded that education attainment was an independent predictor of hypertension incidence only among younger non-Hispanic whites (Vargas et al., 2000).

Income

There were no studies found that used income alone to predict the rate of occurrence of hypertension and/or controlled hypertension. Using income and education together as indicators of social class seems to predict the incidence of hypertension more accurately and consistently than when these variables were considered separately (Kaplan and Nunes, 2003). Lower income AAs have a higher prevalence of hypertension than Caucasians (Becker and Newsom, 2003; Kington and Smith, 1997; Matthews et al., 2002; Resnicow et al., 2001; Sundquist et al., 2001; Williams, 1992). Several authors stated that low income is one of the barriers to BP control in African Americans. Lower education level is also associated with a higher prevalence of both hypertension and uncontrolled of blood pressure in some studies, but findings have not been consistent.

BMI

Body mass index (BMI) is positively and independently associated with morbidity and mortality from hypertension, cardiovascular disease, type II diabetes mellitus and other chronic diseases (Stevens et al., 1998) . A strong association has been depicted between BMI and mortality in Caucasians. (Bei-Fan, 2002; Ni Mhurchu et al., 2004) A similar association has also been demonstrated among Asian populations (MacMahon et al., 1987; Stamler et al., 1978; Weng et al., 2006). The

significant positive association between BMI and both SBP and DBP has been reported in studies of African-Americans (Cassano et al., 1990), Chinese (Bunker, 1995; Dyer and Elliot, 1989), Africans and Caribbeans (Poulter, 1985).

The association between BMI and BP has been widely reported across populations in Asia, Latin America, United States and Canada. In a study that included five Latin American populations (urban) and seven Asian populations (four urban, three rural), significant positive relationships of similar magnitude were observed between BMI and BP, despite differences in mean BMI levels between the populations studied (Bunker, 1995; Ng et al., 2006).

Taking Antihypertensive Medication

The benefits of taking antihypertensive medications are lower BP, which, in turn, can prevent complications such as stroke, myocardial infarction, and heart failure. Antihypertensive medication use has been associated with a 35% to 40% average reduction in stroke incidence (JNC-7, 2003). A sustained reduction in SBP by 12 mmHg over 10 years has been estimated to prevent one death for every 11 Stage I hypertension patients treated (Chobanian et al., 2003). Use of antihypertensive medication is one of the crucial factors affecting BP control. Nathan, Wong, Stanley, and Franklin, (2005) stated that based on U.S. NHANES III data from 1988-1994, hypertension treatment rates in the U.S. are far from the optimal (52%), though they are substantially higher than in European countries (26.8%). “This has been attributed to lower thresholds for treatment in the U.S., increasing the number of treated cases, and lowering the mean BP in the population” (Nathan et al., 2005).

2.3 Literature reviews of blood pressure control

Several studies indicated that, globally, the percent of hypertensive patients

of all ages with blood pressure controlled to below 140/90 mm Hg ranged from 16% among older British men (Patel, 2006) to more than 33% in general practice in Italy (Grandi, 2006).

In 1999 and 2000, results from the National Health and Nutrition Examination Survey (NHANES), the most extensive survey of its kind, indicated that among 1,565 U.S. adult participants with hypertension, only 31% had hypertension controlled to a blood pressure lower than 140/90 mmHg. This means that over 40 million American adults may be suffering from uncontrolled hypertension (Wang and Vasan, 2005). When BP is uncontrolled, it contributes to an increased risk of severe heart failure complications (Hussey and Hardin, 2005), cardiovascular disease, stroke, and mortality (Wang and Vasan, 2005).

Studies in Europe reported a wide range of hypertension control in general practice rates and had low quality scores. One study, with a quality score of five out of nine (Roux, 2006), reported that a minority of all hypertensive patients in France were well controlled. Data were collected in 2001 through a questionnaire completed by the participating general practitioners that enrolled known hypertensive patients

3. Blood Pressure Measurement

Blood pressure measurement methods

The auscultatory method has been the mainstay of clinical BP measurement for as long as has been measured. This is gradually being supplanted by other techniques that are more suited to automated measurement.

1. The Auscultatory Method

Nearly 100 years after it was first discovered, and the subsequent recognition of its limited accuracy, the Korotkoff technique for measuring blood

pressure has continued to be used without any substantial improvement. The brachial artery is occluded by a cuff placed around the upper arm and inflated to above systolic pressure. As it is gradually deflated, pulsatile blood flow is reestablished and accompanied by sounds that can be detected by a stethoscope held over the artery just below the cuff. In older patients with a wide pulse pressure, the Korotkoff sounds may become inaudible between systolic and diastolic pressure, and reappear as cuff deflation is continued. This phenomenon is known as the auscultatory gap. In some cases, this may occur because of fluctuations of intra-arterial pressure and is most likely to occur in subjects with target organ damage (Cavallini et al., 1996).

Mercury Sphygmomanometers

The design of mercury sphygmomanometers has changed little over the past 50 years, except that modern versions are less likely to spill mercury if dropped. There is less to go wrong with mercury sphygmomanometers than with other devices, and there is negligible difference in the accuracy of different brands, which certainly does not apply to any other type of manometer. However, this should not be any cause for complacency. However, many devices in everyday use are defective. The random zero sphygmomanometer was designed to eliminate observer bias but is no longer available.

2. The Oscillometric Method

The oscillations begin well above systolic pressure and continue below diastolic, so that systolic and diastolic pressures can only be estimated indirectly according to some empirically derived algorithm. One advantage of the method is that no transducer need be placed over the brachial artery, so that placement of the cuff is not critical. Other potential advantages of the oscillometric method for

ambulatory monitoring are that it is less susceptible to external noise (but not to low-frequency mechanical vibration), and that the cuff can be removed and replaced by the patient. The main problem with the technique is that the amplitude of the oscillations depends on several factors other than blood pressure, most importantly the stiffness of the arteries. Thus, in older people with stiff arteries and wide pulse pressures the mean arterial pressure may be significantly underestimated (van Montfrans, 2001). The oscillometric method has been used successfully in ambulatory BP monitors and home monitors. Oscillometric devices are also now available for taking multiple measurements in clinical setting.

Location of Measurement – Arm, Wrist, Finger

The standard location for blood pressure measurement is the upper arm, but wrist monitors may be useful in very obese patients if the monitor is held at heart level. Finger monitors are not recommended.

Validation of Monitors

It is recommended that only those devices that have passed this or similar tests should be used in practice, and oscillometric monitor should be validated on each patient before the readings are accepted. With nonautomatic devices, such as mercury and aneroid monitors, it is recommended that the accuracy of the pressure registration mechanism be checked.

BP Measurement in the Clinic or Office

Accurate auscultatory office blood pressure measurement is the bedrock of the diagnosis and treatment of hypertension and has been the standard method used in the major epidemiologic and treatment trials of the past 50 years. However, it is

becoming increasingly clear that as it is used in everyday practice, there are major shortcomings.

Subject Preparation

A number of factors related to the subject can cause significant deviations in measure BP. These include room temperature, exercise, alcohol or nicotine consumption, positioning of the arm, muscle tension, bladder distension, taking, and back and arm supported, such that the middle of the cuff on the upper arm is at the level of the right atrium (the middle of the sternum). At the initial visit, BP should be measured in both arms. The patient should be instructed to relax as much as possible, and not to talk during the measurement procedure; ideally 5 minutes should elapse before the first reading is taken.

Cuff Size

The "ideal" cuff should have a bladder length that is 80% and a width that is at least 40% of arm circumference (a length-to-width ratio of 2:1). The recommended cuff sizes are:

(1) For arm circumference of 22 to 26 cm, the cuff should be "small adult" size: 12×22 cm

(2) For arm circumference of 27 to 34 cm, the cuff should be "adult" size: 16×30 cm

(3) For arm circumference of 35 to 44 cm, the cuff should be "large adult" size: 16×36 cm

(4) For arm circumference of 45 to 52 cm, the cuff should be "adult thigh" size: 16×42 cm

Effects of Body Position

Blood pressure measurement is most commonly made in either the sitting or the supine position, but the 2 positions give different measurements. It is widely accepted that diastolic pressure measured while sitting is higher than when measured supine (by about 5 mm Hg). When the arm position is meticulously adjusted so that the cuff is at the level of the right atrium in both positions, the systolic pressure has been reported to be 8 mm Hg higher in the supine than the upright position (Netea et al., 1998). If the back is not supported (as when the patient is seated on an examination table as opposed to a chair), the diastolic pressure may be increased by 6 mm Hg. Crossing the legs may raise systolic pressure by 2 to 8 mm Hg (Peter, Binder, and Campbell, 1999). The position of the arm is also important when seated measurements are taken: if upper arm is below the level of the right atrium (when the arm is hanging down while in the sitting position) the reading will be too high. Similarly, if the arm is above the heart level, the readings will be too low. These differences can be attributed to effects of hydrostatic pressure and may be 2 mm Hg for every inch above or below the heart level.

Differences Between the Two Arms

It is recommended that blood pressure should be checked in both arms at the first examination. This may be helpful in detecting coarctation of the aorta and upper extremity arterial obstruction. When there is a consistent interarm difference, the arm with the higher pressure should be used.

Cuff Placement and Stethoscope

Cuff placement must be preceded by selection of the appropriate cuff size for the subject's arm circumference. The observer must first palpate the brachial

artery in the antecubital fossa and place the midline of the bladder of the cuff (commonly marked on the cuff by the manufacturer) so that it is over the arterial pulsation over the patient's bare upper arm. The sleeve should not be rolled up such that it has a tourniquet effect above the blood pressure cuff. The lower end of the cuff should be 2 to 3 cm above the antecubital fossa to allow room for placement of the stethoscope. Neither the observer nor the patient should talk during the measurement. The Korotkoff sounds are the best heard using the bell of the stethoscope over in the antecubital foosa. The cuff should initially be inflated to at least 30 mm Hg above the point at which the radial pulse disappears, and deflated at a rate of 2-3 mm Hg per second (or per pulse when the heart rate is very slow) (Thulin, Schersten, Anderson, 1975).

Important Points for Clinical BP Measurement

(1) The patient should be seated comfortably with the back supported and the upper arm bared without constrictive clothing. The legs should not be crossed.

(2) The arm should be supported at heart level, and the bladder of the cuff should encircle at least 80% of the arm circumference.

(3) The mercury column should be deflated at 2 to 3 mm/s, and the first and last audible sounds should be taken as systolic and diastolic pressure. The column should be read to the nearest 2 mm Hg.

(4) Neither the patient nor the observer should talk during the measurement.

Observers and Training

The observer is the most critical component of accurate blood pressure measurement. For accurate blood pressure measurement, the observer must:

(1) be properly trained in the techniques of blood pressure measurement;

(2) use an accurate and properly maintained device;

(3) recognize subject factors, such as anxiety and recent nicotine use, that would adversely affect blood pressure measurements;

(4) position the subject appropriately;

(5) select the correct cuff and position it correctly; and

(6) perform the measurement using the auscultatory or automated oscillometric method and accurately record the values obtained.

Observer error is a major limitation of the auscultatory method. Terminal digit preference is perhaps the most common manifestation of suboptimal blood pressure determination. It is generally recommended that the observer should read the blood pressure to the nearest 2 mm Hg. Before training begins, potential observers should be assessed for physical and cognitive competencies required to carry out the procedure, including adequate vision, hearing, and manual dexterity. Standardized programs with audio-visual tapes that test and retest accuracy in measurement are effective in training and retraining. The evaluation of observers should include an assessment of their knowledge of the different types of observer bias, general technique. Retraining of all health care professionals is strongly recommended.

Number of Measurements

The predictive power of multiple blood pressure determinations is much greater than a single office reading (Wingfield, Freeman, Bulpitt, 2002). One of the potential advantages of supplementing auscultatory readings with readings taken by an automated device is the ability to obtain a larger number of readings. When a series of readings is taken, the first is typically the highest. A minimum of 2 readings should

be taken at intervals of at least 1 minute, and the average of those readings should be used to represent the patient's blood pressure. If there is a 5 mm Hg difference between the first and second readings, additional (1 or 2) readings should be obtained, and then the average of these multiple readings is used.

Automated Method

Automated oscillometric blood pressure devices are increasingly being used in office blood pressure measurement, as well as for home and ambulatory monitoring. When they are used in the office, the readings are typically lower than readings taken by a physician or nurse. The potential advantages of automated measurement in the office are the elimination of observer error, minimizing the white coat effect, and increasing the number of readings. The main disadvantages are the error inherent in the oscillometric method and the fact that epidemiologic data are mostly based on auscultated blood pressure measures. Automated devices may also offer the opportunity to avoid expensive and repetitive training of health care professionals in auscultation, which is necessary to reduce observer errors. Their use still requires careful patient evaluation for caffeine or nicotine use, selection of the correct cuff size, and proper patient positioning if accurate blood pressures are to be obtained. Devices are now available that can take a series of sequential readings and automatically average them.

Self-measurement

The standard type of monitor for home use is now an oscillometric device that records pressure from the brachial artery (O'Brien et al., 2001). An up-to-date list of validated monitors is available. Home or self-monitoring has numerous advantages over ambulatory monitoring, principal among which are that it is inexpensive and

provides a convenient way for monitoring BP over long periods of time. There is some evidence that it improves both therapeutic compliance and BP control (Cappucino et al., 2004; Edmonds et al., 1985; Vrijens and Goetghebeur, 1997). Unfortunately, accurate reading do not guarantee accurate reporting to the physician. Devices that have memory or print-outs of reading are recommended.

When reading are taken, the patient should not have recently indulged in any activity such as exercise or eating that is likely to affect the BP, and should be resting quietly in a comfortable chair for 3-4 minutes with the upper arm at heart level. Three readings should be taken in succession, separately by at least one minute. It is helpful to get readings both in the early morning and the evening.

Ambulatory Blood Pressure (ABP) Measurement

Ambulatory blood pressure (ABP) monitoring is a noninvasive, fully automated technique in which blood pressure is recorded over an extended period of time, typically 24 hours. It has been used for many years as a research procedure and has recently been approved by Medicare for reimbursement of a single recording in patients with suspected White Coat Hypertension (WCH). The standard equipment includes a cuff, a small monitor attached to a belt, and a tube connecting the monitor to the cuff. Most, but not all, ABP devices use an oscillometric technique. An up-to-date list of validated monitors is available. During a typical ABP monitoring session, blood pressure is measured every 15 to 30 minutes over a 24-hour period including both awake and asleep hours, preferably on a workday. The total number of readings usually varies between 50 and 100. Blood pressure data are stored in the monitor and then downloaded into device-specific computer software. The raw data can then be synthesized into a report that provides mean values by hour and period: daytime

(awake), nighttime (asleep), and 24-hour blood pressure, both for systolic and diastolic blood pressure. The most common output used in decision-making are absolute levels of blood pressure, that is, mean daytime, nighttime, and 24-hour values.

4. Self-management model

Self-management is a process of self-control and self-monitoring on the basis of cognition and learning from previous experiences (Kanfer and Goelick, 1991). Self-management of patients with chronic illnesses involves perception, response, monitoring and prevention of symptoms, drug use, management of emergency state, dietary control, exercise, smoking control, stress management, interaction with health team, information management, adaptation to work, interpersonal relations, and psychosocial response to their illness and emotion (Clark et al., 1991). Self-management is a preventive action or any therapeutic activities for health care (Tobin et al., 1986). It aims to promote self-control (Thoresen and Mahoney, 1974). The final target of self-management is to decrease the morbidity and mortality rate, and improve the quality of life (Tobin et al., 1986).

4.1 Definition of self-management

Tobin et al (1986) wrote that self-management is a protective action or performance of therapeutic activities for health care that aims to promote self- control. In their definition, the final goal of self-management is to reduce morbidity and mortality rate, and to promote quality of life.

Clark et al (1991) defined self-management as the daily activities an individual must engage in to control or decrease the impact of disease on health status, which includes contending with the psychosocial difficulties caused or

intensified by the disorder.

Kanfer and Gaelick-Buys (1991) defined self-management as the process of self-control and monitoring of change behavior on the basis of cognitive process and learning from past experience. The obtained information is then evaluated to make decision in response or to induce the desired behavior.

Lorig (1993) defined self-management as learning and practicing the skills necessary to carry on an active and emotionally satisfying life in the face of a chronic condition.

Nakagawa-Kogan (1996) described self-management as a treatment that combines biological, psychological and social intervention techniques, with a goal of maximal functioning of regulatory processes.

von Korff et al. (1997) defined self-management based on a comprehensive literature review as engaging in activities that protect and promote health, monitoring and managing systems and signs of illness, managing the impact of illness on functioning, emotions and interpersonal relationships and adhering to treatment regimens.

Creer (2000) described self-management as a procedure where patients change some aspects of their own behaviors. Successful mastery and performance of self-management strategies results in changes in the mortality and morbidity indices of the disease, improvement in the quality of life of patients and families, and development of self-efficacy in that they could contribute to the management of their disorder. They became partners with their healthcare providers in controlling the chronic disease or disorder.

Lorig et al. (2001) defined self-management as strategies that involve

responsibility for and making decisions about when to use health care providers, practicing appropriate health behaviors, using a problem solving approach to make decisions, and appropriately using family, friends, and community resource as necessary.

Barlow et al. (2002) defined self-management as the individual's ability to manage the symptoms, treatment, physical and psychological consequences and lifestyle change inherent in living with chronic condition. Barlow further states that for self management to be effective, it needs to encompass the "ability to monitor one's condition and to affect the cognitive, behavioral and emotional responses necessary to maintain a satisfactory quality of life".

Glasgow et al (2002) stated that self-management is a specific feature of chronic illness management. However, it is frequently overlooked or insufficiently acknowledged because it involved certain capability that needs to be actually applied into practice.

Dorsey and Murdaugh (2003) wrote that self-management is a combination of therapeutic behavior and practice to seek supportive resources for the improvement of health status and quality of life.

Bourbeau, Nault, and Dangtan (2004) defined self-management as a set of skilled behaviors and various tasks that a person carried out for management of their condition.

Holman and Lorig (2004) defined self-management as an individual's ability to live with chronic illness. That ability involves self-esteem in combination with medical management, role management, and emotional management concerning the illness.

Patayawad Pragodpol (2010) described self management as activities, abilities, skills, behaviors, procedures, strategies, and processes that patient accepts and takes responsibility of active role to manage and control the effect of disease on health status. It also described as the process of self-control monitoring of change behaviors on the basis of cognitive process and learning about their illness and manage them from their accumulated experience by using the cognitive and behavioral skills; practicing appropriate health behaviors; appropriately using family, friends, and community resource as necessary; the procedures where patients change some aspects of their own behaviors for controlling and managing their illness with a good relationship between the patient and the health care team.

According to the above stated definitions, self management was described as self-management, in the context of this study, refers to a patient's ability to understand their condition and to manage and organize their access to key elements of their care. A patient who understands their illness, how to recognize early warning signs and take appropriate action, how to manage their lifestyle for optimal health outcomes and how to work effectively with health care providers and carers is seen to be a good self-manager of their condition.

4.2 Theoretical underpinning self-management model

Self-management is an accurate assessment of one's own knowledge, skill, and abilities; well defined and realistic personal goals, monitoring progress toward goal attainment and being motivated through goal achievement, exhibiting self-control and responding to feed back. It is interpreted as the day to day tasks an individual must undertake to 1) control or reduce the impact of disease on physical health status; 2) cope with the psychosocial problems generated by chronic disease;

and 3) manage daily living according to their financial and social conditions (Barlow et al., 2002). Self-management enables a person to make informed choices; to adapt new perspectives and generic skills that can be applied to new problems as they arises; to practice new health behaviors; and to maintain or regain emotional stability (Lorig and Holman, 1993).

There are two theoretical frameworks underlying the self-management concept including self-control and self-regulation (Creer, 2000; Nakagawa-Kogan, 1996).

4.2.1 Self-control is the concept that postulates that personal control, a locus of control (LOC), is either internal or external. LOC is described as a general principle that a person's attempt to control their personal environment is influenced by internal or external factors. Control is generally defined as "the perceived ability to significantly alter events". Perceived control is defined as "the belief that one has at one's disposal a response that can influence the aversiveness of an event".

In addition, Kanfer and Gaelick-Buys (1991) use the term self-control for a person's actions in a specific situation, rather than as a personality trait. Moreover, they describe self-control as the probability behavior of the response to a situation. For example, a person who was in self-management training acquired self-control skills in the early period of the training program. At the moment of initiating self-control skills, the person was not under direct environmental control even though their success in perception of self-control related to the consequences of support by the social environment. Self-control is a cornerstone in the goal orientation of self-management training. The indicator of success of self-management training is a restoration of self-control; therefore self-control is clearly a matter of central focus in

the self-management concept (Creer, 2000; Nakagawa-Kogan, 1996).

Having knowledge about self-management cannot guarantee that self-management strategies will be used appropriately. Patients must have self-control that is, the belief in their capability to perform these strategies to reach the pretest goals (Creer and Holroyd, 1997). Patients who perceive themselves as lacking the capability to acquire self-management skills may be less persistent, more prone to frustration, and tend to be non compliant with treatment recommendations. Hence, some patients might demonstrate adequate understanding of a particular treatment rationale, but be non-compliant due to their perceived inability to produce the behavior necessary to follow treatment recommendations (Shutty, Cundiff, and DeGood, 1992).

4.2.2 The second philosophical basis of the self-management concept is the self-regulation model. It addresses adaptive and maladaptive states. In maladaptive states, persons need the necessary self-regulatory strategies to achieve adaptive states. Therefore the major goal of these persons is adaptation. The three aspects of adaptive systems that persons employ as a means to coping with maladaptive states include learning, regulation of arousal, and maintenance of an organized conceptual system. Regulation implies maintaining a bodily homeostatic state, whereas dysregulation is the breakdown of this homeostatic state. If illness is dysregulation of health then; self-regulation is a logical method of achieving health.

Self-regulation is the concept of mind-body interface (Baumeister, Heatherton and Tice, 1994; Nakagawa-Kogan, 19996). This term refers to self-generated processes that are planned and cyclically adapted in an attempt to control personal, behavioral, and environment factors (Clark et al., 1991; Zimmerman, 2000). Self-regulation is also defined by Maes and Karoly (2005) as a goal-guidance process

aimed at the attainment and maintenance of personal goals. The self-regulation process requires self-observation, self-judgment, and self-reaction. Self-regulatory processes encourage individuals to learn the strategies to manage their disease (Clark and Zimmerman, 1990).

Self-regulation and self-management concepts focus on patient's goals, but the two concepts are different (Creer, 2000). According to Sulzer-Azaroff and Mayer (1991), self-regulation implies that people follow goals which are pretested by them. However, self-management connotes that individuals follow goals which are mutually set by themselves, caregivers, and healthcare providers (Sulzer-Azaroff and Mayer, 1991). Researchers working with chronically ill patients at present accept that the terms point to the same goal to perform self-management strategies to control symptoms through changing the patients' thoughts, feelings, and actions (Creer, 2000).

4.3 Kanfer and Goelick-Buy's self-management model

Kanfer's concept is widely accepted in current nursing practice and it has been developed to promote self-management among patients with cognitive/ behavioral techniques such as sensitization and desensitization, cognitive restructuring, and training methods of physiological control. Patients who had been trained with self- management program demonstrated changes in physical and cognitive aspects and they developed cognitive and emotional behaviors that help them in improving self- management (Nakagawa-Kogan and Betrus, 1984: 54-60).

Kanfer's concept was a chain of reaction automatically built from the learning of past experience stored long-term memory and subsequently modified into spontaneous response; thus, a person can conduct daily activities with no need to

make decision or to concentrate on the action. Nevertheless, the spontaneous behaviors are not applicable to every situation and sometimes people need to change their behavior in response to the stimulating circumstance. They need to apply self-control process to modify their behavior by using cognitive process and careful planning. Self-management, therefore, is a process deriving from past experience learning, social believe and physical environment that contribute to one's self control.

Kanfer (1980, 1991) proposes that self-management is the process of self-control that requires attentive monitoring of one's behavioral changes, based on information from the cognitive process and learning from past experience. The obtained information is applied to self-appraisal of and decision-making about the response or the behavior that could lead to expected outcomes. Self-management is a significant process that helps patients learn to modify their behaviors in response to environmental stimulation and in reducing the severity of symptoms. Inaccurate self-appraisal will lead to inappropriate decisions about responsive behaviors, resulting in ineffective self-management or symptom control. Nevertheless, provision of support may help a person to conduct appropriate behavior and achieve the expected outcomes; as a result, the person will continue to behave in that manner and have increased self-control.

Kanfer (1980) and Kanfer and Goelick-Buy (1991) introduced the concept of self-management to enhance understanding about mental process in the development of self-control. This concept was based on the belief that each person has potential for seeking help and making effort in changing problematic situations with self- management. As a result, that person will learn new behavior within the boundary of self- control.

Kanfer's concept is applicable to the promotion of symptom self-management, by utilizing self-regulation process comprising self-monitoring, self-evaluation and self- reinforcement to induce reactions that require cognitive and learning process, decision making and support from other people such as family friends and health care professionals. The support is a motivation and reinforcement for patients to change undesired behavior and to maintain desired behavior.

To develop self-management, a person needs to use self-regulation processes. The processes are described in several sources (Creer, 2000; Kanfer, 1991; Karoly, 1993) with various terminologies. According to Kanfer's (1980) process significant in self-management training includes five processes namely 1) goal setting, 2) education and skills training, 3) action and self-regulation, 4) telephone follow up, and 5) evaluation.

1. Goal setting

Goal setting is the activity that is collaborated between patients and health care professionals after discussions, negotiations, and determination. It is responsibility of people to perform whatever self-management skills are necessary to attain the goal (Creer and Holroyd, 1997). The setting of goal may increase the patients' awareness of the desired outcome. Patients are not always clear on their illness and the recommended treatments. Setting goals may help clarify what they should do to manage their health problems most effectively.

This process establishes a set of criteria to develop goals and to measure success. Criteria to measure successful behavior or activities should be set as goals of individuals. This is to reduce unclear standards ambiguous, lacking, or conflicting that lead to less effective self-management (Yates, 1986). Establishment of criteria and

individual goal setting should be shaped only after careful preparation.

This step is an essential beginning of self-control process because it is the step in which a person needs to pay attention to his/ her behaviors and to carefully monitor the behaviors in aspects of thoughts, emotion and others, as well as the stimulating circumstance. Past experience will motivate the person to change the behavior that need to be change, to anticipate the outcomes of change and to compare the behavior with standard criteria.

2. Education and skills training

In this step, two preparatory functions are necessary; patients' knowledge and patients' skills (Creer and Holroyd, 1997). Patients must primarily acquire knowledge of their chronic illness and of "how" it can be managed. When patients learn about their illness and their roles in its management, specific goals can be set to improve their health and well-being. After goals are discussed, negotiated, and finally determined between health care provider and patients and/or family, they should be written up and described in the form of a treatment guideline or action plan. Thus, it is apparent that individuals take full responsibility to perform whatever self-management skills will help to attain theirs goals, whereas health care providers strictly track patients' behavior (Creer and Halroyd, 1997).

3. Action and self-regulation

Patients' action provides very important indication of self-management after making appropriate decisions. These actions involve the performance of self-management strategies to control chronic illness or a health-related condition. Self-regulation is composed of three aspects; self-monitoring, self-evaluation, and self-reinforcement.

Self-monitoring

Self-monitoring is usually initiated by asking a patient to record specifics of behaviors. Self-monitoring has been employed for three purposes (Turk and Kerns, 1985).

1) To obtain baseline frequencies of target behaviors, and to clarify the functional relationship of target behaviors to environment and internal antecedents as well as consequences of the behaviors.

2) To use as a treatment technique to bring about behavior change. That is, many maladaptive behaviors are performed in a seemingly automatic or involuntary fashion. Requiring patients to monitor the performance of such behaviors may serve to "deautomatize" the performances of these behaviors. Thus, it assists patient to perceive their control capability. Self-monitoring may also enhance patients' opportunities to attend to their progress of behavioral change.

3) To use in an evaluation of treatment programs. As target behaviors are monitored in relation to other observed internal or environmental events, attributes of mediators of behavioral change may be validated. Alterations in treatment strategies may be implemented on the basis of collecting data by means of ongoing self-monitoring.

To improve self-monitoring of chronic illness, three suggestions are offered (Creer and Bender, 1993). First, patients should monitor only the phenomena that are operationally defined as the target behavior. Second, an objective measures, such as use of pain intensity to monitor effectiveness of pain education program among cancer patients. Finally, in gathering information, it is important for individuals to observe and record information only during specified periods of time as directed by

health care providers.

Self-monitoring not only provides a foundation but is a necessary condition to determine if goals are to be achieved, as well as heightening self-awareness. Having the baseline awareness of the frequency of habits or symptom, it offers patients the opportunities to define measures in order to determine change and success. The information from self-monitoring is generally used to make decisions about taking medications or changing health behaviors (Lorig, 2001).

Self-evaluation

This is the process of checking the success of change in oneself. Patients must learn to evaluate their own recorded information that included the five steps in this process (Creer and Holroyd, 1997).

First step; patients must be able to detect any significant changes occurring to them. This involves the evaluation of the information that they have observed or monitored, recorded, and processed. From this process, patients are asked to detect changes from some sort of personal baseline or adaptation level. Under these circumstances, there is highly variability among patients because some will be superb at assessing changes and some not.

Second step; patients make more consistent the assessment of changes. In other word, the present criteria for measuring success must be followed. Then, patients can compare collected data about their condition with criteria for decrease symptoms in order to evaluate severity of the disease of health problems.

Third step; patients must able to evaluate and make judgment about the data. Making judgments can be achieved when patients match their behaviors or symptoms to the criteria denoting severe, moderate, or mild levels.

Forth step; patients must learn to evaluate any occurred changes in terms of the antecedent conditions that may have led to the change, the behaviors they can perform to alter the changes, and the potential consequences of their action.

Lastly, fifth step; contextual factors, such as setting events, establishing stimuli, and establishing operations, must be considered in the evaluation of information about patient's management of a chronic illness.

Self-evaluation also refers to how individuals evaluate their performance. Patients can establish realistic expectations about their performance and assess whether they need more training. They also should acquire realistic expectations about the limitation of self-management in helping to control their condition. They should recognize that they are unlikely to be able to use their self-management strategies to control every aspect of either behavior or their illness that they wish to manage. In this step, information obtained from self-monitoring will be compared criteria set by the person or the society in order to evaluate whether the behaviors should be maintained or discontinued.

Self-reinforcement

After comparing his/ her behavior with the standard criteria, the person will have both positive and negative reactions, which affect the person to maintain the behavior, thus strengthening it. Negative reaction, in contrast, will inhibit the behavior, leading to modification of behavior. Positive reaction, therefore, is an important motivation for the continuation of behavior. The motivation may be enhanced with support from other people such as family, friend or healthcare professionals. Self-reinforcement is evident whenever individuals set criteria of performance to achieve and proceed to the self-reward of attainment, exceeding their

own expectations (Yates, 1986). Self-rewards are under patients control, and demand motivation and commitment of individuals to monitor signs, sharpen perception, and produce change. A self-reward system to promote self-esteem may be a promise to oneself of having a new piece of clothing to be worn as a reminder of success. The reward is very important to encourage patients to work on behavioral change.

4. Telephone follow up

Telephone follow up is a part of social support (Tobin et al., 1986) in order to stimulate and follow up the progression of self-management action affecting to blood pressure control. The telephone follow-up after visiting to medical outpatient clinic can help to enhance adherence to a healthy lifestyle, including eating the DASH diet and exercise..

The measure of sustained follow-up is included as one of the key measures for effective chronic illness programs by Wagner (2000), and telephonic nursing is an effective mode of providing sustaining services for health maintenance. Telephonic nursing has the advantage of promoting efficient accessibility that is, being able to reach a relatively large number of clients at a low cost, particularly for clients who have mobility problems and live far away from care facilities (Lorentz, 2008).

5. Evaluation

The final step is the evaluation of the program and termination. Therefore, the patients can evaluate self-management at home by using assessment form for self-monitoring. Then they will discuss the situation with the researcher by telephone and also face-to-face meeting. If the desirable outcome cannot be achieved, then the whole process will be analyzed. If the evaluation is positive, the patients will be reinforced to continue the self-management behaviors.

Self-management approaches with chronic illness require individuals to master three separate but related categories of activities (Clark et al., 1991). First, patients must be sufficiently knowledgeable about their condition and its treatment in order to make decisions about their care. Second, they must perform activities aimed at management of the condition. Finally, they must apply interventions necessary for maintaining adequate psychosocial functioning. All of these behaviors are aimed at reducing the impact of disease on patient's quality of life.

4.4 Self-management intervention in chronic disease patients

The previous studies suggest that the most successful outcomes of self-management intervention are improvements in knowledge, self-efficacy, changes in lifestyle behavior, self-management behaviors and self-care. These have been demonstrated after self-management interventions for diabetes, asthma, arthritis and coronary artery disease (Barlow et al., 2002; Newmann et al., 2004; Norris, Engelgau, Narayan, 2001).

In addition, Newmann et al. (2004) found that self-management programs have resulted in significant benefits measured in quality of life in asthma, diabetes, and arthritis patients. Furthermore, meta-analysis of data from 53 randomized, controlled trials of self-management interventions for adults with diabetes mellitus, hypertension, or osteoarthritis showed that self-management helped reduce hemoglobin A_1C and blood pressure levels in diabetes and hypertension, respectively, but had minimal effect on pain and function in patients with arthritis (Chodosh et al., 2005).

A randomized controlled trial of Chronic Disease Self-Management Program (CDSMP) based on a heterogeneous group of chronic disease patients (heart

disease, lung disease, stroke and arthritis) was done. The CDSMP covers generic topics including: an overview of self-management principles, exercise, pain management, relaxation techniques (e.g. guided imagery and breathing exercises), dealing with depression, nutrition, communication with family and health professionals, and goal setting. Goals should be achieved during the following week, be personally relevant, achievable, challenging, have proximal outcomes and depend largely upon a person's own efforts. The emphasis on enhancing self efficacy and goal setting along with inclusion of topics such as problem solving, dealing with depression and exercise, suggest that the CDSMC may be relevant for those who have experienced a MI (Barlow, Turner, and Gilchrist, 2009).

This study was an evaluation of a self-management education intervention for persons with one or more different conditions. The format of the intervention had the attributes of medium-sized classes, lay leaders, and heterogeneity of participants in terms of type and severity of disease. These results indicate that it is possible to educate patients with different chronic diseases successfully in the same intervention at the same time.

This study showed that, at six months, the intervention group had significant improvements in physical and psychological health status through improvements in weekly minutes of exercise, frequency of cognitive symptom management, communication with physicians, self-reported health, health distress, fatigue, disability, and social/role activities limitations. They also had fewer hospitalizations and days in the hospital (Lorig et al, 1999). The results at two-year follow-up, benefits remained evident, despite worsening disease (Lorig et al., 2001). Another non-randomized, one-year follow-up study carried out by Lorig and

colleagues among patients recruited through Kaiser Permanente (a non-profit health maintenance organization) similarly found improvements on health behaviors, self-efficacy and health status (Lorig et al., 2001).

Self-management training for people with chronic diseases (included endometriosis, depression, diabetes, myalgic encephalomyelitis, osteoporosis and polio) can offer benefits in terms of enhanced self-efficacy, greater use of cognitive behavioral techniques, and improvement in some aspects of physical and psychological well-being (Wright et al., 2003).

The literature review related to self-management education in diabetes included 72 studies conducted by Centers for Disease Control and Prevention (Norris, et al., 2001). Forty six studies showed an effect on patient knowledge and performance of technical skills: 33 studies showed positive impact and 13 showed negative impacts on patient knowledge and performance of technical skills. Patient education led to a reduction in cardiovascular risk measures (elevated weight, cholesterol levels, and blood pressure) in only 18 of 45 studies. The CDC review indicates that patient education by itself is not sufficient to improve clinical outcomes, and that greater patient knowledge does not correlate with improved glycemic control.

In conclusion, of the studies in chronic disease that were reviewed, self-management intervention were delivered in a variety of setting with the most popular being clinical locations (hospital) or the home environment. Self-management approaches were either group-based, an individualized approach, or a combination of both. The format of self-management intervention approaches varied and included booklets, lectures, role play and contracting (goal setting). Most approaches combined at least two formats of delivery. In addition, a diverse range of self-management

components was broadly identified as providing information, drug management, symptom management, management of psychological consequence, lifestyle, social support, communication, and other self-management strategies such as career planning, goal setting, and accessing support services. Multi-component programs are usually designed to increase the repertoire of participants' self-management skills within the realities of living with a chronic condition. The approaches used are not specific to the country of origin.

The effective self-managers will feel confident in selecting the techniques that they believe will meet their specific needs at a given point of time and in a given environment or situation. Multi-components programs are best considered as a "package" of self-management skills, similar to the standard packages of care provided in clinical setting. However, no specific intervention has proved to produce superior results therefore there is no gold standard of self-management (Barlow et al., 2002).

4.5 Self-management intervention for improving blood pressure control

Studies that focused on blood pressure control in the control and intervention study groups tended to have improved blood pressure control status including the proportion of patients with achieve BP control (Bosworth et al., 2009) and the mean changes in systolic blood pressure and diastolic blood pressure (Bosworth et al., 2009; Chodosh et al., 2005; Connell, Wolfe, and McKevitt, 2007; Ebrahim and Smith, 1998; Fahey, Schroeder, and Ebrahim, 2006; Glynn et al., 2010; Nine et al., 2003; Warsi, Wang, and LaValley, 2004; Wongputtakham, 2008). Most studies revealed an improvement in blood pressure control in the intervention group

compared with the control group significantly (Bosworth et al., 2009; Chodosh et al., 2005; Connell, Wolfe, and McKevitt, 2007; Ebrahim and Smith, 1998; McManus et al., 2010; Nine et al., 2003; Warsi, Wang, and LaValley, 2004; Wongputtakham, 2008).

Percentage changes in the proportion of patients with achieve BP control ranged from 4.3 to 16.3%. The mean change in systolic blood pressure ranged from 0.6 to 23 mmHg in the experimental groups. Diastolic blood pressure ranged from 3.9 to 22 mmHg in the intervention groups. The length of follow-up after completion of an intervention seemed to have a major effect on outcomes, and studies with a follow-up period of 6-24 months tended to demonstrate greater effectiveness (Bosworth et al., 2009; Nine et al., 2003).

In conclusion, these studies are heterogeneous with respect to approaches of self-management program, outcomes assessed, study quality, and generalizability. Review of this literature reveals a number of important generalizations concerning the components and determinants of effective interventions and the outcomes most conducive to improvement.

Therefore, the self-management program of this study was approached participants by small group and individual and delivered in the setting at medical out-patient department in hospital. The approaches were combined multi-components including giving information, goal setting, training skills for health behaviors management, monitoring and evaluating for achieving of blood pressure control, and reinforcing related to achieving of their goals. In addition, the telephone call from nurse was cooperated in this program and acted as the supporter and assistant to promote the achieving blood pressure control in the participants.

5. Hypertensive self-management program

This section reviewed the evidence of hypertensive self-management programs researches both in Western and Thailand. In addition, evidence supporting telephone follow-up of hypertensive intervention program was presented.

5.1 Hypertensive self-management researches

Self-management program promoted active illness management (monitoring symptoms, altering medication, or seeking help). Thus, some self-management programs contained more complex interventions such as behavioral treatments. Evaluation of the program emphasized knowledge, blood pressure control, and patient adherence.

Ebrahim and Smith (1998) reported a systematic review of sustained effects of non-pharmacological interventions for lowering blood pressure. Totals of eight RCTs of salt restriction, eight RCTs of weight reduction, eight of stress management, eight of exercise, and one of alcohol reduction of longer than six months duration were found. Net (i.e. intervention – control group) systolic blood pressure changes, mean mmHg (with 95 percent confidence intervals in parentheses), in hypertensive were as follows: salt restriction, weight loss, stress control, and exercise. Smaller changes were found in normotensive participants: salt restriction, weight loss, exercise, and alcohol reduction. Some interventions (e.g. stress control in normotensives) were not examined in either hypertensive or normotensives. The majority of RCTs were of low methodological.

Dongbo et al. (2003) conducted randomized controlled trial of the implementation and quantitative evaluation of chronic disease self-management program in Shanghai, China. The randomized controlled trial with six-month follow-

up and participants in the treatment group received education from a lay-led CDSMP course and one copy of a help book immediately; those in the control group received the same education and book six months later. Patients who received treatment had significant improvements in weekly minutes of aerobic exercise, practice of cognitive symptom management, self-efficacy to manage own symptoms, and self-efficacy to manage own disease in general compared with controls. They also had significant improvements in eight indices of health status and, on average, fewer hospitalizations.

Nine et al. (2003) studied community-based chronic disease management program for African Americans. The primary outcomes were DBP, SBP, quality of life index. Intervention composed of individualized sessions with registered nurses or dieticians involving goal setting, evaluating progress and goal achievement; plus individualized exercise and dietary advice, and weekly support groups. Assessment of outcomes at baseline, 3, 6, 9 and 12 months post-test.

The participants decreases in initial and 1-year values were seen in both systolic blood pressure ($P < .0001$) and diastolic blood pressure ($P = .000$).

Schroeder, Fahey, and Ebrahim (2004) conducted the interventions for improving adherence to treatment in patients with high blood pressure in ambulatory settings. In order to determine the effectiveness of interventions aiming to increase adherence to blood pressure lowering medication in adults with high blood pressure.

The components of interventions were group education, individual education, written information, drug regimen changes, patient support, and organizational changes in care. The results indicated that simplifying dosing regimens increased adherence in seven out of nine studies, with a relative increase in adherence of 8 percent to 19.6 percent. Motivational strategies were successful in 10 out of 24 studies with generally

small increases in adherence up to a maximum of 23 percent. Complex interventions involving more than one technique increased adherence in eight out of 18 studies, ranging from 5 per cent to a maximum of 41 per cent. Patient education alone seemed largely unsuccessful.

Warsi, Wang, and LaValley (2004) conducted a systematic review of self-management education programs in chronic disease. The intervention composed of individual education, group education and variety methods such as written, audiotape, videotape, telephone, and face-to-face. Results indicated that summary effect sizes for self-management education programs were small to modest (range 0.01-0.46 for random effects models). Such programs were associated with significant improvements only in systolic blood pressure for those with hypertension (summary effect size, 0.20; 95%CI, 0.01-0.39).

Chodosh et al. (2005) studied meta-analysis of chronic disease self-management programs for older adults. Intervention used tailored adjustments to meet individual patient needs, a group setting, feedback, and psychological services, and whether the intervention was provided by the patient's usual physician. This study found sufficient evidence to conclude that chronic disease self-management programs for older adults probably result in clinically and statistically significant improvements in blood pressure control. Outcomes measures were clinical outcome e.g. blood pressure for hypertension and intermediate outcomes e.g. knowledge, feeling of self-efficacy, and health behaviors that are postulated to be related to clinical outcomes.

Fahey, Schroeder and Ebrahim (2006) studied interventions used to improve control of blood pressure in patients with hypertension. Randomized controlled trials (RCTs) interventions were comprised of (1) self-monitoring (2) educational

interventions directed to the patient (3) educational interventions directed to the health professional (4) health professional (nurse or pharmacist) led care (5) organizational interventions that aimed to improve the delivery of care (6) appointment reminder systems. The results revealed that self-monitoring did appear to reduce diastolic BP, although trails did not always optimize its potential. In addition, many interventions, including self-monitoring were multi-faceted and so it was difficult to determine the effectiveness of the different components. Appointment reminders increased the proportion of individuals who attended for follow-up. Simple education programs directed at patients are unlikely to influence control of blood pressure.

Connell, Wolfe, and McKevitt (2007) conducted a narrative review of community interventions for improving hypertension control and preventing stroke in black adults hypertension self-management. Interventions for patients to self-manage hypertension composed of goal setting, self-monitoring, family support, group session, individual session, home visit topics identified different publications of the same program. Identical programs were classified differently within and between reviews. The primary outcomes of interest were changes in blood pressure levels or control of blood pressure and hypertension knowledge. The meta- analysis across programs with heterogeneous educational or organizational approaches.

Bosworth et al. (2008) studied Take Control of Your Blood pressure (TCYB) study: A multifactorial tailored behavioral and educational intervention for achieving blood pressure control. Participants were randomly allocated to receive a nurse-administered behavioral intervention or usual care. Patients receive the tailored behavioral intervention bi- monthly for two years via telephone; the goal of the intervention is to promote medication adherence and improve hypertension-related

health behavior. The sample randomized to the behavioral intervention consisted of 319 adults with hypertension (average age = 60.5 years; 47% African-American).
A comparable sample of adults was assigned to usual care (n=317). We had a 96% retention rate for the overall sample for the first 6 months of the study (93% at 12 months). The average phone call has lasted 18 minutes (range 2 to 51 minutes). From baseline to six months, self-reported medication adherence increased by 9% in the behavioral group vs. 1% in the non-behavioral group.

Bosworth et al (2009) indicated that a centralized blind and stratified randomized algorithm was used to randomly assign eligible patients to receive usual care, a behavioral intervention (bimonthly tailored nurse-administered telephone intervention targeting hypertension-related behaviors) home BP monitoring 3 times weekly, or the behavioral intervention plus home BP. The results showed that combined home BP monitoring and tailored behavioral telephone intervention improved BP control, systolic BP, and diastolic BP at 24 months relative to usual care.

McManus et al. (2010) studied a randomised controlled trial of telemonitoring and self-management in the control of hypertension (TASMINH2). Self-management of hypertension using a simple drug titration plan in combination with telemonitoring of blood pressure resulted in significant reductions in systolic blood pressure at 6 and 12 months compared with usual care. The self-addition of medications when patients were not at goal may have overcome any therapeutic inertia sometimes associated with physician management. From baseline to 12 months, systolic blood pressure decreased by 17.6 mm Hg (14.9–20.3) in the self- management group and by 12.2 mm Hg (9.5–14.9) in the control group (difference between groups 5.4 mm Hg, 2.4–8.5;

p=0.0004). Frequency of most side-effects did not differ between groups, apart from leg swelling (self-management, 74 patients [32%]; control, 55 patients [22%]; *p*=0.022).

These studies illustrate that the self-management approaches were group-based, an individualized approaches, or combination of both. The components of self-management interventions are composed of goal setting, evaluating progress, goal achievement, group education, individual education, dietary counseling, support group, family support, home blood pressure monitoring, appointment reminder systems, telephone call administered, and organizational interventions. Some interventions focus on improving adherence to the Dietary Approaches to Stop Hypertension (DASH) dietary pattern, weight management, reduced sodium intake, regular moderate-intensity physical activity, adverse effects of medication therapy, smoking cessation, stress, and moderation of alcohol intake. Interventions were delivered through written information or multimedia materials (audiotape, videotape, booklets, and CD-ROMS), interactive sessions with professionals, and non-interactive sessions, or combination of these approaches. The duration of the interventions was widely varied (1week-5 years). The interventions focused on improving health outcomes (i.e. lifestyle behaviors, blood pressure control).

A hypertensive self-management program should emphasis an interactive approach between health care provider and participants. Patients should make their own decisions in managing of themselves while health care provider supports them with useful information. The program should encourage active participation, and use a variety strategies which improve health outcomes.

In Thailand, few researcher conducted self-management program in hypertensive patients in order to enhancing patients' ability to manage their physical and psychological consequences and lifestyle changes. Most of the researchers conducted health education program in hypertensive patient. Self-management approaches were either group-based, an individualized approach, or combination of both. Regarding the materials used in self-management program most studies use multi-media materials such as booklet, video, audiotape, and CD-ROMS. These studies are as follows;

Nontarut Sataverapong (2007) studied effects of the self medication management program on knowledge about medication use, medication management ability, medication adherence, and blood pressure control in persons with essential hypertension. The design was used quasi-experimental research with a two-group pre-test post- test design. The study findings revealed that at fourth weeks and eight weeks after entering the program, the mean scores of knowledge about medication use, medication management abilities, and medication adherence of the experimental group were statistically significantly higher and their blood pressure levels were statistically significantly lower than those of the control group ($p<.001$).A comparison of the interaction between reception of the program and time showed that the mean scores of knowledge about medication use, medication management abilities, and medication adherence were statistically significantly higher. Also, the blood pressure levels measured at baseline and after entering the program were statistically significantly different ($p<.001$).

Orasa Panpakdee et al.(2008) conducted the behavioral modification project in hypertensive patients at risk for stroke at Ramathibodi Hospital by using group

process, letter reminder, telephone follow-up, 5 times of implementing meeting about stress management, diet and blood pressure control, and exercise management. The duration of this project was 3 months. The media was composed of manual book, CD-ROM, self-record book. The project findings revealed that 1) blood pressure of the hypertensive patients at risk for stroke who received the behavioral intervention had significantly decreased compared to before ($p < .05$). 2) hypertensive patients at risk for stroke who received the behavioral intervention had significantly differences in self-efficacy in the dimensions of diet and weight control, exercise, stress management compared to before ($p < .05$).

Siriwat Wongputtakham (2008) conducted the effects of self- management on health behaviors and blood pressure among hypertensive patients. By using quasi-experimental research (two groups pre and post test design). Thirty subjects were purposively selected from patients attending the hypertensive clinic, out-patients department, Nan hospital. The results revealed that (1)Health behaviors mean score of hypertensive patients after receiving the self-management plan was significantly higher than that of before ($p< .001$). (2) Health behaviors mean score of hypertensive patients who received the self-management plan was significantly higher than those who did not ($p< .001$). (3)Blood pressure of the hypertensive patients who received the self-management plan had significantly decreased compared to before ($p < .001$). (4) Blood pressure of the hypertensive patients who received the self-management plan was significantly lower than those who did not ($P < .001$).

5.2 Telephone follow-up

Modes of administering hypertension interventions and programs include the use of landline or cellular telephones. Nowadays, most homes in Thailand have

phones, making it a useful tool to deliver self- management program. Evidence supports the fact that telephone follow-up reduce cost and missed appointments, and increase frequency of contact and satisfaction in patients with mode of communication (Car and Sheikh, 2003). Additionally, telephone support has been found to be beneficial in improving of adherence to medication regimen and lifestyle behaviors.

Bosworth et al. (2008) conducted the behavioral intervention was telephone administered for several reasons. Delivering an intervention by telephone may enhance the intervention's cost-effectiveness primarily due to reduced visit rates. Telephone intervention also provide an opportunity to reach more patients and these interventions may be more acceptable and convenient than in person interventions.

Schroeder, Fahey, and Ebrahim (2004) conducted the interventions for improving adherence to treatment in patients with high blood pressure in ambulatory settings. They summarized methods of intervention into four categories. The nurse phone call is one method of the patient motivation support and reminder. The results reported that 96% achieved maximum adherence score versus 91%, $p<.05$

Glynn et al. (2010) studied a systematic review of self-monitoring and other non-pharmacological interventions to improve the management of hypertension in primary care. The results stated about the telephone reminder intervention compared with usual care gave the different results in terms of systolic and diastolic blood pressure, show improvement in blood pressure control but not significant, OR 0.5 (95% CI = 0.4 to 0.7).

Telephone follow-up is a strategy to remind or follow self-management practices of patients at home. Nurses can counsel and help patients to solve the problem and support or promote for maintaining good lifestyle behaviors.

6. Developing self-management program in hypertensive patients at risk for stroke

Self-Management Program (SMP) was focused on the ability of the patients to handle the problems. The researcher developed this program based on the self-management concept. The development process of the program is composed of 4 phases as follows:

1. The Problem Assessment and Needs Identification Phase

The first phase begins with assessing and identifying the problems in hypertensive patients at risk for stroke. This phase consists of introduction to the program, mutual goal setting, According to the literature reviewed on the problems in hypertensive patients at risk for stroke in Thailand and other countries both eastern and western country, the findings were found that the hypertensive patients at risk for stroke had poor monitoring of illness, impair in daily functioning, stressful life event, low self-efficacy, no self-management skill, non-adherence to antihypertensive drug. This information is the essential baseline data that facilitate the effective development of the program.

2. Preparation for Self-management Phase

After the patient could clearly identify the problem and establish goals to solve the problems, the nurse should enhance the patients' hypertensive knowledge and skill training through the disease and self-management skills. This phase consists of knowledge of hypertension, DASH diet exercise and medication, stroke risk and

stroke warning signs, self-management skills training, information about the resources that effect the management. Education will be immediately intervened to correct patient's perception. The researcher should correct their perception by giving systematic information in order to improve the understanding, so that patients will learn the correct knowledge and have self-awareness.

3. The Practice for Self-Management Phase

This phase will be implemented or action the self-management process as follows:

3.1 Self-monitoring refers to a patient's observation and recording of health problems including early stroke warning signs that influence the occurring of stroke. It might involve any or all of the processes of self-control that requires attentive monitoring of one's behavioral changes, based on information from the cognitive process and learning from past experience.

3.2 Self-evaluation refers to obtaining information from self-monitoring, learning and practicing the management strategies to appropriate behaviors and goals. Self-evaluation can affect physical and psychological health.

3.3 Self-reinforcement refers to the reward that hypertensive patients at risk for stroke plan to give themselves, based on successful performance in managing behaviors or achieving goals.

4. The Evaluation for Self-Management Phase

The final step is self-reaction that refers to the attention individuals direct toward evaluating their performance (Bandura, 1986). The evaluation of self-management phase that include the outcome evaluation and terminate the program.

Self-management program (SMP) was developed based on self-

management model (Kanfer and Goelick-Buy, 1991). SMP would provide the knowledge and practice skills to manage the health behaviors that significantly related to improve health status. All activities of this program which implemented into five sessions can be described and divided into 1) self-monitoring, 2) self-evaluation, and 3) self-reinforcement processes based on self-management model as follows:

1) Self-monitoring process. This is continuous independently assessed by an observer that leads to change from the inappropriate health behaviors to the desired health behaviors. Self-monitoring not only provides a foundation but it is a necessary condition to determine if goals are to be achieved, as well as heightening self-awareness. To improve self-monitoring of chronic illness, three suggestions are offered (Creer and Bender, 1993). First, patients should monitor only the phenomena that are operationally defined as the target behavior. Second, an objective measure should be included. Finally, in gathering information, it is important for individuals to observe and record information only during specified periods of time.

Self-monitoring of SMP was implemented with the participants record their inappropriate health behavior to obtain baseline frequencies of target behaviors in “the health behaviors related to hypertensive risk factors questionnaire”. Their target behaviors were composed of diet behavior, exercise behavior and medication adherence due to all of these behaviors are related to increase hypertensive risk factors that influence to the risk of stroke. The participants have to record their target behaviors in the easy way that altered or measured, counted frequencies, and noted the circumstances of occurrence in the hypertensive booklet by recording the first two selected target behaviors in the first time that we met at medical OPD. After that, they have to continuous monitor and record all target behaviors until finished this program

(12 weeks). Both intervener and the participants clearly specify the priority setting of target behaviors to be observed and discussed the entire self-monitor recording method to illustrate the limits of target behaviors. The hypertensive booklet can available at anywhere and anytime that the behavior is likely to occur. Self-monitoring assignments will be reviewed following the session in which they were assigned.

Establishment of criteria and individual goal setting would occur only after careful systematic preparation (Creer and Halroyd, 1997) by giving hypertension significant information both hypertension knowledge and hypertensive self-management skills that reflects the information collection of self management model. Patients must primarily acquire knowledge of their health problems or condition of their chronic illness that is to be prevented or managed and how their risk factor or the disorder itself can be managed. Hypertension significant information would provide at the first day of meeting for enhancing patients' hypertension knowledge. The participants' self-management skills would cover the hypertensive risk factors management including diet management, physical activity and exercise management, and medication adherence management by using anticipatory regulation practice and would provide at the third time of meeting.

Following the participants learn about their illness and their roles in its management, specific goals can be set to improve their health and well-being. Setting realistic goals is the key to goal attainment. Goal setting for this study have been demonstrated to enable individuals to stay motivated and achieve their goals (Kanfer and Goelick-Buy, 1991). The participants were instructed to set goals that were flexible to accommodate any unexpected challenges.

Successful collaboration between intervener and participants in goal setting guides the participant in organizing and applying self-management skills to achieve selected goals. The relationship between the participants and intervener were called partnership which active experience collaborative care in manage their health, rather than passive recipients of health care interventions. In addition, intervener used contracting and stimulus control as additional techniques for achieving the goal.

2) Self-evaluation process. This process consists of a comparison between the information obtained from self-monitoring and the person's standard for the given behavior. Kanfer and Goelick-Buy (1991) have emphasized the importance attribution of self-evaluation process at two stages of the model. First, the participants must be engaged in goal directed behavior. The behaviors were evaluated with respect to its relevance to the individual's short and long term goals. Secondly, in evaluating the cause of success or failure to reach the aspired criterion, the participants must be attributed the cause of a discrepancy to some aspect of self or to some external factor.

To achieve the participant's goal, the person's standard for the given behavior would be set and related to an objective measurement. The performance criteria or standards of the inappropriate health behavior's management were included 1) eat the high fruit and vegetables diet in everyday, 2) take more physical activities and exercise at least 30 minutes 3 times a week, and 3) adhere hypertensive drugs.
In addition, the participants have to evaluate and make adjustment about the recording health behavior data, and evaluate the antecedent and consequences of success or failure to reach the aspired criterion with considering the intrapersonal and contextual factors. The participants can compare collected data about their condition with

standards criteria in order to evaluate and make adjustment about their health status or health problems.

3) Self-reinforcement process. This process presents that the participants react cognitively and emotionally to the results of the self-evaluation. After comparing his/ her behavior with the standard criteria, the participants would have both positive and negative reactions, which affected the participants to maintain the behavior, thus strengthening it. Negative reaction, in contrast, would inhibit the behavior, leading to modification of behavior. Positive reaction, therefore, was an important motivation for the continuation of behavior.

In this study, the participants have to evaluate and present his/her positive and negative reactions and outcomes. After that, the participants used the negative reactions to prohibit the behaviors or leading to modification of behaviors, and used the positive reactions to motivate the continuation of desired health behaviors. Intervener used enacting motivation, and emphasized the continuation of desired health behaviors. Intervener gave the scenario of negative role model with showed the negative consequences and asked the participants to critique the scenario "What do you feel? If it belongs to you, what will you do next?" Intervener trained the participants to use self-reinforcement when the participants accomplished the inappropriate health behaviors management by using the material reinforcement or verbal symbolic self-reinforcement that related or promoted their better health. Intervener also usually used the verbal reinforcement to participant when the participants accomplished the changing behaviors that related or promoted their better health, and increased the desired health behaviors. The participants were asked to

imagine the consequences of accomplished and not accomplished the desired health behaviors by intervener.

Self-management techniques have probably made repeated previous attempts to change his or her inappropriate health behavior. Failure might have been due to lack of environmental support, lack of knowledge of specific behavior change methods, or lack of sufficient incentives for trying to change (Kanfer and Goelick-Buy, 1991). Then, SMP would promote self-management by using telephone call as a social support in this program and participants can call intervener at any time for environmental support. As Mead et al. (2009) mentioned that combining social support was more effective to improve self-management for achieving the goals. In addition, this intervention used hypertensive self-management education from booklet for enhancing knowledge specific to behavior change, and using the negative/positive scenario for enhancing incentives for more successful from the self-help resources as the model suggestion.

The target health behaviors management of this program was composed of diet management, physical activity and exercise management, and medication adherence. The processes of the target health behaviors management were developed based on self-management model of Kanfer and Goelick-Buy (1991).

1) The Dietary Approaches to Stop Hypertension (DASH) diet Participants were encouraged to eat high fruit and vegetable diet, The Dietary Approaches to Stop Hypertension (DASH) diet can help patients control their blood pressure. The DASH diet is rich in grains, fruits, vegetables and low-fat dairy products. It limits fat, saturated fat and cholesterol and provides plenty of fiber, potassium, calcium and magnesium. The DASH diet also limits sodium to between

2,300 milligrams and 1,500 milligrams a day.

2) Physical activity and exercise management. This program suggested in moderate exercise by walking 30 minutes at least three times per week. Reaching the target of heart rate is to be 70% of maximum heart rate that most appropriate for hypertensive patients. The intervener would describe the benefit of aerobic exercise and regular physical activity to heart function, and train the participants to check their heart rate. In addition, the participants were encouraged to balance a level of physical activity that keep fit with the number of calories intake.

3) Medication adherence program suggested the use of hypertensive drugs in five groups and also informed the side effect of each group of medication. Additionally, it had self-report and checklist for patients in order to self-monitoring appropriate for taking medication during intervention.

The media of this program were composed of booklets, flip chart for enforcing the knowledge and practice skills for hypertensive patients. Booklets provided information about hypertensive risk factors, clinical course and patho-physiology of disease, cognitive affective and behavioral factors affected to worse progressive of hypertension, management, complication, and inappropriate health behaviors management. Moreover, booklets also contained the self-report and checklist used for self-monitoring and self-evaluation about inappropriate health behavior management.

CHAPTER III

RESEARCH METHODOLOGY

This chapter describes the research methodological approaches employed in this study. They consisted of research design, population and sample size, research instruments, data collection, and data analyses.

Research design

This study was conducted a randomized controlled trial two groups pretest and posttest research design (Friedman, Furberg, and DeMets, 1998; Knapp, 1998; Shadish, Cook, and Campbel, 2002), which aimed to examine the effect of a self-management program on blood pressure control among hypertensive patients at risk for stroke. The participants were randomly assigned to either the experimental or the control group. The intervention included four phases of the self-management program. Data collections were processed at baseline and at the 3rd month after the completion of the intervention. This research design diagram of the study was as follows (Figure 3):

R	O_1	X	O_2	Experimental group
R	O_3		O_4	Control group

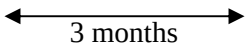

Figure 3 Research design

R = random assignment in order to place samples into either the experimental or control groups

X = the self-management program was implemented within 3 months.

O_1 = gathering personal information questionnaire and blood pressure

measurement in the experimental group as baseline data.

O_2 = blood pressure measurement in the experimental group at the 3rd month after intervention provided

O_3 = gathering personal information questionnaire and blood pressure measurement in the control group as baseline data.

O_4 = blood pressure measurement in the control group at the 3rd month after intervention provided

Setting

The study was implemented at the Police General Hospital, Bangkok, Thailand, which is a 600-bed tertiary care hospital and provides comprehensive health care to police personnel and their relatives, including civilians and ordinary people with a variety of diseases including chronic disease. This hospital was selected as a setting for this study for the following reasons: (1) the increase of hypertensive patients in the Police General Hospital from 2009-2011 was 6,830, 7,745, and 8,192 respectively; (2) the mean total hospital stay for stroke in this hospital was 16.70 days, whereas the length of hospital stay for stroke in Thailand was 20.63 days (Thailand Health Profile, 2010). This showed that the Police General Hospital also had a length of hospital stay similar to other hospitals in Thailand. (3) This hospital had chronic care service for caring hypertensive patients following the guidelines for the treatment of hypertension (Thai Hypertension Society, 2008) at the same standard of care as other hospitals in Thailand. The intervention was conducted in the activity room in the medical outpatient clinic. The medical outpatient clinic provides medical service on Monday to Friday from 8.00 a.m. to 16.00 p.m. Each day, there are approximately 200-300 patients receiving medical services in the department. These services include medical

treatment for chronic illness by medical doctors and provision of information and advice about chronic illness from medical doctors and nurses.

Population and sample

Population of the study

The target population in this study was hypertensive patients based on the ICD10 who had risk for stroke assessed by the classification of people at risk for stroke (Bureau of Non-Communicable Disease, 2007).

Samples of the study

Hypertensive patients at risk for stroke were identified according to the record of chart review. The hypertensive patients at risk for stroke whose characteristics met the inclusion criteria were selected for the study.

1. Sample selection

Simple random sampling was used to obtain participants in the study. The following criteria were used to select the participants:

The hypertensive patients at risk for stroke receiving hypertensive care of the experimental group were invited to participate in the study and were selected from a chart record according to the inclusion criteria as follows:

1) Aged range from 35-79 years.

2) Those that had been diagnosed with essential primary hypertension with stage I hypertension classified by the Seventh Report of the Joint National Committee (JNC-7) and having systolic blood pressure 140-159 mmHg and diastolic blood pressure 90-99 mmHg.

3) Being classified as people at risk for stroke (Bureau of non-communicable disease, 2007) at the level of patients at high risk.

4) Having good communication skills, i.e., could read and write in the Thai language

5) All participants agreed to participate in the intervention, as expressed in the consent form.

The exclusion criteria for this study included:

1) The participants that had been participated in any other formal potential self-management skills development program, for example, a medication adherence program

2) The participants asked for discontinuation of their participation in this intervention during the process.

3) The participants had active severe hypertensive complications such as congestive heart failure, stroke, renal failure, or mental illness, liver disease or pregnancy.

2. Sample size

The sample size in this study was calculated based on a significance level of 0.01 and a power of 0.90 (Hair et al., 2010). Eighty-eight patients were required for both the experimental and control groups. A previous, similar study reported an attrition rate of 20% (Warsi et al., 2004); therefore, at least 106 patients were required for each group. Initially, 108 patients on a criteria basis agreed to be enrolled in the study. Prospectively, participants were equally allocated into the experimental (n = 54) and comparison groups (n = 54).

3. Sampling procedures

Two hundred and twenty four of hypertensive patients at risk for stroke were identified according to the review of their chart. When the hypertensive patients

at risk for stroke whose characteristics met the inclusion criteria were selected for the study, the investigator randomly assigned them to treatment using computerized simple randomization (SPSS) into two groups, number “0” and “1.” Then they were randomized either to the control or intervention group by using a sealed envelope technique with the letter “E” for the experimental group and the letter “C” for the control group. First, the researcher set the number “0” and drew a ballot from the sealed envelope and the number “1” represented the rest of the items in the envelope in order to assign the participants into either the experimental (N=54) or control group (N=54). This technique minimized the possibility of an imbalance among potentially confounding variables and achieved better between the experimental and control group assignment (Zeller, Anderson, Good and Zeller, 1997).

The participants consisted of 108 hypertensive patients at risk for stroke, 54 for the experimental group and 54 for the control group. The researcher invited them into the setting to measure their blood pressure at baseline. The participants that attended the experimental group received the hypertensive self-management program while those attended the control group received conventional nursing care.

4. Sample attrition

Because of the long duration of the program, an above-average drop-out rate of subjects was likely to occur. One hundred twelve hypertensive patients were screened from a review of the patients’ record in the medical outpatient clinic and one was excluded for congestive heart failure and three refused to participate in the study.

For the initial data collection, 108 participants fulfilled the initial criteria and were approached to participate in the study; however, 8 patients were unable to participate throughout the entire process of the study. The reasons why four

participants withdrew from the study in the experimental group were moving to another province so they failed to maintain the follow-up after the intervention finished. The reason why the other four participants dropped out of the control group was that they were busy with their works and their life so they could not complete every session in the study. Therefore, the final samples consisted of 100 patients; 50 of them were in the control group that obtained conventional nursing care while the other 50 patients were in the experimental group that obtained conventional nursing care and received the Self-Management Program (SMP). Details of the sampling procedure are presented in Figure 4

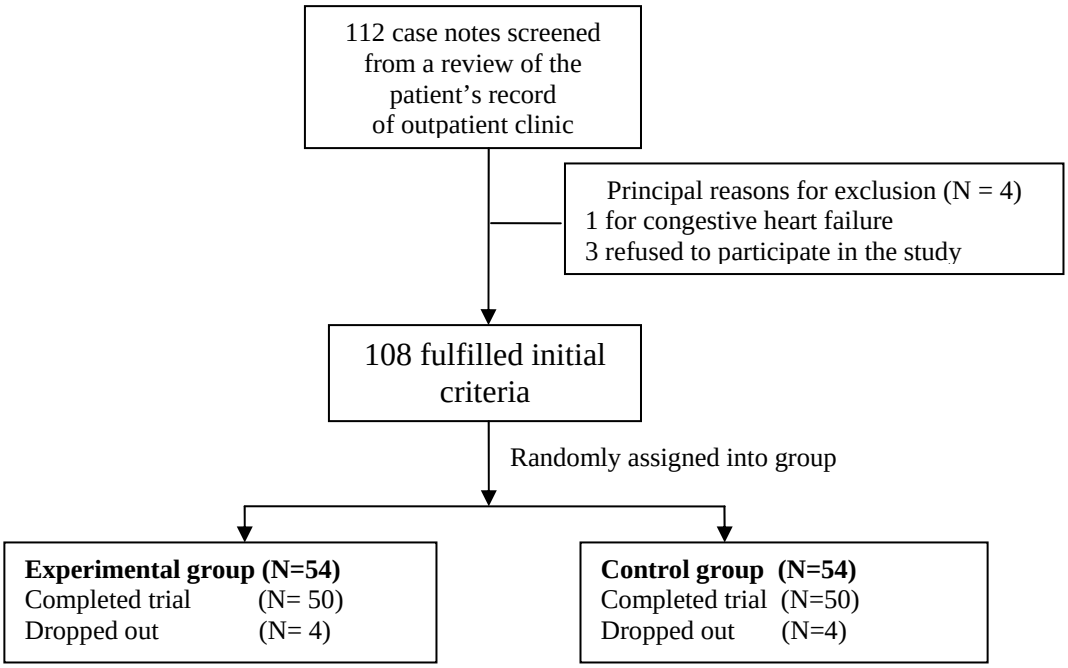

Figure 4 Details of the sampling procedure

5. Sample approach methods

5.1 The researcher approached the participants and presented information in non-technical terms about the intervention, the benefits of the intervention, and protection of human rights in order to seek their approval to

participate in the study. Once the prospective participants agreed to participate in this study, they signed a consent form.

5.2 After grouping, the participants in the control group received the usual care from the hospital, while the experimental group received the scheduled appointment to participate in the Self-Management Program (SMP). Both groups completed the personal information sheet and their blood pressure was measured at the baseline. In addition, the experimental group received a self-management booklet for hypertensive patients at risk for stroke. The control group also received the self-management booklet for hypertensive patients at risk for stroke after they finished the program.

Research instruments

The instruments used in this study were composed of three types: 1) data collection instruments, 2) intervention instruments, and 3) experimental monitoring instruments. The content validity of the instruments was examined by 7 experts composed of one internal medicine specialist; 4 nurses instructors who are experts in adult nursing, and 2 instructors who are experts in the Dietary Approach to Stop Hypertension (DASH) diet and exercise management in hypertensive patients.

1. Data collection instruments

A questionnaire instrument was used to measure the outcome of this study. There were the personal information sheet and the blood pressure measurement device, as detailed below.

1.1 The personal information sheet

The personal information sheet was developed by the researcher and collected information on the personal and social background of the sample concerning

age, gender, marital status, educational level, occupation, family income, duration of illness, blood pressure level, and numbers of hypertensive medications taking.

1.2 Instrument for blood pressure measurement

This study used the office or clinic blood pressure equipment because of its low cost, versatility, and ability to perform repeatedly and persistently over the long term (Chobanian et al., 2003; O'Brien, 2003; Pickering, Hall, Appel et al., 2005). The automatic blood pressures monitor (oscillometric) is calibrated every six months. This calibrated cuff from OMRON Company on June, 2011 reported the manometer failure rate of 0.2% out of less than 0.5%. The measurement based on the JNC VII guideline for the management of arterial hypertension (Chobanian et al., 2003) as follows:

When measuring BP, care should be taken to:

1. Allow the patients to sit for several minutes in a quiet room before beginning BP measurements

2. Take at least two measurements spaced by 1–2 minutes, and additional measurements if the first two are quite different

3. Use a standard bladder (12–13 cm long and 35 cm wide) but have a larger and a smaller bladder available for fat and thin arms, respectively.

4. Have the cuff at the heart level, whatever the position of the patient.

5. Press the switch "on" then the monitor will show "o" at the systolic channel.

6. Measure BP in both arms at first visit to detect possible differences due to peripheral vascular disease. At this time, take the higher value as the reference.

7. Measure BP 1 and 5min after assumption of the standing position of the subjects.

8. Patients, and in other conditions in which postural hypotension may be frequent or suspected.

9. Measure heart rate by pulse palpation (at least 30 sec) after the second measurement in the sitting position.

2. Intervention instruments

The instruments for intervention were composed of the Self-Management Program (SMP), the Manual of Self-Management Program, the self-monitoring assessment form, and instruction media. The details of these instruments are as follows:

2.1 The Self-Management Program (SMP) was developed by using the self-management model (Kanfer and Goelick-Buy, 1991) as a theoretical framework. The self-management model used as the strategies that patients apply to control blood pressure by using the appropriate methods with existing resources. Therefore, the SMP refers to the cognitive and behavioral efforts to control blood pressure associated with adherence to the Dietary Approach to Stop Hypertension (DASH) diet, exercise, and medication taking by using the strategies which were applied among hypertensive patients at risk for stroke in order to improve knowledge about hypertension, DASH diet and exercise, stroke risk, enhance compliance with antihypertensive medication and self-management skills, identifying stroke warning signs and coping with stroke warning signs through the processes that included self-monitoring, self-evaluation, and self-reinforcement processes based on self-

management model of Kanfer and Goelick-Buy (1991), telephone follow-up, and evaluation.

The Self-Management Program (SMP) was described in three dimensions: the self-management program development, the self-management program trial, and the self-management program modification as follows:

2.1.1 The Self-Management Program development

The Self-Management Program (SMP) was developed based on the self-management model (Kanfer and Goelick-Buy, 1991) and existing knowledge as shown in chapter two. The program consisted of 5 sessions. The researcher developed the intervention to improve knowledge about hypertension, DASH diet and exercise, compliance with antihypertensive medication, stroke risk and self-management skills, identifying stress and stroke warning signs of a stroke and coping with stress and stroke warning signs through a process that included self-monitoring, self-evaluation, and self-reinforcement. This plan was flexible and allowed for individual implementation. This program composed of four phases that covered the five sessions of implementation within three months. The four phases of this program were as follows:

Phase 1: Problem Assessment and Needs Identification

The first phase began with assessing and identifying the problems in hypertensive patients at risk for stroke. This phase consisted of introduction to the program, and mutual goal setting. According to the literature reviewed on the problems in hypertensive patients at risk for stroke in Thailand and other countries, both eastern and western countries, the finding were found that the hypertensive patients at risk for stroke had poor monitoring of their illness, they were impaired in

their daily functioning, had stressful life events, had low self-efficacy, no self-management skill, and non-adherence to antihypertensive drugs (Ornstein, Jenkins, Nietert et al., 2004; Davis and Ford, 2001; Hyman and Pavlik, 2001). This information is comprised the essential baseline data that facilitated the effective development of the program.

Phase 2: Preparation for Self-management

After the patients clearly identified the problems and established goals to solve the problems, the nurse enhanced the patients' hypertensive knowledge and skill training through the disease and self-management skills. This phase consisted of knowledge of hypertension, DASH diet, exercise, and medication taking, stroke risk and stroke warning signs, self-management skills training, and information about the resources that effected the management. Education was immediately intervened to correct the patient's perception. The researcher corrected their perception by giving systematic information in order to improve their understanding so that patients learned the correct knowledge and had self-awareness.

Phase 3: Practice for Self-Management

This phase was implemented or action the self-management process as follows:

1. Self-monitoring refers to a patient's observation and recording of health problems including early stroke warning signs that influence the occurrence of stroke. It might involve any or all of the processes of self-control that require attentive monitoring of one's behavioral changes, based on information from the cognitive process and learning from past experience.

2. Self-evaluation refers to obtaining information from self-

monitoring, and learning and practicing the management strategies for appropriate behaviors and goals. Self-evaluation can affect physical and psychological health.

3. Self-reinforcement refers to the rewards that the hypertensive patients at risk for stroke planned to give themselves, based on successful performance in managing behaviors or achieving target goals.

Phase 4: Evaluation for Self-Management

The final step is self-reaction, which refers to the attention individuals direct toward evaluating their performance (Bandura, 1986). The evaluation of self-management phase that include the outcome evaluation and termination of the program.

The details of the program were obtained from the Manual of Self-Management Program. The intervention was composed of two manual booklets and one self-monitoring assessment form.

1. Self-management booklet for hypertensive patients at risk for stroke. The booklet developed by the researcher was used as the manual for the participants in the experimental group. It consisted of the DASH diet management booklet, the exercise management booklet, and the medication taking booklet.

2. Self-management manual for the nurse. The researcher developed this manual to give the nurse information on how to promote the SMP for hypertensive patients at risk for stroke. The conceptual framework, the steps of the self-management program and hypertension knowledge, DASH diet, exercise, and medication taking, stroke risk and stroke warning signs which illustrated about self-management behaviors (diet, exercise, and medication taking) were included in this manual.

These two manuals were validated for content by 7 experts: one internal medicine specialist, four nurse instructors in adult nursing and two instructors that were expert in the DASH diet and exercise in hypertensive patients at risk for stroke to determine their appropriateness. The comments and suggestions from the experts were too small of alphabets in the self-management booklet for hypertensive patients at risk for stroke, the timing of the sessions was quite long, there were too many details and too much content in each session, some contents were too complicate for understanding, adding the objectives of each manual clearly.

3. The self-monitoring assessment form for hypertensive patients at risk for stroke. This form was developed by the researcher and used for the samples in the experimental group. It was used to daily self-record the DASH diet eating behavior, exercise management behavior and medication taking by the patients.

This form was a document for individual planning, composed of four activities to improve self-management skills including 1) problem assessment and goal setting; 2) preparation for self-management; 3) practice for self-management; and 4) evaluation of self-management behavior. The participants had to monitor their daily self-management behaviors while at home. The researcher gave the self-monitoring assessment form to 7 experts as mentioned previously. Additionally, the researcher corrected the self-monitoring assessment form as suggested by the experts in order to make it as convenient and practical for the participants that might be lay person. Then, the researcher tried it out with five hypertensive patients at risk for stroke, and corrected it to make it suitable for the participants again.

The instruction media of this program was composed of flip charts, pamphlets, posters for example the methods of exercise; walking, example models of ingredients, and example models of the DASH diet.

2.1.2 The Self-Management Program trial

The revised program manuals were tried out on five hypertensive patients at risk for stroke that had similar characteristics to the patients in the study. The objectives for conducting the pilot study were (1) to determine the feasibility of the proposed study, (2) to identify the problems in an experimental intervention, and (3) to examine the validity and reliability of the research instruments. Any problems that came from the try out were reported to advisors. The results of the try out indicated that the researcher should combine some related content, some sessions were had too much content to follow, and some session needed more time to practice the skills.

2.1.3 The Self-Management Program Modification

The suggestions from the experts and the result from try out were indicated that the researcher should modify and make the contents more concise in the self-management booklets, the DASH diet management booklet, the exercise management booklet, and the medication taking booklet because there was too much content, and extending more time in some session and added the clearly objectives in each session. Moreover, the alphabets of manual booklets were appropriately modified in their size.

3. Experimental monitoring instruments

The instruments for monitoring the experimentation for this study was the hypertensive self-management knowledge test.

3.1 Hypertensive self-management knowledge test

The hypertensive self-management knowledge test developed by the researcher consisted of three parts: the DASH diet, exercise, and hypertensive medication. Each part related to significant information regarding the knowledge about hypertension provided to the participants. This test was administered after each session of hypertensive education at the medical outpatient department in order to determine the participants' understanding of healthy lifestyle behaviors. It consisted of 10 items each part with a dichotomous answer for choosing: "correct or incorrect" (correct = 1 point, incorrect = 0 point). The total score ranged from 0-10. The hypertensive patients at risk for stroke were determined the level for passing at 8 out of 10 scores (80%). If any participant could not reach this level, the researcher gave them another chance and allowed them to ask and review their knowledge again until they understood and performed the self management behavior. Ten out of 50 participants (20%) had a knowledge score less than 80%; thus, they had to test again until they reached the target scores. These meant that they had enough knowledge to perform properly the self-management behaviors

The researcher tested the psychometric property by using content validity and internal consistency reliability. This questionnaire was given to 7 experts composed of one internal medicine specialist, four nurse instructors in adult nursing, and two instructors experts in the DASH diet, and exercise in hypertensive patients at risk for stroke. The content validity was validated by those experts which resulted of CVI=0.95. The internal consistency reliability of this instrument was tested with 30 hypertensive patients at risk for stroke by using the Kuder-Richardson-20 (KR-20) was 0.88.

Experimental procedure

The experimental procedure in this study included 3 phases: preparation, implementation, and evaluation.

1. Preparation phase

1.1 Instrument preparation

The manual of the SMP, the media for this program, and all instruments were developed by the researcher and the content validity was evaluated by 7 experts.

1.2 Preparation of the research assistant

The research assistant in this study was a volunteer staff nurse with a master degree in adult nursing who helped administer the questionnaires to the participants. The information necessary for the assistant such as objectives, procedures, the questionnaires, and BP measurements used in the study were provided. To ensure the mutual understanding of the factors mentioned above the question and answer were repeated until the assistant demonstrated the correct understanding of the entire process of the program. In addition, the assistant was well trained in using all of the instruments.

1.3 Place preparation

The researcher informed the director of nursing, and collaborated with the head nurse and staff nurses in the medical outpatient clinic at the Police General Hospital. The objectives, procedures, and approximate length of time for the data collection were provided. In addition, the researcher also requested and prepared the activities room or meeting room for the first and second sessions of the SMP implementation.

2. Implementation phase

2.1 Procedures in the control group

The participants in the control group completed the personal information sheet, and their blood pressure was measured at baseline of the intervention. They received the usual care during 3 months in the medical outpatient clinic. The usual care is also including information or nursing care providing service by nurses in the medical outpatient clinic; health education before finishing the service, and providing information to the group of patients by using the pamphlet while the patients waited to see the physician in the medical outpatient clinic. The participants were measured for blood pressure at baseline, and the 3rd month after the baseline, and received the self-management booklet for hypertensive patients at risk for stroke when they followed-up at the medical outpatients clinic after finishing (3 months) the program.

2.2 Procedures in the experimental group

The participants in the experimental group received the usual care and the self-management program, which was composed of four phases and covered the five sessions of implementation within 3 months, and the self-management booklet for hypertensive patients at risk for stroke. In addition, they completed the personal information questionnaire during the first day of intervention. All activities of this program were implemented into five sessions that can be concluded as follows:

The first session was implemented in the medical outpatient clinic during the first day of intervention for about 50 minutes. The aims of this session were to develop relationships, to introduce the program and provide knowledge for participants, to help the participants set their short and long term goal for managing their self-management behaviors, to promote the participants for monitoring, and

recording their behaviors in the self-monitoring assessment form. Then patients set their goals, and assessed their problems and needs. In addition, the researcher assessed their previous knowledge and experience with hypertension, and supported them in understanding hypertension, risk factors, warning signs, and hypertensive self-management behaviors.

The second session was implemented at the medical outpatient clinic during the 2nd week of intervention for about 60 minutes. The intervener prepared and supported the participants for gaining more knowledge, understanding, and practicing the skills for their DASH diet behavior by using the DASH diet management booklets about hypertensive patients at risk for stroke. The intervener not only helped participants to set their short- and long-term goals for managing the DASH diet behavior but also enhanced the participants self-confidence and self-reinforcement for accomplishing their goals. The participants have to present their knowledge about the DASH diet management through the test by using the hypertensive self-management knowledge test. The first part of the hypertensive self-management knowledge test had to meet the standard criteria (80%) of this program before continuing to the next session. If the participants could not pass the standard criteria, the implementation of this session was repeated during the next hour of that day. In addition, the intervener supported the participants in monitoring, recording, and evaluating their DASH diet management for the self-monitoring assessment form and supported them in continuing their self-management behaviors in their everyday lives.

The third session was implemented at the medical outpatient clinic during the 3rd week of intervention for about 90 minutes. The aims of this phase were to encourage the participants r continue their self-management behaviors in their

everyday lives. The activities of this session included monitoring and evaluating the short and long term goals of exercise management and medication taking management and skills training and supporting the participants to manage their exercise and medication taking behavior related to data from the self-monitoring assessment form. Moreover, the intervener was also supported the participant's management of cognition, affective, and behavior with induce change of self-management behaviors. In this session, the participants had to take the second and third part of the hypertensive self-management knowledge test and had to pass the standard criteria at 80% of the program before continuing to the next session. If they could not meet the standard criteria, the implementation of the session would take place again during the next hour of that day.

The fourth session was the action and self-regulation and telephone follow-up, which was implemented at the participants' homes by using telephone calls at the 6^{th} and 10^{th} week of intervention. These phone calls were limited to 15-20 minutes. The aims were to reinforce, monitor, and evaluate the participants for maintaining their self-management behavior and regular recording in the self-monitoring assessment form, to reinforce the participants in using effective decision making to correct their health problems, and to support the participant's management of cognition, affective, and behavior with induce changes of self-management behaviors.

The fifth session was implemented at the medical outpatient clinic during the 12^{nd}week of the intervention. The aims were to evaluate the achievement of the participants' long-term goals, to reinforce the participants in continuing their self-management behaviors in daily life, to answer the questions from the participants and

to support the participants in giving information to the others, and to terminate the program. The intervention process is summarized on table 3.

3. Evaluation phase

The evaluation phase appraised the effects of the SMP, which included the outcome evaluation and termination of the program. This phase was conducted at the medical outpatient clinic 12 weeks and aimed to evaluate the long-term goals of the participants in the experimental group by intervener and to obtain data about blood pressure for the posttest both groups by a research assistant. This phase required the interaction between the participants in the experimental groups and intervener concerning the evaluation of their long-term goal accomplishment. The participants in the control group also received the self-management booklet for hypertensive patients at risk for stroke on the day of when the intervention was finished. All participants were reinforced to continue their self-management behaviors. Finally, the researcher have her many thanks to all of the participants for participating in this study.

Table 3 Summary of the intervention process

PHASE	CONTENTS	METHOD	SESSION & TIME	Measurement	OUTPUT	OUTCOMES
I Problem Assessment and Need Identification	- Trust building - Introduction to the program <u>Goal setting</u> - Assess problems and needs. - Information collection	- Group process	- Session 1 (50minutes) (the1st week)	- Blood pressure - Self-monitoring assessment form	-Problems and needs from each patient	-Blood Pressure Control -Continue their self-management behaviors in their daily lives
II Preparation for Self-management	<u>Education and skills training</u> - Hypertension knowledge, stroke risk and stroke warning signs - DASH diet and skill training - Exercise program, skill training - Medication taking, skill training	- Group process - Group teaching - Group training	- Session 2 (60minutes) (the2nd week) -Session 3 (90 minute) (the3rd week)	Hypertension knowledge test - Self-monitoring assessment form	Hypertensive knowledge -knowledge of DASH diet, exercise, medication taking -Self-management skills	
III Practice for Self-management	<u>Action and self-regulation</u> - Self-monitoring - Self-evaluation - Self-reinforcement - Telephone follow up	Performance evaluation- -Individual telephone follow-up	- Session 4 (the 4th to 11st week) -the 6th & 10th week) (10-15 minutes)	- Telephone follow up record form - Self-monitoring assessment form	-self-management behaviors (DASH diet, exercise, medication)	
IV Evaluation for Self-management	<u>Evaluation</u> - Evaluation and termination of the program	-Daily self-monitoring assessment form -Participate with the researcher	- Session 5 (50minutes) (the 12nd week)	- Blood pressure - Self-monitoring assessment form	-Benefits and barriers of self-management behaviors	

Data Collection

1. After the study was approved by the Research Ethics Committee of the Police General Hospital, the researcher informed the director of nursing and head

nurse of medical outpatient clinic, explained the study purpose and procedure, the date of the beginning of the study, and the approximate length of the data collection.

2. The prospected sample according to the inclusion criteria in this Study was recruited. Once the samples were identified, the research assistant clearly explained the objectives, procedures, information about the protection of the human rights of the participants, and details of the program, including its advantages and disadvantages before they signed the consent form if the samples agreed to participate in this study. Those that wished to participate read and signed the informed, written consent.

3. The subjects were randomly assigned into an experimental and a control group.

4. The researcher assistant measured blood pressure following the guideline. Blinding between the participants and the research assistant that collected the data used for controlling confounding factors, decrease bias, and increase validity of the outcome.

5. The participants in the control group received the usual care, while the participants in the experimental group received the usual care and the self-management program from the intervener.

6. The obtaining data for the date of intervention finished was conducted by a research assistant at the 3rd month after recruitment when they followed up at the medical outpatient clinic.

7. Research checked the questionnaire and cleaned the data prior to data analysis.

Data Analysis

Data from the questionnaires were entered into a worksheet for SPSS version 16. An assigned study number was used for the data of each subject and ensured the anonymity of the participants. Data were entered twice into two separated files in order to identify errors. These files were compared to identify inconsistencies. Data cleaning strategies by using frequency, and minimum and maximum values, were used to identify coding or entry errors.

Statistical analyses were performed with the Statistical Package for Social Sciences (SPSS) for Windows version 16.0 (SPSS Inc. Chicago, 2001) with a significance level set at < .05 as follows:

Descriptive statistics were used to describe the demographic characteristics of the participants and dependent variables with frequency, range, mean, standard deviation, and percentage.

Chi-square test was used to compare the demographic characteristics of the participants and dependent variables between the participants in the experimental and control groups at the baseline.

Independent-samples *t*-test was performed to determine the differences in mean SBP and DBP scores between control and experimental group, and paired-samples *t*-test was performed to compare the differences in mean SBP and DBP between pretest and posttest in each group.

Protection of the Rights of the Human Subjects

The study proposal was submitted to the committee of ethical approval for this study was obtained through the Research Ethics Committee of Police General Hospital, for approval prior to data collection. After obtaining permission to conduct

the study from the director of the Police General Hospital, the potential participants that met the study criteria were informed of the purpose, procedure, benefits, and risks of the study. The benefits of participant, the participants learned about self-management which helped them to take care of themselves and prevented unhealthy behaviors due to problems of risk for stroke before giving their approval. The written information declared all of the rights that the subjects had. The subjects were clearly informed of their rights to terminate at anytime with no consequences at all. They were assured that their willingness to participate in the study had no implications for the health care services that they received. They were also told that their decisions to discontinue participation in the study would not affect their relationship with the health care providers or their access to any services available at the hospital.

This intervention program presented no harm at all to the subjects, and did not interrupt with the routine nursing care or medical care. It also had the effective nursing care to encourage the patients' self-management behaviors. Then unhealthy behaviors were decreased which can be prevented stroke risk in these subjects. Throughout the study process, the researcher made an attempt to avoid any possibility of discomfort, interference, over excessive response burden on the subjects. Confidentiality of data collection was ensured both during data collection and after data collection.

CHAPTER IV

RESEARCH RESULTS

The purpose of the study was to examine the effects of self-management program on hypertensive patients at risk for stroke. The sample was composed of 100 hypertensive patients at risk for stroke at medical outpatient department of the Police General Hospital in Bangkok, Thailand. All the participants whose characteristics met the inclusion criteria were randomized before there were assigned to either experimental or control group, resulting in 50 patients in each group. Participants in the intervention group received conventional nursing care and the self-management program, whereas participants in the control group received conventional nursing care from hospital staff. The personal data and outcome of the study was collected at the baseline for pretest. The BP readings was collected at the 1st, 2nd, and 3rd month after complete the program for posttest. The obtained data were analyzed to answer the research question. The research findings were presented in four parts.

Part 1: The descriptive analysis of the personal characteristics and comparison of SBP and DBP in both groups

Part 2: The results of hypotheses testing

Part 3: The effect size of this study.

Part 1: The descriptive analysis of the personal characteristics and comparison of SBP and DBP in both groups

The personal characteristic of the samples in the experimental and control groups were presented. The participants were male 45%, and female 55%. The age was ranged from 35 to 79 years which mean 59.67, SD 9.66. Most of them were married 74%, completed the elementary school 41%. The occupations were various which full

time worked 43%, 49% unemployed and 10% priest (see table 4). The income was mostly more than 25,000 bath/month 26%, whereas the average income 21,348.30 baht (*SD* = 13,304.57) per month with sufficient income (83%).

Table 4 Participant characteristics at baseline (n=100)

Characteristics	Control group (n=50)		Experimental group (n=50)		χ^2	*df*	*p*-value
	n	%	n	%			
Age (years)					2.98	3	.40
35 – 49	7	14	7	14			
50 – 59	11	22	17	34			
60 – 69	22	44	21	42			
70 – 79	10	20	5	10			
Range= 60-69, *M*= 59.6, *SD*=9.6							
Gender					.04	1	.84
Female	27	54	28	56			
Male	23	46	22	44			
Status					3.58	3	.51
Single	3	6	6	12			
Married	38	76	36	72			
Divorced	8	16	6	12			
Separated	1	2	2	4			
Education					2.36	4	.44
No literate	3	6	1	2			
Elementary	22	44	19	38			
Secondary	2	4	4	8			
Diploma	14	28	15	30			
Bachelor	9	18	2	4			
Occupation					10.16	5	.15
Unemployed	27	54	22	44			
Merchant	4	8	3	6			
Government	5	10	10	20			
Employee	4	8	7	14			
Priest	3	6	7	14			
Other	7	14	1	2			

The income was mostly more than 25,000 Bath/month 26%, whereas the average income 21,348.30 baht (SD 13,304.57) per month with sufficient income (83%) (see table 4 (con't)).

Table 4 (con't)

Characteristics	Control group (n=50)		Experimental group (n=50)		χ^2	*df*	*p*-value
	n	%	n	%			
Income (Bath/month)					5.35	5	.38
<5,000	2	4	1	2			
5,000 – 10,000	12	24	12	24			
10,001 – 15,000	5	10	10	20			
15,001 – 20,000	16	32	8	16			
20,001 – 25,000	4	8	4	8			
>25,000	11	22	15	30			
Range= >25,000 Baht, *M*=21,348.30, *SD*=13,304.57							
Sufficiency income					3.47	1	.11
Insufficient	12	24	5	10			
Sufficient	38	76	45	90			

Eighty percent of the participants (80%) had a Body Mass Index (BMI) over 23 kg/m^2. Participants had been diagnosed with hypertension for an average 1.61 (SD .567) years with most taking two antihypertensive medications daily. Baseline physiological status between groups did not differ significantly (see table 5).

Table 5 Physiological status among participants at baseline (n=100)

Characteristics	Control group (n=50)		Experimental group (n=50)		χ^2	*df*	*p*-value
	n	%	n	%			
BMI* (kg/m^2)					0.25	5	.38
≤ 23	9	18	11	22			
>23	41	82	39	78			
Range *17.2-42.7*, *M = 27.1*, *SD = 5.0*							
Duration of HTN** (years)					2.43	2	.31
1-5	24	48	19	38			
6-10	23	46	30	60			
> 10	3	6	1	2			
Range = *1-20*, *M = 6.21*, *SD = 4.1*							
Number of drug used					0.00	1	1.00
1 agent	4	8	4	8			
2 agents	38	76	38	76			
3 or more agents	8	16	8	16			

* BMI = Body Mass Index, ** HTN = Hypertension

At baseline, all participants in experimental and control groups had the stage I HTN (100%). At the 3rd month of intervention, most of participants' blood pressure in the experimental group was in the stage of Pre-HTN (68%) followed by the stage I HTN (28%). Nearly half of participants (32%) randomized in the control group had stage II HTN and Stage I HTN of 56%, respectively. The participant details of the stages of HTN are shown on table 6.

Table 6 The percentage of participants classified by stage of hypertension (n=100)

Classification of HTN*	Baseline		3rd month	
	n	%	n	%
Control group (n=50)				
Normal	-	-	-	-
Pre-HTN	-	-	6	12
Stage I	50	100	28	56
Stage II	-	-	16	32
Experimental group (n=50)				
Normal	-	-	2	4
Pre-HTN	-	-	34	68
Stage I	50	100	14	28
Stage II	-	-	-	-

* Classification of HTN = Classification of blood pressure based on the Seventh Report of the Joint National Committee (JNC-7) guideline (Chobanion et al., 2003) to determine level of normal blood pressure and high blood pressure, including **Normal** refers to SBP < 120 and/or DBP < 80 mm Hg; **Pre-HTN** refers to SBP = 120-139 and/or DBP = 80-89 mmHg; **Stage I** refers to SBP =140-159 and/or DBP= 90-99mmHg ; **Stage II** refers to SBP ≥ 160 and/or DBP ≥ 100 mm Hg

Assumption testing of *t*-test statistics

The *t*- test was used to determine if participants' blood pressure control improved after intervention. The dependent variables for the *t*- test were SBP and DBP (pretest, and posttest) and the independent variable was group (experimental and control). The assumptions for the *t*- test were tested before further analysis. The following assumptions were examined to ensure the validity of statistical calculations.

1. Normality distribution of dependent variables was tested. All both two dependent variables, SBP and DBP, were not accepted as a normal distribution because the skewness and kurtosis values of each dependent variable were far to zero including skewness and kurtosis value of SBP at baseline in the control group, namely .261 and -.013, respectively; and skewness and kurtosis value at baseline and 3 month

in the experimental group, namely .304, and -1.651 (for skewness) .042, and 3.541 (for kurtosis), respectively. For DBP found the kurtosis value at the baseline and 3 months in the control group, namely -.775 and -.442, respectively; and skewness value at baseline, and 3 months, namely -1.446, and -1.094, respectively; kurtosis value at baseline and 3 months, namely 2.418, and 2.833, respectively.

It showed small negative kurtosis and small skewness. Fisher's measure of skewness and kurtosis was calculated by dividing the skewness or kurtosis value by the standard error for skewness or kurtosis (see Table 7) (Duffy and Jacobsen, 2001, p. 44). Values above +1.96 or below -1.96 are significant at the .05 level. It indicates that this distribution is significantly skeweness and kurtosis. As the Fisher's measure of skewness and kurtosis values were shown on table 7 found that most of those values were higher than +1.96 or -1.96 (Range = -4.2864 to 15.524) indicated this variable did not violated an assumption of normal distribution. In sum, an assumption of normal distribution had been met.

Table 7 Skewness and kurtosis of SBP and DBP among participants in control group (n = 50) and experimental group (n = 50)

Time	Control group						Experimental group					
	Skewness	SE	Fisher's measure	Kurtosis	SE	Fisher's measure	Skewness	SE	Fisher's measure	Kurtosis	SE	Fisher's measure
Systolic Blood Pressure												
Baseline	.261	.337	-	-.013	.662	-	.304	.337	-	.042	.662	0.063
3 months	.605	.337	-	.404	.662	-	-1.651	.337	-4.90	3.541	.662	5.349
Diastolic Blood Pressure												
Baseline	-.525	.337	-	-.775	-.525	-	-1.446	.337	-4.291	2.418	.662	3.653
3 months	-.781	.337	-	-.442	-.781	-	-1.094	.337	-3.246	2.833	.662	4.279

* = Fisher's measure of skewness and kurtosis

2. Equality of variances is required. Levene's test of equality of variances presented the F=.072, *p*-value = .789 of SBP, and F=2.955, *p*-value =.089 of DPB at

baseline indicated non-significant difference. This means that each group has the equality of variances. It can use the significant of *t*-test (*p*-value) at the level of equal variances assumed. Then, *p*-values of SBP and DBP at the baseline are .435 and .926, respectively. Levene's test of equality of variances presented the F=17.990, *p*-value = .000 of SBP, and F=12.058, *p*-value =.001 of DPB at the 3 months indicated significant difference. This means that each group has the non-equality of variances. It can use the significant of *t*-test (*p*-value) at the level of equal variances not assumed. Then, *p*-values of SBP and DBP at the 3 months are .000 and .000, respectively.

3. Each score (or difference score for the paired *t*-test) must be independent of all other scores.

Part 2: The results of hypothesis testing

The results answer the two hypotheses.

Hypothesis 1: Hypertensive patients at risk for stroke in the experimental group would have significant higher proportion of achieving blood pressure control than those in the control group at the third month after the interventions.

No one at baseline met target blood pressure values. Good blood pressure control is generally considered to be less than 140/90 mm Hg, for diabetics or chronic kidney disease, controlled BP is defined as less than 130/80 mmHg (Chobanian et al., 2003). The participants were assigned in the experimental group was equal to those in the control groups at the first month, but was significantly difference at the third month, (χ^2 (1, N = 100) = 7.85, p = .005). The participants in the experimental group (64%) had greater BP control than the usual care group (8%) (see table 8).

Table 8 The proportion of participants in control of blood pressure

Blood Pressure Control	Control group (n=50)		Experimental group (n=50)		χ^2	*p*-value
	n	%	n	%		
Baseline					-	-
Controlled	0	0	0	0		
Uncontrolled	50	100	50	100		
The 3rd month					7.85	.005
Controlled	4	8	32	64		
Uncontrolled	46	92	18	36		

Note: - refers to no statistic value due to the same size of participant between both groups.

Hypothesis 2: Hypertensive patients at risk for stroke in the experimental group would have significantly lower mean differences of SBP and DBP at the third months after the interventions and significantly lower mean differences of SBP and DBP at the third month than those in the control group.

The blood pressure of the participants in the experimental and control group at pretest and posttest were presented. The blood pressure was reported into the SBP and DBP. To answer the hypothesis, independent-samples *t*-test statistics was performed to test the difference of blood pressure between the experimental and control groups. In addition, paired-samples *t*-test statistics was also performed to test the difference between before and after receiving self-management program in the experimental group and before and after receiving usual care in the control group.

The result showed that the SBP and DBP scores were not significantly different between experimental and control groups at pretest (baseline) $t = .784$ (98, .435) and $t = .093$ (98, .926) ($p<.05$), respectively. The means of SBP was significantly

decrease between experimental and control groups at posttest (at the 3rd month) *t*= 8.071 (70.394, .000) (p<.05). The means of DBP was significantly increase between experimental and control groups at posttest (at the 3rd month) (*t*= 7.226 (88.106, .000) (p<.05). The mean scores of the SBP and DBP in the experimental group were lower than the means scores of SBP and DBP in the control group as shown on the table 9.

Table 9 The comparison of the mean SBP and DBP between the experimental and control groups at pretest and posttest

Blood Pressure	Experimental group n=50 Mean (SD)	Control group n=50 Mean (SD)	t	df	*p-value*
Pretest					
SBP	149.58(4.27)	148.92(4.15)	.784	98	.435
DBP	87.58(8.11)	87.42(9.06)	.093	98	.926
Posttest					
SBP	136.30(7.06)	154.94(14.73)	8.071	70.394	.000
DBP	79.68(6.12)	90.52(8.67)	7.226	88.106	.000

In addition, the paired-samples *t*-test was used to examine the difference of the SBP and DBP. The result showed significantly decrease in means of SBP and DBP in the experimental group at posttest (the 3rd month) *t* = 12.664 (49, .000) and *t*= 6.867 (49, .000) (p<.05), respectively. In conversely, it showed significantly increase in means of SBP and DBP in the control group at posttest (the 3rd month) *t* = 3.009 (49, .003) and *t*= 2.406 (49, .020) (p<.05), respectively. (see table 10)

Table 10 The comparison of SBP and DBP between pretest and posttest of the experimental and control groups

Blood pressure	**Pretest** (baseline)	**Posttest** (3rd month)	**Mean difference**	**Std. Error Mean**	***t***	**df**	***p*-value**
	Mean(SD)	**Mean(SD)**					
Experimental group (n=50)							
SBP	149.58(4.27)	136.30(7.06)	13.280	1.049	12.664	49	.000
DBP	87.58(8.11)	79.68(6.12)	7.900	1.150	6.867	49	.000
Control group (n=50)							
SBP	148.92(4.15)	154.94(14.73)	-6.020	.587	3.099	49	.003
DBP	87.42(9.06)	90.52(8.67)	-3.100	1.289	2.406	49	.020

The participants who received the self-management program in the experimental group has significantly lower of SBP and DBP score than the participants who received usual care in the control group. Then, the self-management program could make the significantly lower scores of the blood pressure in hypertensive patients at risk for stroke.

Part 3: The effect size of this study

The effect size presents the ability to detect an association between a predictor and an outcome variable (Browner, Newman, and Cummings, 1998). The effect size is calculated by the following formula:

$$\text{Effect Size} = \frac{\text{Experimental group mean} - \text{Control group mean}}{\text{Control group standard deviation}}$$

There are three levels of value of effect size: small = 0.2, medium = 0.5, and large = 0.8 (Cohen, 1988). The effect size for SBP and DBP were large (10.81/8.66 = 1.25), (18.64/14.72), respectively at 3 months.

Summary

Data analysis in this study used 50 participants in each group. Hypotheses testing were done by using *t* test statistics. Both SBP and DBP variables met every assumptions underlying the statistical testing. The characteristics of the samples in the experimental and control groups were not significantly different at baseline. At the 3rd month, SBP and DBP variables were significantly different; both dependent variables compared at baseline, which supported the hypotheses.

CHAPTER V

DISCUSSION IMPLICATION AND RECOMMENDATION

This chapter presents a summary of the study, including a discussion of the research findings regarding the effect of the self-management program on blood pressure control among hypertensive patients at risk for stroke. In addition, the limitations of the study, implications for nursing, and recommendations for future research are described.

Characteristics of the participants

The sample in this study was composed of 100 hypertensive patients at risk for stroke. The participants were male at 45%, and female at 55%. The mean of the age was 59.67 (9.66) years, and this was congruent with the studies of McManus et al., 2010; Bosworth et al., 2009; Fahey et al., 2006; Schroeder et al., 2004; Dongbu et al., 2003; and Nine et al., 2003. Heart Disease and Stroke Statistics (2010) also reported that a higher percentage of men than women have hypertension until 45 years of age. From 45 to 54 and from 55 to 64 years of age, the percentages of men and women with hypertension was similar. Most of them were married (74%), and had completed elementary school at 41%. The education of all Thai people was limited during the past three decades especially in the country. Compulsory education for six years was only introduced 25 years ago by the Elementary Education Act of A.D. 1980. Thus, some persons that were born before 1980 had only four years of education or did not receive a formal education (Boonchanaviwat, Saku, and Chaisutthi, 2005). The occupations were varied 43% worked full time, 49% were unemployed and 10% were priest. The income was for the most part more than 25,000 baht/month (26%),

whereas the average income of 21,348.30 baht (SD 13304.57) per month with sufficient income (83%). Half of the subjects were unemployed because they were retired government officials and received the money from the government or some money was received from their children for living. Eighty three percent of the participants had a BMI over 23 kg/m2, reflecting a higher than average weight of the criteria for Asian people (WHO, 2004). The mean of body mass index both the experimental and control groups were stated in the high normal level. Obese individuals are more likely to have hypertension than non-obese individuals (Harris et al., 2000; Janssen, Katzmarzyk, and Ross, 2002; JNC-7, 2003; Miech et al., 2006; Schneider et al., 2007; Sugiyama et al., 2007).

Obesity has been identified as a significant independent predictor of cardiovascular disease. In addition, obesity is a highly prevalent condition among hypertensive patients at risk for stroke by likely mediated through its association with high blood pressure and hyperlipidemia (Ding et al., 2004; Vollmer et al., 2001).Most participants had the duration of hypertension diagnosed 6-10 years (53%) whereas the average mean was 6.21 years. According to the amount of antihypertensive drugs used, most participants had 2 agents (76%) and this was inconsistent with the study of Peera Buranakitjaroen (2006), where one-third of participants were put on ≥ 2 drugs.

A comparison of the characteristics of the subjects that participated in the study did not show any significant differences. This ensured that the refusal of some subjects to participate study would not affect the dependent variables. To control the extraneous variables as much as possible, randomization was conducted. All possible distinguishing characteristics of the subjects between the self-management and control groups were equally compared. Statistical analysis showed similar

demographic characteristics in the self-management and control groups because all participants were assigned to the groups randomly.

Summary of the study

This study was a randomized controlled trial two groups' pretest-posttest research that aimed to evaluate the effect of a self-management program on blood pressure control among hypertensive patients at risk for stroke. The patients who met the inclusion criteria: hypertensive patients at risk for stroke that had received medical treatment, those that lacked complications that represented barriers to cooperating in the study, and patients classified as people at risk for stroke (Bureau of non-communicable disease, 2007) at the level of patients at high risk were included to the study. The sample was composed of 100 hypertensive patients at risk for stroke that received medical treatment at the Police General Hospital and that were randomly assigned to either the experimental or control group using the sealed envelope technique. This setting was having of the increasing in prevalence of hypertensive patients from 2009-2011 was 6,830, 7,745, and 8,192 respectively and the hospital stay of stroke in this hospital was similar to the length of hospital stay of stroke in Thailand. Also this hospital had a chronic care service for caring for hypertensive patients following guidelines for the treatment of hypertension (Thai Hypertension Society, 2008) that exhibited the same standard care as in other hospitals in Thailand. So it could be representative of hypertensive patients at risk for stroke.

The patients that participated in the experimental group received the usual care and the self-management program, whereas the participants in the control group received only the usual care from the health care professions. The self-management program was divided into 5 sessions. The first and second sessions were implemented

at the medical outpatient clinic. In the third session, the participants practiced the skills at their home and action and self-regulation for their health behaviors management. In addition, the participants had to set their short-and long-term goals for achieving their health behaviors management and to monitor and evaluate the short term goals. The fourth session was implemented by using telephone calls at the 6^{th} and 10^{th} week after baseline in order to reinforce, monitor, and evaluate the participants for maintaining their health behavior management and regular recording in the self-monitoring assessment form. The final session was implemented at medical outpatient clinic at the 3^{rd} month of intervention in order to evaluate the achievement of participants' long term goal, to reinforce the participants for continuing self-management behaviors in daily life, to answer the questions from the participants and support the participants in terms of giving information to the others, and to terminate the program. The participants in the experimental group met the standard criteria of the program which passed 80% of the self-management hypertensive knowledge and health behavior management in the second and third sessions.

The personal data related to risk factors, and the blood pressure measurement was collected on the first day of the intervention as baseline, and blood pressure was also collected during after intervention implementation. Descriptive statistics, chi-square, and *t*-test statistics were used to analyze the data in order to answer the research question. The results showed improvement in BP control and clinically significant improvement in the experimental group compared with the control group. The mean scores of systolic BP and diastolic BP were lower than in the control group at 3 months from baseline and the differences were significant. The percentage of the BP goal achievement increase in the intervention group was higher than in the control

group. The average systolic BP and diastolic BP in the experimental group was 136.30 (*SD*= 7.06), 79.68 (*SD*= 6.11) at 3 months. This result was lower than in the control group whose average change was 154.94 (*SD*= 14.72), 90.52 (*SD*= 8.66) at 3 months.

Discussion

The effective of self-management program

Hypothesis 1: Hypertensive patients at risk for stroke in the experimental group would have significant higher proportion of achieving blood pressure control than those in the control group at the third month after the interventions. The result supported that this program could help the hypertensive patients at risk for stroke had significantly higher proportion of achieving blood pressure control.

The outcomes of the self-management program showed that the participants in the experimental group had pre-hypertension at 68% followed by stage I hypertension at 28% whereas the participants in the control group had stage II hypertension at 32% and stage I hypertension of at 56%, respectively. This means that overall the self-management program was successful in reducing in the SBP and DBP and in achieving blood pressure control. The hypertensive patients at risk for stroke who participate in this program increased their abilities to improve BP control successfully compared to the control group. This study supported the evidence that a self-management program could decrease blood pressure control in hypertensive patients at risk for stroke through nursing strategies, skill training including the telephone call and facilitating with nurses providing patients with guidance to monitor their progress and in achieving agreed management goals. These findings are consistent with those of from Barlow et al. (2002), which indicated that self-management interventions

have a beneficial effect on health outcomes of participants in the short term. Moreover, implementing an effective self-management program by healthcare providers, having remote patient encounters (telephone), and setting groups within the current health care system remains important challenges for improving hypertension care.

Goal blood pressure was achieved more easily in younger patients than older patients. Identical findings were reported that SBP is more difficult to control in older patients (Black, 2002). Similarly, in a large study of factors influencing BP control in ambulatory patients seen in non-hypertension clinics, persons of age 65 years or older were more than 2.5 times as likely to have uncontrolled BP (Knight et al., 2001). In the overall group in the clinic, most participants had 2 agents of antihypertensive drugs agreeing with the results of several large clinical trials studies showing the two or three drugs may be needed in many patients to achieve control of BP.

As a result of the score of hypertension knowledge test, it showed that forty out of fifty participants (80%) were high scores of the test (80%). This means they had adequate of knowledge for applying in self-management behaviors after receiving the significant and sufficiently knowledge. Another instrument that participants used in the intervention at their home was the self-reported of self-monitoring assessment form. This indicated that most of them had regularly performed DASH diet consumption everyday (64%), exercise (100%), and medication taking (96%) (Appendix I). Moreover, this program had several strategies to implement: group health information, written the short and long-term goals, telephone call follow-up, and oral communication. These several strategies confirmed that the self-management program improved and achieved blood pressure control among hypertensive patients

at risk for stroke. It was in congruent with the study of Schroeder, Fahey, and Ebrahim (2004) by using a variety of techniques have been associated with a large net reduction in BP.

Health education was associated with improvements in knowledge about hypertension, and when combined with individualized support for patients to self-manage their conditions, including goal setting and monitoring to enhance patient self-management of hypertension, and social support in managing hypertension were associated with reductions in blood pressure levels and improvements in blood pressure control (Connell, Wolfe, and McKevitt, 2007). The most effective comprised combinations of health education as part of a multiple intervention strategies, self-management of hypertension, and support in managing hypertension.

Hypothesis 2: Hypertensive patients at risk for stroke in the experimental group would have significantly lower mean differences of SBP and DBP at the third months after the interventions and significantly lower mean differences of SBP and DBP at the third month than those in the control group. The result supported that this program could help the hypertensive patients at risk for stroke had significantly lower mean differences of SBP and DBP at the third months due to several reasons;

1) Based on the self-management model, the participants have the sufficiently knowledgeable about hypertension and their condition from the cognitive technique of this program. Everyone have to meet the standard criteria about 80% of the hypertension knowledge questionnaire that covered the significant knowledge and understanding about hypertension, patho-physiology, health behaviors related to stroke risk factors, and self-management behaviors. The participants in the experimental group had the average of the hypertension knowledge's score at 88%,

maximum 100%, minimum 87% (Appendix H). Then, they can make informed decisions for managing their health behaviors, after receiving the significant and sufficiently knowledge.

2) Hypertensive patients at risk for stroke have to perform activities aimed at manage their health behaviors from the behavioral technique of this program. In this study, all the participants in the experimental group were trained and practiced about the activities of general, DASH diet management, exercise management, and medication taking management of their condition when participated in the second sessions of the program. This session was related to self-management concept as a necessary method for maintaining and improving patients' health behavior and health status (Dongbo et al., 2003).

3) Hypertensive patients at risk for stroke have to apply the skills necessary for maintaining adequate self-management behaviors. All of them performed their health behaviors management in the real life situation during 3 months of the intervention. Researcher examined the necessary skills of the participants that composed of DASH diet management skill, exercise management skill, and medication taking management skill and then evaluate the short-term goal. When they met both of criteria about the hypertension knowledge and hypertension self-management, it represented they could manage their health behaviors.

4) The efficacious of SMP based on self-management model encompassed the ability of the participants to perform and manage their health behavior by using self-monitoring, self-evaluation, and self-reinforcement processes (Kanfer, 1980; Kanfer and Goelick-Buy,1991). After receiving the SMP, the participants in the experimental group showed the higher scores (Appendix H) in hypertension knowledge (100%),

that congruence with the study of Barlow et al (2002); Newmann et al (2004); and Norris et al. (2001). They demonstrated that the chronic patients including hypertension had improvements in knowledge, and self-management behaviors after received the self-management interventions.

5) The SMP based on self-management model was promoted the participants to perceive the significant of self-management behaviors, accept their goals as desirable and motivated toward their achievement, and satisfy with this program and the helping from intervener. Especially, when intervener used the telephone call for reinforcement them to maintenance of the certain behavior for achieving self-management. All these activities were significantly affected to the cognitive, behavioral and emotional responses necessary to maintain a satisfactory quality of care (Clark et al., 1991).

6) The participant set up the short and long term goals to manage their health behaviors related to DASH diet, exercise, and medication taking. When the participants accomplished their goals, it significantly related to improve their health behaviors. Due to the literature review supported that DASH diet management was correlated with decrease blood pressure (Cakir and Pinar, 2006; Diaz et al., 2005; JNC-7, 2003; Vollmer et al., 2001), and exercise was associated with decrease blood pressure (Wallace, 2003; Bacon et al., 2004; Murphy et al., 2007), and lastly medication taking management also related with decrease blood pressure (Chobanian et al., 2003; Nathan et al., 2005) When the participants could manage their health behaviors, it's also associated with their health status improvement.

The result of this study was congruence with the previous studies as described following:

The research findings revealed that SMP strength particularly given the extensive implementation of goal setting for BP control and encouragement patients to change their behaviors by using group discussion, self-management and reinforcement by a telephone call approach. Both methods were effective in promoting the health outcomes (Kirscht, 1977; Chiu and Wong, 2010). In addition, the strengths in this study were that the participants in both groups be randomly assignment and used the assessment of people at risk for stroke as a criteria for recruitment.

Therefore, the self management program was proper in providing the appropriate action for the corresponding participant with poor control of his or her BP. Moreover, this study monitored BP level at baseline and the 3rdmonth and through telephone follow-ups to improve the process of care and to achieve blood pressure control. Similarly, Bosworth et al. (2008) conducted a behavioral intervention that was administered over the phone for hypertensive patients. Delivering an intervention by telephone may enhance the intervention's cost-effectiveness primarily due to reduced blood pressure level. Telephone intervention also provides an opportunity to reach more patients and these interventions may be more acceptable and convenient than in person interventions.

Moreover, this telephone intervention tailored by nurse has early indication of acceptance, feasibility, and efficacy. Siriwat Wongputtakham (2008) conducted the study about the effects of self- management on health behaviors and blood pressure among hypertensive patients. The results revealed that the blood pressure of the hypertensive patients that received the self-management plan had significantly decreased and lower than those in the control group.

This study also focused on blood pressure control in the control and intervention study groups tended to have improved blood pressure control status including the proportion of patients with achieve BP control (Bosworth et al,. 2009) and the mean changes in systolic blood pressure and diastolic blood pressure (Bosworth et al., 2009; Chodosh et al., 2005; Connell, Wolfe, and McKevitt, 2007; Ebrahim and Smith, 1998; Fahey, Schroeder, and Ebrahim, 2006; Glynn et al., 2010; Nine et al., 2003; Warsi, Wang, and LaValley, 2004; Wongputtakham, 2008). Also, the percentage changes in the proportion of patients with achieve BP control ranged from 4.3 to 16.3%. The mean change in systolic blood pressure ranged from 0.6 to 23 mmHg in the experimental groups. Diastolic blood pressure ranged from 3.9 to 22 mmHg in the intervention groups. (Bosworth et al., 2009; Nine et al., 2003).

These findings suggest that the level of patient partnership in their clinical care is an important element in achieving BP control. Because hypertensive patients at risk for stroke are likely need special support in order to improve their medication adherence and lifestyle changes. Self-management program, with mutually planned activities between participants and health care providers and using a set of protocol included assessments of knowledge and behavior in BP control, use of lifestyle modification has been associated with achieving of blood pressure. (Chodosh, 2005; Kearney, Whelton, Reynolds, et al., 2005).

This results of SMP congruence with most studies that examined physical activity changes were positive for self-reported changes (Dongbo et al., 2003; Ebrahim and Smith, 1998; Nine et al., 2003) including improvements in dietary change (Bosworth et al, 2008; Chui and Wong, 2010; Nine et al, 2003; Warsi et al., 2004), or salt restrict (Ebrahim and Smith, 1998), and an increase in medication-

taking of antihypertensive agent (Schroeder, Fahey, and Ebrahim, 2004; Warsi et al., 2004). The same finding was also found in the study of Ebrahim and Smith, 1998; Nine et al., 2003; Wongputtakham, 2008 who found the increase in physical activity levels were associated with improved blood pressure control.

Implications and recommendations

The findings of this study have provided significant information for nursing practice, nursing education, and nursing research.

Implications for nursing practice

These results supported the idea that a self-management program should be added to the usual care as a nursing practice guideline and should be implemented at the tertiary hospital in Thailand or run as part of hypertensive educational services. With these nursing strategies, health care providers may be tailored to the patients' needs and concern their ability to self-manage their disease effectively and nurses should implement this program to this group of patients. The telephone call method should be applied to nursing practice administered by nurses. Furthermore, this method was quite effective in changing patient behavior, including exercise behavior, improving medication adherence, and enhancing diet adherence.

This program can be used as part of nursing curricula in medical nursing, especially for nursing care in medical departments. Curriculum in medical nursing, hypertensive self-management should be developed for training advanced nurse practitioners. The curriculum should encompass the following: theories which promote self-management and behavioral change, cognitive behavioral therapy, and the concept of patient empowerment; medical knowledge about hypertension, pathology of hypertension, hypertension medications; cognitive skills, , goal-setting,

problem-solving skills, and communication skills; practical skills, exercise, diet management, and self-monitoring skills. Furthermore, the hypertensive self-management program developed in this study should be a part of medical nursing curriculum.

Implications for Nursing Research

The results of this study revealed that the effectiveness of the hypertensive self-management program in tertiary hospital. This program may be adapted to research in other health settings or other chronic illness of patients. The research can be strengthened on the competency of nurses at the tertiary hospital to implement self-management program for chronic diseases.

Recommendations for future research

The long-term effects of the self-management program should be examined. This study should be replicated with separate settings between the experimental and control group in order to prevent contamination of the intervention. The hypertensive self-management program enhances knowledge, self-care activities, and quality of life as well as improves blood pressure control. Therefore, the principle of the self-management program may be applied to other chronic illnesses such as type 1 diabetes and ischemic heart disease. Hypertensive patients at risk for stroke should attend the self-management program for proper self-management behaviors. Self-management programs of these chronic illnesses should be developed and tested for effectiveness.

Limitations

This finding may lack of international generalizability due to the setting and cultural influences in Thailand. Another limitation concerns the duration of the

intervention, which might have been too short. A long duration of intervention may have improved control to even a great degree.

Conclusion

The findings of this study showed that the self-management program promoted better SBP and higher BP control for Thai hypertensive patients at risk for stroke. Self-management programs should be promoted in tertiary care settings by incorporating them into the regular care. In addition, control of blood pressure is crucial for delaying delay clients' progression to cardiovascular problems and stroke events, and even death.

With a broader perspective, interventions can be designed to focus on BP control and other activities to improve the quality of life of hypertensive patients at risk for stroke. The results are encouraging even though the findings lack international generalizability due to the setting and cultural influences in Thailand.

Blood pressure control by using a self-management program can also promote an interactive process involving the clients as partners; they can be coached to take ownership in managing their own health conditions (Chiu and Wong, 2010). This mode of care delivery, using self-management skill training and telephone follow-up is worth considering for other chronic disease management programs and participants selected from several areas are needed for further study.

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APPENDICES

Appendix A

Personal data sheet and Hypertensive information

(แบบสอบถามข้อมูลส่วนบุคคลและ
ข้อมูลทางคลินิกเกี่ยวกับโรคความดันโลหิตสูง)

ส่วนที่ 1 แบบสอบถามข้อมูลส่วนบุคคล

ชื่อ-นามสกุลผู้ป่วย……..

ชื่อ-นามสกุลผู้ดูแลที่เข้าร่วมโครงการ……เกี่ยวข้องเป็น……..

ที่อยู่ผู้ป่วย……

เบอร์โทรศัพท์……..…สถานบริการสุขภาพ....…….

****

ส่วนที่ 1 ข้อมูลส่วนบุคคล

คำอธิบาย แบบสอบถามข้อมูลส่วนบุคคลใช้เพื่อประเมินข้อมูลพื้นฐานและภาวะสุขภาพ จำนวน 8 ข้อ

คำชี้แจง: โปรดใส่เครื่องหมาย □ ลงในช่อง □ ที่ตรงกับตัวท่านมากที่สุดและระบุข้อมูลในช่องว่าง

ชื่อผู้ป่วย ..... นามสกุล.....อายุ.....ปี

บ้านเลขที่ …….. หมู่ที่ ……ถนน.....

แขวง/ตำบล.....เขต/อำเภอ.....

จังหวัด.....โทร.....H.N.....

1. สถานภาพสมรส
   ( ) โสด ( ) คู่ ( ) หม้าย ( ) หย่าร้าง ( ) แยกกันอยู่
2. ระดับการศึกษา
   ( ) ไม่ได้เรียน ( ) อนุปริญญา หรือปวส.
   ( ) ประถมศึกษา ( ) ปริญญาตรี/เทียบเท่า
   ( ) มัธยมศึกษา หรือปวช. ( ) สูงกว่าปริญญาตรี
3. สิทธิในการรักษา
   ( ) บัตรทอง ( ) ประกันสังคม ( ) อื่นๆ.....
   ( ) ข้าราชการหรือรัฐวิสาหกิจ ( ) จ่ายเอง
4. อาศัยอยู่กับ
   ( ) คู่สมรส ( ) บุตร ( ) ทั้งคู่สมรสและบุตร
   ( ) ญาติ ( ) หลาน ( ) คนเดียว
5. อาชีพ
   ( ) ไม่ได้ทำงาน ( ) พนักงานบริษัท
   ( ) เกษตรกรรม ( ) พนักงานรัฐวิสาหกิจ/พนักงานมหาวิทยาลัย
   ( ) รับจ้างทั่วไป ( ) รับราชการ

( ) ค้าขาย ( ) ธุรกิจส่วนตัว

( ) อื่นๆ ระบุ.....

6. รายได้ของครอบครัวเฉลี่ยต่อเดือน……บาท

( ) พอใช้ ( ) ไม่พอใช้

7. ผู้ป่วยมีโรคประจำตัวอะไรบ้าง ระบุรายละเอียด (ตอบได้มากกว่า 1 ข้อ)

[ ] 1 โรคหลอดเลือดหัวใจ หัวใจขาดเลือด กล้ามเนื้อหัวใจตาย

[ ] 2 โรคเบาหวาน

[ ] 3 โรคหืด

[ ] 4 โรคปอดอุดกั้นเรื้อรัง

[ ] 5 วัณโรคปอดหรือวัณโรคส่วนอื่น

[ ] 6 แขนขา มือเท้าอ่อนแรง

[ ] 7 ชัก ลมชัก ลมบ้าหมู

[ ] 8 โรคตับ (ตับแข็ง มะเร็งตับ ตับอักเสบ)

[ ] 9 โรคกระเพาะอาหารหรือลำไส้อักเสบ

[ ] 10 โรคไตวาย

[ ] 11 ไทรอยด์ผิดปกติ

[ ] 12 ปวดข้อเข่า ข้อเข่าเสื่อม ข้อเข่าอักเสบ ปวดข้อมือ ข้อเท้า

[ ] 13 ปวดหลัง ปวดเอว

[ ] 14 ปวดศีรษะ

[ ] 15 ปวดที่อื่นๆ …….

[ ] 16 โรคตา ต้อเนื้อ ต้อกระจก ต้อหิน การมองเห็นบกพร่อง

[ ] 17 โรคหู หูอื้อ หูหนวก การได้ยินบกพร่อง

[ ] 18 โรคสมองเสื่อม ความจำเสื่อม หลงลืม

[ ] 19 โรคซึมเศร้า

[ ] 20 โรคจิตประสาทอื่นๆ

[ ] 21 โรคมะเร็งที่อื่นๆ……..

[ ] 22 โรคเลือด / ซีดเรื้อรัง

[ ] 23 โรคอื่น ๆ (ระบุ) .....

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ส่วนที่ 2 ข้อมูลทางคลินิกเกี่ยวกับโรคความดันโลหิตสูง

คำอธิบาย แบบบันทึกข้อมูลทางคลินิกเกี่ยวกับโรคความดันโลหิตสูงโดยผู้วิจัยหรือผู้ช่วยวิจัยสัมภาษณ์ผู้สูงอายุ หรือผู้ดูแล พร้อมทั้งทบทวนประวัติการรักษาโรคความดันโลหิตสูงของผู้สูงอายุในระยะเวลา 3 เดือนที่ผ่านมา จากแบบประเมินภาวะสุขภาพครอบครัว (Family folder)

1. ระยะเวลาที่ได้รับการวินิจฉัยด้วยโรคความดันโลหิตสูง..... ปี.....เดือน

2 ในระยะเวลา 3 เดือนที่ผ่านมา ระดับความดันโลหิตของท่าน.....มิลลิเมตรปรอท.

3. ยาที่ได้รับการรักษาล่าสุด (ระบุชื่อยา ขนาดยา เวลา และวิธีใช้ยา)

เดือนที่ 1

ยารักษาความดันโลหิตสูง

……..……

……

ยาอื่นๆ

……..……

……

เดือนที่ 2

ยารักษาความดันโลหิตสูง

……..……

……

ยาอื่นๆ

……..……

……

เดือนที่ 3

ยารักษาความดันโลหิตสูง

……..……

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ยาอื่นๆ

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Appendix B

Health assessment and blood pressure control

(แบบประเมินภาวะสุขภาพ และการควบคุมความดันโลหิต)

เดือนที่	0 ก่อนเข้าโปรแกรม	1	2	3	4	5	6
น้ำหนัก (กก.)							
ส่วนสูง (ซม.)							
ดัชนีมวลกาย (กก./ม.^{2})							
รอบเอว (ซม.)							
รอบสะโพก (ซม.)							
สัดส่วนรอบเอวต่อรอบสะโพก (waist hip ratio)							
ชีพจรขณะพัก (ครั้ง/นาที)							
ระดับความดันโลหิตตัวบน (ซีสโตลิค)							
ระดับความดันโลหิตตัวล่าง (ไดแอสโตลิค)							
ผลการควบคุมความดันโลหิต	O คุมได้ O คุมไม่ได้	O คุมได้ O คุมไม่ได้	O คุมได้ O คุมไม่ได้	O คุมได้ O คุมไม่ได้	O คุมได้ O คุมไม่ได้	O คุมได้ O คุมไม่ได้	O คุมได้ O คุมไม่ได้

ขอขอบคุณในความร่วมมือ

Appendix C

The Self-Management Manual for Hypertensive Patient at Risk for Stroke Booklet

(คู่มือการจัดการตนเองสำหรับผู้ป่วยโรคความดันโลหิตสูง ที่เสี่ยงต่อโรคหลอดเลือดสมอง)

คู่มือผู้ป่วยโรคความดันโลหิตสูง

โดย

พ.ต.ท.หญิง สุขฤดี ธัชศฤงคารสกุล

รศ.ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์

ผศ.ดร.ชนกพร จิตปัญญา

คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2553

คำนำ

ความดันโลหิตสูงเป็นปัญหาสุขภาพที่เปรียบเสมือนระเบิดเวลาในหลอดเลือดที่รอเวลาแสดงผลเมื่อเกิดโรคหลอดเลือดสมองตีบหรือเรียกว่า สโตรค (stroke) เมื่อเวลายังไม่ถึงจุดระเบิด อาการของโรคจะไม่ปรากฏให้เห็น แต่ภาวะความดันโลหิตสูงก็เร่งให้หลอดเลือดตีบเร็วขึ้น แล้วแต่ว่าระเบิดเวลาจะอยู่ที่จุดใด ยิ่งความดันโลหิตสูงเท่าไร ก็ยิ่งใกล้ถึงจุดระเบิดเร็วเท่านั้น ดังนั้นการที่ผู้ป่วยโรคความดันโลหิตสูงรู้จักที่จะจัดการตนเองโดยมีความรู้ความเข้าใจที่ถูกต้อง มีทักษะในการจัดการพฤติกรรมที่เป็นปัญหาสุขภาพ จึงเป็นสิ่งสำคัญที่ผู้ป่วยโรคความดันโลหิตสูงควรมีการดูแลสุขภาพและปฏิบัติตามอย่างต่อเนื่อง เพื่อลดโอกาสเสี่ยงต่อการเกิดความรุนแรงและภาวะแทรกซ้อนต่างๆ ที่อาจตามมาได้

คู่มือผู้ป่วยโรคความดันโลหิตสูงฉบับนี้ จึงจัดทำขึ้นโดยมีวัตถุประสงค์เพื่อเป็นองค์ความรู้ด้านการดูแล ช่วยเหลือ สนับสนุนผู้ป่วยโรคความดันโลหิตสูงให้สามารถดูแลจัดการตนเอง หรือปฏิบัติต่อพฤติกรรมที่เป็นปัญหา เช่น การจัดการกับพฤติกรรมการรับประทานอาหาร การจัดการกับพฤติกรรมการออกกำลังกาย เพื่อสุขภาพที่สมบูรณ์แข็งแรง ไม่เป็นภาระแก่ผู้อื่น และเพื่อมีชีวิตในบั้นปลายอย่างมีความสุข

ผู้จัดทำหวังเป็นอย่างยิ่งว่า คู่มือผู้ป่วยโรคความดันโลหิตสูงฉบับนี้จะสามารถทำให้ผู้ป่วยมีความรู้ความเข้าใจ มีทักษะในการจัดการกับพฤติกรรมได้อย่างเหมาะสม และสามารถควบคุมความดันโลหิตได้ในที่สุด

พ.ต.ท.หญิง สุขฤดี ธัชศฤงคารสกุล
รศ. ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์
ผศ.ดร. ชนกพร จิตปัญญา

แบบบันทึกการตั้งเป้าหมายพฤติกรรมการออกกำลังกาย

คำชี้แจง ให้บันทึกข้อมูลเกี่ยวกับตั้งเป้าหมาย
พฤติกรรมและการวางแผนการปรับเปลี่ยน
พฤติกรรมของผู้ป่วยโรคความดันโลหิตสูงโดย
บันทึกทุกเดือน

คำถาม ท่านจะทำอะไร ท่านจะทำอย่างไร บ่อยแค่ไหน จะเริ่มต้นเมื่อไหร่

พฤติกรรมที่ 2 การออกกำลังกาย

ปัญหาการไม่ออกกำลังกายของท่าน ที่ต้องการแก้ไข คือ

.....

เป้าหมายของเดือนที่ 2 คือ .....

.....

.....

ขั้นตอนการปฏิบัติ เมื่อปฏิบัติสำเร็จ
ทำเครื่องหมายถูก

1.....☐
2.....☐
3.....☐
4.....☐

ท่านคิดว่าเป้าหมายที่เลือกมีความสำคัญที่ระดับใด

สำคัญน้อย 1 2 3 4 5 6 7 8 9 10 สำคัญมาก

ท่านมีความเชื่อมั่นที่จะบรรลุเป้าหมายนี้เท่าไร

ไม่มั่นใจ 1 2 3 4 5 6 7 8 9 10 มั่นใจมากที่สุด

การประเมินผล .....

.....

Appendix D
Self-management Behaviors Record

แบบบันทึกการจัดการตนเอง

การรับประทานยาลดความดันโลหิต

การตั้งเป้าหมายการจัดการตนเอง และการวางแผนปฏิบัติ

คำชี้แจง

ให้ผู้ป่วยความดันโลหิตสูงระบุปัญหาและเป้าหมายการรับประทานยาลดความดันโลหิตของผู้ป่วย และวางแผนปฏิบัติการรับประทานยาลดความดันโลหิตของผู้ป่วย ลงในช่องว่างให้สมบูรณ์

ปัญหาการรับประทานยาลดความดันโลหิตของผู้ป่วยที่ต้องการแก้ไข คือ

.....

.....

เป้าหมายของการรับประทานยาลดความดันโลหิตของผู้ป่วย คือ

.....

.....

ผู้ป่วยคิดว่าเป้าหมายที่เลือกมีความสำคัญที่ระดับใด

สำคัญน้อย 1 2 3 4 5 6 7 8 9 10 สำคัญมาก

ผู้ป่วยมีความเชื่อมั่นที่จะบรรลุเป้าหมายนี้เท่าไร

ไม่มั่นใจ 1 2 3 4 5 6 7 8 9 10 มั่นใจมากที่สุด

ขั้นตอนการปฏิบัติ เมื่อปฏิบัติสำเร็จทำเครื่องหมาย √

ลงในช่อง □

1.....□

2.....□

3.....□

4.....□

การประเมินผล

.....

.....

คำชี้แจง ให้พยาบาลบันทึกข้อมูลแผนการรักษาของแพทย์สำหรับผู้ป่วยความดันโลหิตสูง โดยเขียนระบุ ชื่อยา ขนาดยา และใส่ √ ลงใน □ที่ตรงกับเวลาและมื้ออาหาร

ชื่อยา	ขนาดยา	เวลา		มื้ออาหาร			
		ก่อนอาหาร	หลังอาหาร	เช้า	เที่ยง	เย็น	ก่อนนอน
ยาลดความดันโลหิต 1.							
2.							
3.							
4.							
ยาอื่นๆ 1.							
2.							
3.							
4.							
5.							

แบบบันทึกพฤติกรรมการออกกำลังกาย

สัปดาห์ที่ 1

การออกกำลังกาย	วันที่						
	1	2	3	4	5	6	7
ชนิดของการออกกำลังกาย - การเดิน							
- การวิ่งเหยาะ							
- การปั่นจักรยาน							
- อื่นๆ ระบุ.....							
ระยะเวลา - น้อยกว่า 30 นาที							
- 30 นาทีขึ้นไป แต่น้อยกว่า 1 ชั่วโมง							
- 1 ชั่วโมงขึ้นไป							
ความถี่ - น้อยกว่า 3 ครั้งต่อสัปดาห์							
- ตั้งแต่ 3 ครั้งต่อสัปดาห์ขึ้นไป							
ความเหนื่อย - ไม่รู้สึกเหนื่อย							
- เหนื่อยและมีเหงื่อออก							

แบบบันทึกพฤติกรรมการรับประทานอาหาร

สัปดาห์ที่ 1

รายการอาหาร	ปริมาณที่ควรกินต่อวัน 2,000 กิโลแคลอรี	วันที่						
		1	2	3	4	5	6	7
ข้าว ธัญพืช	7-8 ทัพพี	Oกิน ..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน
เนื้อสัตว์	น้อยกว่า 4 ช้อนกินข้าว	Oติดมัน..... Oไม่ติดมัน	Oติดมัน..... Oไม่ติดมัน	Oติดมัน..... Oไม่ติดมัน	Oติดมัน ..... Oไม่ติดมัน	Oติดมัน..... Oไม่ติดมัน	Oติดมัน..... Oไม่ติดมัน	Oติดมัน..... Oไม่ติดมัน
ผัก	4-5 ถ้วย	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน
ผลไม้	4-5 ผล	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน
นมไขมันต่ำ	2-3 แก้ว	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน
ถั่ว	12-15 ถ้วย/สัปดาห์	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน
น้ำมัน Oน้ำมันสัตว์ Oน้ำมันพืช	2 ช้อนชา	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน
เกลือ	ไม่เกิน 2/3 ช้อนชา	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน
ขนม (ระบุ .....)	หลีกเลี่ยง	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน	Oกิน..... Oไม่กิน
แอลกอฮอล์	หลีกเลี่ยง	Oดื่ม..... Oไม่ดื่ม	Oดื่ม..... Oไม่ดื่ม	Oดื่ม..... Oไม่ดื่ม	Oดื่ม..... Oไม่ดื่ม	Oดื่ม..... Oไม่ดื่ม	Oดื่ม..... Oไม่ดื่ม	Oดื่ม..... Oไม่ดื่ม

Appendix E

The Self-management Program Manual

(Thai Version)

คู่มือพยาบาล

โปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง

SELF-MANAGEMENT PROGRAM ON BLOOD PRESSURE CONTROL IN HYPERTENSIVE PATIENTS AT RISK FOR STROKE

จัดทำโดย

พ.ต.ท.หญิง สุขฤดี ธัชศฤงคารสกุล

นิสิตหลักสูตรพยาบาลศาสตรดุษฎีบัณฑิต

คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

อาจารย์ที่ปรึกษาหลัก รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์

อาจารย์ที่ปรึกษาร่วม ผู้ช่วยศาสตราจารย์ ดร. ชนกพร จิตปัญญา

คู่มือนี้เป็นส่วนหนึ่งของวิทยานิพนธ์ปริญญาพยาบาลศาสตรดุษฎีบัณฑิต

คำนำ

ในปัจจุบันโรคความดันโลหิตสูงเป็นโรคเรื้อรังที่พบได้ประมาณ 20% ในประชากรทั่วโลกและมีแนวโน้มที่มีจำนวนมากขึ้นในทุกๆ ปี อีกทั้งเป็นโรคที่มีสาเหตุสำคัญที่นำไปสู่การเกิดโรคหลอดเลือดสมองและโรคอื่นๆ ตามมา หากไม่ได้รับการดูแลรักษาที่ถูกต้อง อีกทั้งโรคความดันโลหิตสูงเป็นโรคเรื้อรังที่ต้องใช้ระยะเวลาในการรักษา ผู้ป่วยบางคนคิดว่าตนเองเจ็บป่วยตลอดเวลา ไม่สามารถทำงานหรือปฏิบัติกิจวัตรประจำวันได้ตามปกติ รู้สึกว่าตนเองต้องพึ่งพิงบุคคลรอบข้าง ทั้งครอบครัว ทีมสุขภาพ และชุมชน ส่งผลให้เกิดภาระกับบุคคลรอบข้าง และเกิดผลกระทบและผลเสียตามมา ทั้งทางร่างกาย จิตใจ สังคม และเศรษฐกิจของผู้ป่วย ครอบครัว สังคมและประเทศชาติ ปัจจุบันรูปแบบการดูแลผู้ป่วยโรคเรื้อรังมีการเปลี่ยนแปลงไปจากเดิม รวมถึงผู้ป่วยโรคความดันโลหิตสูงที่ต้องมีชีวิตอยู่กับการเจ็บป่วยเรื้อรังไปตลอดชีวิต ผู้ป่วยจึงต้องดูแลสุขภาพของตนเองเกี่ยวกับโรคที่เป็นอยู่ไม่ว่าจะเป็นการปฏิบัติตนตามแผนการรักษา การมาตรวจตามนัด หรือการปฏิบัติพฤติกรรมสุขภาพที่เหมาะสมกับโรค เพื่อควบคุมอาการของโรคไม่ให้กำเริบขึ้น การให้ความรู้และทักษะต่างๆ ที่จำเป็นเกี่ยวกับความเจ็บป่วย จึงมีความจำเป็นที่จะทำให้ผู้ป่วยสามารถพึ่งพาตนเองได้มากขึ้น ลดการพึ่งพาผู้อื่น การให้ผู้ป่วยมีส่วนร่วมในการดูแลสุขภาพของตนเองมากขึ้น จึงเป็นรูปแบบในการดูแลผู้ป่วยโรคความดันโลหิตสูงในปัจจุบัน

ในสภาพการณ์ปัจจุบันพบว่าผู้ป่วยที่เป็นโรคความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมองยังขาดความรู้ความเข้าใจในการจัดการตนเอง โดยเฉพาะอย่างยิ่งการจัดการตนเองในด้านการรับประทานอาหาร และด้านการออกกำลังกาย เนื่องจากคนที่ป่วยเป็นโรคความดันโลหิตสูงประมาณ 40-50% จะไม่มีอาการ จึงทำให้ไม่ทราบว่าป่วยเป็นโรคความดันโลหิตสูง หรือแม้จะทราบว่าป่วยเป็นโรคความดันโลหิตสูง แต่ไม่มีอาการใดๆ หรือมีอาการแต่เพียงเล็กน้อย ยังไม่กระทบต่อการดำเนินชีวิตประจำวัน ผู้ป่วยก็อาจไม่ใส่ใจ ทำให้ไม่มีการจัดการตนเองที่ถูกต้อง โอกาสเกิดโรคแทรกซ้อน เช่น โรคหลอดเลือดสมองและโรคอื่นๆ มีมากขึ้น อีกทั้งโรคความดันโลหิตสูงมีความซับซ้อนทั้งตัวโรคเอง การเสื่อมของหลอดเลือดตามวัย และวิธีการรักษา ด้วยลักษณะดังกล่าวจึงจำเป็นต้องให้การดูแลผู้ป่วย เพื่อให้มีการจัดการตนเองที่ถูกต้องและเหมาะสม สามารถดำรงชีวิตอยู่กับการเจ็บป่วยด้วยโรคความดันโลหิตสูงได้อย่างปกติสุข พยาบาลเป็นผู้มีบทบาทหน้าที่ให้บริการดูแลแบบองค์รวม มีความเป็นผู้นำในทีมสุขภาพ สามารถประสานงานกับบุคลากรในทีมสุขภาพ และสามารถทำหน้าที่ชี้แนะให้แก่ทีมเป็นที่ปรึกษา ให้ความรู้ และส่งเสริมให้ผู้ป่วยโรคความดันโลหิตสูงสามารถจัดการดูแลตนเอง เพื่อควบคุมระดับความดันโลหิต ชะลอหรือป้องกันภาวะแทรกซ้อน ตลอดรวมถึงการมีคุณภาพชีวิตที่ดี

ดังนั้นผู้วิจัยจึงออกแบบโปรแกรมการจัดการตนเองในผู้ป่วยโรคความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง โดยมีการจัดการตนเองในด้านการรับประทานอาหาร และด้านการออกกำลังกาย เพื่อให้เกิดการเปลี่ยนแปลงพฤติกรรมสุขภาพ และนำไปสู่เป้าหมายที่ต้องการ โปรแกรมการจัดการตนเองนี้ ประยุกต์ใช้รูปแบบการจัดการตนเองของ Tobin et al. (1986) และ Kanfer (1980) ซึ่งประกอบด้วย 5 องค์ประกอบ ได้แก่ การตั้งเป้าหมายพฤติกรรมการจัดการตนเอง การให้ความรู้และฝึกทักษะการจัดการตนเอง การปฏิบัติและการกำกับตนเอง การโทรศัพท์ติดตาม และการประเมินผลการปฏิบัติ

คู่มือพยาบาล "โปรแกรมการจัดการตนเองในผู้ป่วยโรคความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง" นี้ เป็นส่วนหนึ่งของการดำเนินงานวิจัย เรื่อง "ผลของโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง" ซึ่งเป็นวิทยานิพนธ์ในหลักสูตรพยาบาลศาสตรดุษฎีบัณฑิต สาขาพยาบาลศาสตร์ คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย จัดทำขึ้นจากการศึกษาค้นคว้าตำรา วารสาร และเอกสารทางวิชาการ รวมทั้งข้อเสนอแนะจากพยาบาลในหน่วยงานที่ดูแลผู้ป่วยความดันโลหิตสูง ภายใต้คำแนะนำของอาจารย์ที่ปรึกษาวิทยานิพนธ์ และผู้ทรงคุณวุฒิในสาขาที่เกี่ยวข้อง

เพื่อให้การดำเนินงานวิจัย เป็นไปได้ด้วยความเรียบร้อย ถูกต้องตามกระบวนการวิจัย และเกิดประโยชน์กับผู้ป่วยโรคความดันโลหิตสูง ผู้วิจัยจึงได้จัดทำเอกสารฉบับนี้โดยมีเนื้อหาสาระเกี่ยวกับโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง เพื่อเป็นแนวทางสำหรับพยาบาลในการปฏิบัติงาน และสนับสนุนให้ผู้ป่วยโรคความดันโลหิตสูงมีการจัดการตนเอง เพื่อนำไปสู่การมีพฤติกรรมสุขภาพที่ดีและสามารถชะลอหรือป้องกันการเกิดภาวะแทรกซ้อน ซึ่งจะก่อให้เกิดประโยชน์สูงสุดต่อผู้รับบริการอย่างมีประสิทธิภาพ

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รศ. ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์
ผศ.ดร. ชนกพร จิตปัญญา

โปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง

แนวคิดและหลักการ

โปรแกรมการจัดการตนเองนี้ ได้ประยุกต์ใช้รูปแบบการจัดการตนเองของ Tobin et al (1986) และ Kanfer (1980) ซึ่งการจัดการตนเองนี้ เป็นการปฏิบัติกิจกรรมที่เกี่ยวข้องกับการดูแลรักษาสุขภาพหรือป้องกันการเกิดปัญหาสุขภาพ โดยที่ผู้ป่วยมีส่วนร่วมในการปฏิบัติกิจกรรมร่วมกับเจ้าหน้าที่ในทีมสุขภาพ (Tobin et al., 1986) แนวคิดนี้มีการนำมาใช้อย่างแพร่หลายในการดูแลผู้ป่วยโรคเรื้อรังรวมถึงโรคความดันโลหิตสูง เพื่อลดผลกระทบที่เกิดจากการเจ็บป่วย และส่งเสริมให้ผู้ป่วยมีความสามารถและทักษะในการควบคุมโรคด้วยตนเองไม่ให้ทวีความรุนแรงขึ้น และส่งผลให้ผู้ป่วยมีคุณภาพชีวิตที่ดีขึ้น

เป้าหมายการรักษาความดันโลหิตสูงคือ ลดความเสี่ยงต่อการป่วยและเสียชีวิตด้วยโรคเกี่ยวกับหัวใจและหลอดเลือด และโรคหลอดเลือดสมอง โดยควบคุมความดันโลหิตซิสโตลิคให้ต่ำกว่า 140 มิลลิเมตรปรอท และความดันไดแอสโตลิคให้ต่ำกว่า 90 มิลลิเมตรปรอท (Joint National Committee, 2003) แนวทางการดูแลรักษาความดันโลหิตสูงเริ่มจากการรักษาโดยไม่ใช้ยา เป็นการปรับเปลี่ยนพฤติกรรม และควบคุมปัจจัยต่างๆ เช่น การรับประทานอาหารประเภทลดเค็ม ลดไขมัน การควบคุมน้ำหนัก การออกกำลังกาย การจัดการความเครียด การงดสูบบุหรี่ และลดการดื่มเครื่องดื่มแอลกอฮอล์ เป็นต้น เมื่อไม่สามารถควบคุมความดันโลหิตได้ จึงเริ่มพิจารณาการใช้ยาควบคู่กับการปรับเปลี่ยนพฤติกรรม ซึ่งยาที่ใช้ในการควบคุมความดันโลหิตมีหลายกลุ่ม การเลือกใช้ยาในทางปฏิบัติมักพิจารณาตามสาเหตุและปัจจัยเสี่ยง ระดับความดันโลหิต และการตอบสนองต่อยาของผู้ป่วยแต่ละราย อย่างไรก็ตามการปฏิบัติตัวให้เหมาะสมกับโรค ยังเป็นสิ่งสำคัญ เพื่อที่จะสามารถดำรงชีวิตอยู่ร่วมกับโรคได้อย่างเป็นปกติสุข ซึ่งผู้ป่วยจำเป็นต้องมีความรู้และทักษะที่จำเป็นในการจัดการตนเองต่อโรคความดันโลหิตสูง ทำให้ผู้ป่วยสามารถพึ่งพาตนเองได้มากขึ้น ลดการพึ่งพาผู้อื่น เป็นการให้ผู้ป่วยมีส่วนร่วมในการดูแลสุขภาพตนเองมากขึ้น

จากการทบทวนเอกสารและงานวิจัยที่เกี่ยวข้องพบว่า ผู้ป่วยความดันโลหิตสูงจำนวนมากมีปัญหาด้านการปฏิบัติพฤติกรรมสุขภาพในการควบคุมหรือลดความดันโลหิต (Wang & Vasan, 2005; Elmer, Obarzanek, Vollmer, et al., 2006; Lexin & Tiemin, 2006) แม้จะมีการให้ความรู้และแนะนำการปฏิบัติตัวที่เหมาะสมกับโรคก็ตาม

การใช้ทฤษฎีการจัดการตนเองของ Kanfer (1980) จะช่วยให้ทราบแนวทางในการเพิ่มความสามารถในการจัดการตนเองของผู้ป่วยความดันโลหิตสูง สำหรับโปรแกรมการจัดการตนเอง

นั้น ประกอบด้วย 5 องค์ประกอบ ได้แก่ 1) การตั้งเป้าหมายพฤติกรรมการจัดการตนเอง ตามแนวคิดของ Tobin et al.(1986) พยาบาลและผู้ป่วยควรตั้งเป้าหมายในการปฏิบัติร่วมกัน เริ่มจากการค้นหาปัญหา โดยการประเมินพฤติกรรมการปฏิบัติตัวเพื่อควบคุมระดับความดันโลหิต ได้แก่ การรับประทานอาหาร และการออกกำลังกาย เพื่อนำข้อมูลที่ได้มาตั้งเป้าหมายการปฏิบัติ 2) การให้ความรู้และฝึกทักษะการจัดการตนเอง เพื่อเตรียมผู้ป่วยให้พร้อมสำหรับการปฏิบัติพฤติกรรมการจัดการตนเอง โดยให้ความรู้และฝึกทักษะเพื่อให้ผู้ป่วยสามารถนำไปประยุกต์ใช้ในการปฏิบัติตามเป้าหมายที่ตั้งไว้ 3) การปฏิบัติและการกำกับตนเอง หลังจากที่ผู้ป่วยได้รับความรู้และฝึกทักษะแล้ว ทำให้เข้าใจสภาวะของโรค แนวทางการปฏิบัติตน มีความมั่นใจในการปฏิบัติ นำกลับไปปฏิบัติที่บ้านและกำกับการปฏิบัติด้วยตนเอง โดยใช้เทคนิคการกำกับตนเองของ Kanfer (1980) ที่ประกอบด้วย การติดตามตนเอง การประเมินตนเอง และการเสริมแรงตนเอง 4) การโทรศัพท์ติดตาม เป็นส่วนหนึ่งของการสนับสนุนทางสังคม ตามแนวคิดของ Tobin et al. (1986) เพื่อกระตุ้นเตือนและติดตามความก้าวหน้าในการปฏิบัติการจัดการตนเองต่อระดับความดันโลหิต และ 5) การประเมินผลการปฏิบัติ เป็นการติดตามตัวแปรทางสรีรวิทยาตามแนวคิดของ Tobin et al. (1986) เพื่อประเมินผลลัพธ์การปฏิบัติพฤติกรรมการจัดการตนเองของผู้ป่วย โดยใช้แบบบันทึกการติดตามตนเองและระดับความดันโลหิต หากความดันโลหิตมีค่าต่ำกว่าก่อนทดลอง จะเสริมแรงด้วยการกล่าวคำชมเชย ซึ่งเป็นการสร้างแรงจูงใจให้ปฏิบัติตามอย่างต่อเนื่อง แต่ถ้าความดันโลหิตไม่ลดลง จะเสริมแรงตนเองด้วยการทางแก้ไขร่วมกัน

เพื่อให้ผู้ป่วยความดันโลหิตสูงมีการจัดการตนเองที่ถูกต้องและเหมาะสม สามารถดำรงชีวิตอยู่กับการเจ็บป่วยด้วยโรคได้อย่างปกติสุข พยาบาลเป็นผู้ที่มีบทบาทหน้าที่ให้บริการดูแลแบบองค์รวม มีความเป็นผู้นำในทีมสุขภาพ สามารถประสานงาน กับบุคลากรในทีมสุขภาพ และสามารถทำหน้าที่ชี้แนะให้แก่ทีม เป็นที่ปรึกษา ให้ความรู้ และส่งเสริมให้ผู้ป่วยสามารถจัดการดูแลตนเอง เพื่อควบคุมระดับความดันโลหิต เป็นการชะลอหรือป้องกันภาวะแทรกซ้อนให้ผู้ป่วยสามารถอยู่ร่วมกับโรคได้ พึ่งพาตนเองได้มากขึ้น และมีคุณภาพชีวิตที่ดี

วัตถุประสงค์

1. เพื่อให้พยาบาลเข้าใจและประยุกต์ใช้แนวคิดการจัดการตนเองในการดูแลผู้ป่วยโรคความดันโลหิตสูง ในการออกแบบโปรแกรมการปฏิบัติการจัดการตนเองในการดูแลรักษาโรค ส่งเสริมสุขภาพ ป้องกันภาวะแทรกซ้อน และควบคุมระดับความดันโลหิตในผู้ป่วยโรคความดันโลหิตสูง

2. เพื่อเป็นแนวทางในการพัฒนาพยาบาลให้มีความรู้และทักษะเฉพาะในการดูแลผู้ป่วยโรคความดันโลหิตสูง

3. เพื่อเป็นแนวทางพัฒนาคุณภาพการจัดการดูแลสุขภาพที่เฉพาะเจาะจงสำหรับผู้ป่วยโรคความดันโลหิตสูง ที่สอดคล้องกับความต้องการของผู้ป่วยต่อไป

กลุ่มเป้าหมาย

กลุ่มตัวอย่างคือ ผู้ป่วยความดันโลหิตสูง ที่มารับบริการ ณ แผนกผู้ป่วยนอกอายุรกรรม โรงพยาบาลตำรวจ ซึ่งมีคุณสมบัติดังต่อไปนี้

1. อายุตั้งแต่ 35 ปีขึ้นไป
2. เป็นผู้ป่วยที่ได้รับการวินิจฉัยจากแพทย์ตามเกณฑ์ ICD-10 ว่าเป็นโรคความดันโลหิตสูงชนิดไม่ทราบสาเหตุ (Essential primary hypertension) โดยมีระดับความดันโลหิต ตั้งแต่ 140/90 มิลลิเมตรปรอทขึ้นไป
3. มีข้อบ่งชี้ตามเกณฑ์ในการแบ่งกลุ่มเสี่ยงต่อการเกิดโรคหลอดเลือดสมองของกระทรวงสาธารณสุข โดยอยู่ในกลุ่มเสี่ยงสูงขึ้นไป (มีปัจจัยบ่งชี้ 2 ข้อ)
4. สื่อสารภาษาไทยเข้าใจ พูดคุยโต้ตอบและอ่านออกเขียนได้
5. ยินยอมเข้าร่วมการศึกษาวิจัย

เกณฑ์ในการแบ่งกลุ่มเสี่ยงต่อการเกิดโรคหลอดเลือดสมองของกระทรวงสาธารณสุข

ข้อบ่งชี้ดังกล่าวประกอบด้วยข้อบ่งชี้โอกาสเสี่ยงทั้งสิ้น 8 ข้อ ที่สัมพันธ์กับการเกิดโรคหลอดเลือดสมองหรืออัมพาต ได้แก่ ประวัติครอบครัวญาติสายตรงที่เป็นโรคหัวใจขาดเลือด หรืออัมพาตก่อนอายุ 55 ในผู้ชาย และ 65 ปีในผู้หญิง ประวัติเป็นโรคหัวใจ โรคหลอดเลือดสมอง การสูบบุหรี่ ความดันโลหิตสูง เบาหวาน ไขมันผิดปกติ ภาวะอ้วน รวมถึงข้อบ่งชี้อื่นๆที่แสดงถึงการเพิ่มความรุนแรงของโอกาสเสี่ยง ได้แก่ ภาวะเบาหวานที่เป็นมานาน หรือคุมได้ไม่ดี ภาวะความดันโลหิตสูงที่คุมได้ไม่ดี ภาวะไขมันคอเลสเตอรอลสูง โรคพันธุกรรมไขมันผิดปกติที่มีอาการทางคลินิก โดยในการประเมิน ใช้แบบประเมินคัดกรองจากแบบบันทึกภายใต้โครงการรณรงค์ป้องกันอัมพฤกษ์ อัมพาต สำนักโรคไม่ติดต่อ กระทรวงสาธารณสุข (สำนักนโยบายและยุทธศาสตร์ กระทรวงสาธารณสุข, 2550)

โปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง

ประกอบด้วย 5 ขั้นตอน ดังนี้

ขั้นตอนที่ 1 การตั้งเป้าหมายพฤติกรรมการจัดการตนเอง

ครั้งละ 40 นาที

พยาบาลและผู้ป่วยตั้งเป้าหมายในการปฏิบัติร่วมกัน โดย

1) การค้นหาปัญหา เพื่อนำข้อมูลที่ได้มาตั้งเป้าหมายการปฏิบัติ

2) การตั้งเป้าหมายในการปฏิบัติ เพื่อแก้ไขปัญหาที่ค้นพบจากพฤติกรรมที่เป็นปัญหา

ขั้นตอนที่ 2 การให้ความรู้และฝึกทักษะการจัดการตนเอง

ครั้งละ 60 นาที โดย

1) ให้ความรู้เกี่ยวกับโรคความดันโลหิตสูง

2) ฝึกทักษะการจัดการตนเองสำหรับพฤติกรรมการรับประทานอาหาร และการออกกำลังกาย

ขั้นตอนที่ 3 การปฏิบัติและการกำกับตนเอง

ครั้งละ 50 นาที

หลังจากที่ผู้ป่วยได้รับความรู้ และฝึกทักษะแล้วนำกลับไปปฏิบัติที่บ้าน และกำกับการปฏิบัติด้วยตนเอง โดยใช้เทคนิคการกำกับตนเองของ Kanfer (1980) ที่ประกอบด้วย

1) การติดตามตนเอง

2) การประเมินตนเอง

3) การเสริมแรงตนเอง

ขั้นตอนที่ 4 การโทรศัพท์ติดตาม

ครั้งละ 20 นาที

ใช้เพื่อกระตุ้นเตือนและติดตามความก้าวหน้าในการปฏิบัติการจัดการตนเอง

ขั้นตอนที่ 5 การประเมินผลการปฏิบัติ

ครั้งละ 30 นาที

การประเมินผลการปฏิบัติ เป็นการประเมินผลลัพธ์การปฏิบัติพฤติกรรมการจัดการตนเองของผู้ป่วย โดยใช้แบบบันทึกการติดตามตนเองและค่าความดันโลหิต

⇨ **การควบคุมความดันโลหิต**

แผนการจัดการตนเองของโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง

ขั้นเตรียมการ

วัตถุประสงค์

1. เพื่อสร้างความคุ้นเคย และความเป็นกันเอง ในการปฏิบัติกิจกรรมที่เกี่ยวข้องกับการดูแลรักษาสุขภาพหรือป้องกันการเกิดปัญหาสุขภาพ
2. เพื่อสร้างความเข้าใจในการให้ความร่วมมือและแรงจูงใจในการดูแลตนเองที่เหมาะสม
3. เพื่อสนับสนุนและให้กำลังใจในการปฏิบัติกิจกรรมการจัดการตนเอง

ขั้นปฏิบัติการพยาบาล

1. ศึกษาข้อมูลผู้ป่วยโรคความดันโลหิตสูงที่มารับบริการ ณ แผนกผู้ป่วยนอกอายุรกรรม แต่ละราย

2. คัดเลือกผู้ป่วยตามเกณฑ์ที่ระบุไว้ในการเลือกกลุ่มเป้าหมาย ได้แก่ ผู้ป่วยที่ได้รับการวินิจฉัยตามเกณฑ์ ICD-10 ว่าเป็นโรคความดันโลหิตสูงชนิดไม่ทราบสาเหตุ (Essential primary hypertension) มีระดับความดันโลหิต มากกว่า 140/90 มิลลิเมตรปรอท และมีข้อบ่งชี้ตามเกณฑ์ในการแบ่งกลุ่มเสี่ยงต่อการเกิดโรคหลอดเลือดสมองของกระทรวงสาธารณสุข โดยอยู่ในกลุ่มเสี่ยงสูงขึ้นไป

3. พบผู้ป่วยโรคความดันโลหิตสูงเพื่อขอความร่วมมือในการเข้าร่วมโปรแกรมการจัดการตนเอง

4. บอกให้ทราบสิทธิในการปฏิเสธการเข้าร่วมโปรแกรมที่จะไม่มีผลกระทบต่อการรักษาพยาบาลตามปกติที่จะได้รับ

หากผู้ป่วยโรคความดันโลหิตสูงยินยอมเข้าร่วมโปรแกรมฯ จะดำเนินการตามวัตถุประสงค์การปฏิบัติโปรแกรมการจัดการตนเอง ซึ่งมี 5 ขั้นตอน ดังนี้

1. **การตั้งเป้าหมายพฤติกรรมการจัดการตนเอง** มีวัตถุประสงค์เพื่อให้ผู้ป่วยกำหนดทิศทางหรือเป้าหมายว่า สิ่งที่บุคคลต้องการจะทำ ผลสำเร็จที่คาดหวังคืออะไร การตั้งเป้าหมายต้องอาศัยแรงจูงใจ จึงจะนำไปสู่ความสำเร็จ

2. **การให้ความรู้และฝึกทักษะการจัดการตนเอง** มีวัตถุประสงค์เพื่อเตรียมผู้ป่วยให้พร้อมสำหรับการปฏิบัติพฤติกรรมการจัดการตนเอง ทั้งในด้านความรู้เรื่องโรคความดันโลหิตสูงและทักษะการจัดการตนเองในพฤติกรรมการรับประทานอาหารและการออกกำลังกาย

3. **การปฏิบัติและการกำกับตนเอง** มีวัตถุประสงค์เพื่อให้ผู้ป่วยมีความมั่นใจในการปฏิบัติสามารถนำกลับไปปฏิบัติที่บ้านและกำกับการปฏิบัติด้วยตนเอง เป็นการแสดงถึงความสามารถในการจัดการตนเองของผู้ป่วยในการควบคุมและจัดการกับภาวะความเจ็บป่วยเรื้อรังที่มีผลต่อสุขภาพ

4. **การโทรศัพท์ติดตาม** มีวัตถุประสงค์เพื่อเป็นส่วนหนึ่งของการสนับสนุนทางสังคม ตามแนวคิดของ Tobin et al. (1986) เพื่อกระตุ้นเตือนและติดตามความก้าวหน้าในการปฏิบัติการจัดการตนเองต่อพฤติกรรมการรับประทานอาหารและการออกกำลังกาย

5. การประเมินผลการปฏิบัติ มีวัตถุประสงค์เพื่อประเมินผลลัพธ์การปฏิบัติพฤติกรรมการจัดการตนเองของผู้ป่วย โดยดูจากแบบบันทึกการติดตามตนเอง และแบบบันทึกความดันโลหิต

แนวทางปฏิบัติการพยาบาลการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิ ตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง

กระบวนการพยาบาล	แนวทางการปฏิบัติ	ตัวอย่างการปฏิบัติ	เครื่องมือ/สื่อ
การแนะนำให้ข้อมูลโปรแกรมการจัดการตนเองฯ (ระยะเวลาที่ใช้ 30 นาที)	1. ชี้แจงระยะเวลา และรูปแบบของโปรแกรมฯ 2. ให้ผู้ป่วยโรคความดันโลหิตสูงเซ็นต์ใบยินยอมเข้าร่วมโปรแกรมฯ 3. เปิดโอกาสให้ผู้ป่วยโรคความดันโลหิตสูงซักถามข้อสงสัย	- อธิบายระยะเวลาและรูปแบบที่ใช้ในการปฏิบัติการจัดการตนเอง และเปิดโอกาสให้ซักถามข้อสงสัยต่างๆ หากผู้ป่วยให้ความร่วมมือจึงให้เซ็นต์ในใบยินยอมเข้าร่วมการปฏิบัติกิจกรรมนี้	- ใบยินยอมเข้าร่วมโปรแกรมการพยาบาลการจัดการตนเองฯ
1. การตั้งเป้าหมายิกรรมการจัดการองฯ ะเวลาที่ใช้ 40 นาที)	1. พูดคุยเกี่ยวกับประสบการณ์การเลือกรับประทานอาหาร หรือการพยายามลดปริมาณอาหารเค็มที่ผ่านมา เกี่ยวกับวิธีการ ปัญหาและอุปสรรคที่เกิดขึ้น รวมถึงประสบการณ์การออกกำลังกาย เป็นการประเมินพฤติกรรมการปฏิบัติตัว เพื่อควบคุมระดับความดันโลหิต 2. ผู้วิจัยและผู้ป่วยร่วมกันตั้งเป้าหมาย ในการปรับเปลี่ยนพฤติกรรมที่เป็นปัญหา	- พูดคุยเชื่อมโยงพฤติกรรมที่พบเข้าสู่การเกิดโรคความดันโลหิตสูง และการป้องกันปัญหาเสี่ยงต่อการเกิดโรคหลอดเลือดสมอง ค้นหาปัญหาพฤติกรรมฯโดยการซักถาม -“ในแต่ละมื้อในรอบวันคุณรับประทานอาหารอะไรบ้าง และออกกำลังกายประเภทไหน จำนวนเท่าไร และบ่อยครั้งแค่ไหน” - ขอให้ร่วมกันตั้งเป้าหมายที่ตนเองประเมินว่าสามารถทำได้ ทั้งเป้าหมายเรื่องการรับประทานอาหารและเป้าหมายในเรื่องการออกกำลังกาย ผลสำเร็จที่คาดหวังคืออะไร ผู้ป่วยมีอะไรเป็นแรงจูงใจ เพื่อไปให้ถึงเป้าหมาย	

กระบวนการพยาบาล	แนวทางการปฏิบัติ	ตัวอย่างการปฏิบัติ	เครื่องมือ/สื่อ
	3. ผู้วิจัยแนะนำการใช้คู่มือผู้ป่วย แบบบันทึกการตั้งเป้าหมาย แบบบันทึกการติดตามตนเอง พร้อมทั้งตรวจสอบการลงแบบบันทึกให้สมบูรณ์	- ให้ผู้ป่วยทดลองบันทึกการตั้งเป้าหมาย และบันทึกการติดตามตนเองทั้งพฤติกรรมการรับประทานอาหารและการออกกำลังกาย โดยผู้วิจัยตรวจสอบการลงบันทึกและหากมีปัญหา ผู้ป่วยสามารถซักถามได้ จากนั้น จึงนำเข้าสู่ขั้นตอนที่ 2 คือการให้ความรู้และฝึกทักษะการจัดการตนเอง	- คู่มือผู้ป่วย -แบบบันทึกการตั้งเป้าหมาย - แบบบันทึกติดตามตนเอง
2. การให้ความรู้และฝึกทักษะการจัดการตนเองฯ (ระยะเวลาที่ใช้ 60 นาที)	1. ให้ความรู้เรื่องโรคความดันโลหิตสูง ชนิดของโรคความดันโลหิตสูง สาเหตุการเกิด ปัจจัยส่งเสริมให้เกิด อาการของโรค แนวทางการรักษา ผลกระทบจากโรค และแนวทางการปฏิบัติตน ให้มีความมั่นใจในการปฏิบัติ นำกลับไปปฏิบัติที่บ้านได้	-“ทราบหรือไม่ว่า โรคความดันโลหิตสูงมีกี่ชนิด และเกิดจากสาเหตุใด” -“ลองบอก มีปัจจัยเสี่ยงของการเกิดโรค รวมถึงอาการแสดงความรุนแรงของโรคความดันโลหิตสูงว่ามีอะไรบ้าง” -ท่านใดสามารถบอกถึงผลกระทบของโรคความดันโลหิตสูงว่าเป็นอย่างไร”	- ภาพพลิกเรื่องโรคความดันโลหิตสูง
	2. ฝึกทักษะการจัดการตนเองในพฤติกรรมการรับประทานอาหาร	-สำหรับแนวทางการปฏิบัติตนเพื่อควบคุมความดันโลหิตมีแนวทางดังนี้…..” -ให้ความรู้ฝึกทักษะการเลือกรับประทานอาหารต้านความดันโลหิตสูง ประเมินว่ามีอาหาร	-ภาพพลิกอาหารต้านความดันโลหิตสูง

กระบวนการพยาบาล	แนวทางการปฏิบัติ	ตัวอย่างการปฏิบัติ	เครื่องมือ/สื่อ
	3. ฝึกทักษะการจัดการตนเองในพฤติกรรมการออกกำลังกาย	ชนิดใดบ้างที่เป็นอาหารต้านโรคความดันโลหิตสูง -ให้ความรู้และฝึกทักษะการออกกำลังกายที่เหมาะสมกับโรคความดันโลหิตสูง เช่น วิธีการเดิน วิ่งเหยาะหรือเดินเร็ว หรือวิธีอื่นๆ รวมถึงหลักการออกกำลังกายที่ถูกต้อง และปลอดภัย	-หนังสือการเดินนี้ไซร้มิใช่ธรรมดา - คู่มือผู้ป่วย
3. การปฏิบัติและการกำกับตนเอง (ระยะเวลาที่ใช้ 50 นาที)	- เมื่อผู้ป่วยได้รับความรู้และฝึกทักษะแล้ว ทำให้เข้าใจสภาวะของโรค แนวทางการปฏิบัติตนที่ถูกต้อง และสามารถกำกับการปฏิบัติด้วยตนเอง โดยให้ความรู้เกี่ยวกับขั้นตอนการกำกับตนเอง 3 ขั้นตอน	- หลังจากที่ได้รับความรู้และฝึกทักษะการจัดการตนเองในพฤติกรรมการรับประทานอาหารและการออกกำลังกายแล้ว ต่อไปเป็นขั้นตอนที่ใช้ในการกำกับตนเอง เพื่อให้สามารถควบคุมกำกับการปฏิบัติพฤติกรรมที่ตั้งเป้าหมายไว้ เพื่อบรรลุผลในการควบคุมความดันโลหิต โดยการใช้แบบบันทึกการติดตามตนเอง	- คู่มือผู้ป่วย -หนังสือการเดินนี้ไซร้มิใช่ธรรมดา - แบบบันทึกการติดตามตนเอง
3.1 การติดตามตนเอง (self-monitoring)	-ให้ผู้ป่วยติดตามตนเองด้วยการบันทึกลงในแบบบันทึกการติดตามตนเองในด้านการรับประทานอาหารและการออกกำลังกาย	- “เมื่อเทียบกับเกณฑ์มาตรฐานหรือเป้าหมายที่กำหนดไว้ คุณรับประทานอาหาร และออกกำลังกายได้ตรงหรือแตกต่างตามเกณฑ์อย่างไรบ้าง”	
3.2การประเมินตนเอง (self-evaluation)	- การประเมินตนเอง ให้ผู้ป่วยเปรียบเทียบผลการปฏิบัติจากแบบบันทึกการติดตามตนเองกับเป้าหมายที่ตั้งไว้ทุกวัน	-“เพื่อการประเมินปัญหาและการวางแผนการปฏิบัติพฤติกรรมที่ดี ขอให้ประเมิน	

กระบวนการพยาบาล	แนวทางการปฏิบัติ	ตัวอย่างการปฏิบัติ	เครื่องมือ/สื่อ
3.3 การเสริมแรงตนเอง (self-reinforcement)	- การเสริมแรงตนเอง เป็นการเสริมแรง เพื่อให้ผู้ป่วยมีพฤติกรรมที่ถูกต้องต่อไป - การค้นหาสาเหตุ เพื่อการกำหนดเป้าหมาย และแนวทางแก้ไขการปฏิบัติพฤติกรรม	เกี่ยวกับการรับประทานอาหาร และการออกกำลังกายของตนเอง แล้วดูว่า เป็นอย่างไร ทำได้หรือไม่ แตกต่างจากเกณฑ์ มากน้อยเพียงใด มีระดับความรุนแรงอย่างไร รวมถึงพิจารณาปัจจัยที่ทำให้เกิดพฤติกรรมที่เป็นปัญหา และแนวทางการแก้ปัญหาพฤติกรรมนั้น” -หากผู้ป่วยสามารถปฏิบัติพฤติกรรมเป้าหมายได้บรรลุผลตามที่ตั้งใจไว้ ให้ผู้ป่วยพูดชมเชยตนเอง - หากผู้ป่วยไม่สามารถปฏิบัติพฤติกรรมได้ตามที่ตั้งเป้าหมายไว้ ให้พิจารณาร่วมกับผู้วิจัย หาสาเหตุและแนวทางแก้ไขสิ่งที่ทำให้การปฏิบัติพฤติกรรมนั้นไม่สำเร็จและทำการตั้งเป้าหมายและแนวทางการปฏิบัติพฤติกรรมใหม่	- แบบบันทึกการติดตามตนเอง - แบบบันทึกพฤติกรรมการติดตามตนเอง
4. การโทรศัพท์ติดตาม (ระยะเวลาที่ใช้ 20 นาที)	- เป็นการกระตุ้นเตือนและติดตามความก้าวหน้าในการปฏิบัติกิจกรรมการจัดการตนเองต่อระดับความดันโลหิต - ทบทวนองค์ความรู้จากการจัดกิจกรรมการให้ความรู้และฝึกทักษะการจัดการตนเอง	1. กล่าวทักทายและสวัสดีผู้ป่วยโรคความดันโลหิตสูง เพื่อสร้างสัมพันธภาพที่ดีในการดูแล ติดตามอย่างต่อเนื่องในการปฏิบัติพฤติกรรม 2. สอบถามภาวะสุขภาพ ผลการตรวจร่างกาย และประเมินความสามารถในการปฏิบัติกิจกรรมการจัดการตนเองของผู้ป่วยความดัน	-แบบฟอร์มแผนการพูดคุยโทรศัพท์ -แบบบันทึกติดตามตนเอง

กระบวนการพยาบาล	แนวทางการปฏิบัติ	ตัวอย่างการปฏิบัติ	เครื่องมือ/สื่อ
		โลหิตสูง 3. ประเมินปัญหาที่พบในการปฏิบัติกิจกรรมการจัดการตนเองของผู้ป่วยความดันโลหิตสูง ทั้งพฤติกรรมการรับประทานอาหารและพฤติกรรมการออกกำลังกาย รวมถึงการใช้แบบบันทึกต่างๆ 4. ให้คำแนะนำเกี่ยวกับวิธีปฏิบัติตัวที่สอดคล้องกับปัญหาที่พบในการปฏิบัติกิจกรรมการจัดการตนเองของผู้ป่วยความดันโลหิตสูง 5. ทบทวนองค์ความรู้จากการจัดกิจกรรมการให้ความรู้และฝึกทักษะการจัดการตนเอง โดยการซักถามและให้ความรู้เพิ่มเติมในส่วนที่ยังไม่เข้าใจ 6. สอบถามปัญหาอื่นที่เกิดขึ้นจากการปรับเปลี่ยนพฤติกรรมสุขภาพ พร้อมทั้งร่วมกันหาแนวทางแก้ไขปัญหาให้กับผู้ป่วย 7. รับฟังปัญหาเกี่ยวกับการควบคุมความดันโลหิต และเปิดโอกาสให้ผู้ป่วยโรคความดันโลหิตสูง ได้ระบายความรู้สึก 8. กล่าวให้กำลังใจและชมเชยผู้ป่วยความดันโลหิตสูง เพื่อเสริมสร้างแรงจูงใจในการปฏิบัติ 9. เน้นย้ำกำหนดนัดตรวจและการร่วมกิจกรรมกลุ่มครั้งต่อไป(ตาม	

กระบวนการพยาบาล	แนวทางการปฏิบัติ	ตัวอย่างการปฏิบัติ	เครื่องมือ/สื่อ
		เวลาที่แพทย์นัดหรือ ประมาณ 2 สัปดาห์) 10. จดบันทึกผลการโทรศัพท์พูดคุยประเด็นปัญหาที่ต้องดูแลต่อเนื่องในแบบฟอร์มแผนการพูดคุยโทรศัพท์	
5. การประเมินผลการปฏิบัติ (ระยะเวลาที่ใช้ 30 นาที)	1. เป็นการประเมินผลลัพธ์การปฏิบัติพฤติกรรมการจัดการตนเองของผู้ป่วย โดยดูจากแบบบันทึกการติดตามตนเอง และระดับความดันโลหิต 2. สนับสนุนและให้กำลังใจในการร่วมมือปฏิบัติกิจกรรมการพยาบาลที่จะส่งผลต่อการดูแลตนเองที่ดีขึ้นของผู้ป่วยโรคความดันโลหิตสูง 3. เชื่อมโยงให้เห็นถึงการจัดการตนเอง ต่อพฤติกรรมที่ต้องการปรับเปลี่ยน และต่อระดับความดันโลหิตโดยใช้โปรแกรมการจัดการตนเองนี้ 4. นัดหมายการเข้าร่วมโปรแกรมการพยาบาลครั้งต่อไป	- “การจัดการตนเองเป็นเรื่องที่สามารถเรียนรู้และปรับเปลี่ยนกันได้ ขอให้มีความตั้งใจและมีความพยายาม ก็จะสามารถทำได้อย่างต่อเนื่องแน่นอน” -“กิจกรรมต่างๆ ในโปรแกรมนี้มุ่งเน้นการพัฒนาตัวเองให้มีความสามารถที่จะจัดการกับปัญหาของตนได้ ทำให้มีผลต่อการลดระดับความดันโลหิตและช่วยลดภาวะเสี่ยงต่อการเกิดโรคหลอดเลือดสมองได้ ต่อไปหวังว่าจะปฏิบัติพฤติกรรมตามการจัดการตนเองนี้ได้อย่างคล่องแคล่ว มีแนวทางการปฏิบัติพฤติกรรมที่ดี ช่วยแก้ปัญหาได้มากขึ้น ช่วยลดระดับความดันโลหิตและป้องกันภาวะเสี่ยงต่อการเกิดโรคหลอดเลือดสมองได้เป็นอย่างดี” “วันนี้ต้องขอขอบคุณสำหรับความร่วมมือ ดิฉันขอเป็นกำลังใจให้คุณประสบความสำเร็จกับความตั้งใจ	- แบบบันทึกการติดตามตนเอง

กระบวนการพยาบาล	แนวทางการปฏิบัติ	ตัวอย่างการปฏิบัติ	เครื่องมือ/สื่อ
		จริงของคุณ แล้วพบกันครั้งต่อไป วันที่... เวลา...สถานที่...นะคะ”	

ประโยชน์ที่คาดว่าจะได้รับ

1. ผู้ป่วยโรคความดันโลหิตสูง มีความรู้ความเข้าใจในการจัดการตนเองเพื่อควบคุมความดันโลหิต

2. ผู้ป่วยโรคความดันโลหิตสูง สามารถนำความรู้ที่ได้รับไปปฏิบัติการจัดการตนเองได้อย่างมีประสิทธิภาพ

การประเมินผล

1. ผู้ป่วยโรคความดันโลหิตสูงพูดคุยแลกเปลี่ยนประสบการณ์และความคิดเห็น

2. ผู้ป่วยโรคความดันโลหิตสูงแสดงความสนใจ ให้ความร่วมมือในการเข้าร่วมกิจกรรมและมีการใช้แบบบันทึกต่างๆ ในการปฏิบัติกิจกรรมการจัดการตนเอง

3. ผู้ป่วยโรคความดันโลหิตสูงสามารถจัดการตนเองในพฤติกรรมตามที่ตั้งเป้าหมายได้

4. มีสัดส่วนของผู้ป่วยโรคความดันโลหิตสูง ที่ประสบความสำเร็จในการควบคุมความดันโลหิตได้ตามเกณฑ์มากกว่าเมื่อเทียบกับผู้ป่วยโรคความดันโลหิตสูง ที่ควบคุมไม่สำเร็จ โดยติดตามประเมินหลังโปรแกรมสิ้นสุด และติดต่อกันทุก 1 เดือนจนครบ 3 เดือน

Appendix F

The Self-management Program Implementation

(Thai Version)

แผนการสอนผู้ป่วยโรคความดันโลหิตสูง

การจัดการตนเองในผู้ป่วยความดันโลหิตสูงที่ผู้วิจัยจัดทำขึ้นจากแนวความคิดการจัดการตนเองของ Tobin et al (1986) และ Kanfer (1980) ซึ่งการจัดการตนเองนี้ เป็นการปฏิบัติกิจกรรมที่เกี่ยวข้องกับการดูแลรักษาสุขภาพหรือป้องกันการเกิดปัญหาสุขภาพ โดยที่ผู้ป่วยมีส่วนร่วมในการปฏิบัติกิจกรรมร่วมกับเจ้าหน้าที่ในทีมสุขภาพด้วย ประกอบด้วย 1) การตั้งเป้าหมายพฤติกรรมการจัดการตนเอง 2) การให้ความรู้และฝึกทักษะการจัดการตนเอง 3) การปฏิบัติและการกำกับตนเอง 4) การโทรศัพท์ติดตาม และ5) การประเมินผลการปฏิบัติ

ผู้ดำเนินการ พ.ต.ท.หญิง สุขฤดี ธัชศฤงคารสกุล นิสิตหลักสูตรพยาบาลศาสตรดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

วัตถุประสงค์ทั่วไป

1. เพื่อให้ผู้ป่วยโรคความดันโลหิตสูง สามารถประเมินและระบุปัญหา รวมทั้งสาเหตุของปัญหาที่ส่งผลให้ไม่สามารถควบคุมความดันโลหิตได้
2. เพื่อให้ผู้ป่วยโรคความดันโลหิตสูง สามารถนำปัญหา สาเหตุที่ประเมินได้ มาตั้งเป้าหมายในการปฏิบัติหรือจัดการตนเองในการปรับเปลี่ยนพฤติกรรมสุขภาพ เพื่อควบคุมความดันโลหิตของตนเองได้
3. เพื่อให้ผู้ป่วยโรคความดันโลหิตสูง มีความรู้ความเข้าใจ และสามารถฝึกทักษะปฏิบัติการจัดการตนเองเกี่ยวกับพฤติกรรมการรับประทานอาหาร การออกกำลังกาย เพื่อควบคุมความดันโลหิตของตนเองได้
4. เพื่อให้ผู้ป่วยโรคความดันโลหิตสูง สามารถประเมินผลการปฏิบัติพฤติกรรมการจัดการตนเองได้

กลุ่มเป้าหมาย ผู้ป่วยโรคความดันโลหิตสูงชนิดไม่ทราบสาเหตุที่เสี่ยงต่อการเกิดโรคหลอดเลือดสมองที่มีค่าความดันโลหิต ตั้งแต่ 140/90 มิลลิเมตรปรอทขึ้นไป และไม่มีภาวะแทรกซ้อนจากความดันโลหิตสูง ที่มารับบริการที่แผนกผู้ป่วยนอกอายุรกรรม โรงพยาบาลตำรวจ จำนวน ..... คน

สถานที่ดำเนินการ แผนกผู้ป่วยนอกอายุรกรรม โรงพยาบาลตำรวจ

กำหนดการเรียนการสอน

ครั้งที่ 1 วันที่……. เดือน……2554 เวลา……น. เรื่อง “กินอย่างไร ให้ปลอดภัยจากความดันโลหิตสูง”

ครั้งที่ 2 วันที่……. เดือน……2554 เวลา……น. เรื่อง “ออกกำลังกายวันนี้ เพื่อชีวีที่มีสุข”

เวลาในการสอน ครั้งละ 1 ชั่วโมง 30 นาที

อุปกรณ์และสื่อ

1. คู่มือผู้ป่วยโรคความดันโลหิตสูง
2. คู่มืออาหารต้านความดันโลหิตสูง
3. คู่มือออกกำลังกายวันนี้ เพื่อชีวีที่มีสุข
4. ภาพพลิกเรื่องโรคความดันโลหิตสูง
5. ภาพพลิกอาหารต้านความดันโลหิตสูง
6. ภาพพลิกเรื่องออกกำลังกายวันนี้ เพื่อชีวีที่มีสุข
7. หนังสือการเดินนี้ไซร้มิใช่ธรรมดา
8. สมุดบันทึกพฤติกรรมการรับประทานอาหารต้านความดันโลหิตสูง
9. สมุดบันทึกพฤติกรรมการออกกำลังกาย
10. โมเดลตัวอย่างอาหาร

วิธีการ

1. การบรรยาย
2. การสาธิต
3. การอภิปราย
4. การคิดวิเคราะห์
5. การแสดงความคิดเห็น
6. การฝึกปฏิบัติ

แผนการสอน ครั้งที่ 1

เรื่อง “กินอย่างไร ให้ปลอดภัยจากความดันโลหิตสูง”

วันที่.....เดือน.....พ.ศ. 2554

วัตถุประสงค์	เนื้อหา	กิจกรรมการเรียนการสอน	สื่อ	วิธีการสอน	การประเมิน
เพื่อแนะนำตัวและสร้างสัมพันธภาพที่ดีระหว่างผู้ป่วยกับผู้วิจัย เพื่อให้ผู้ป่วยทราบข้อมูลเกี่ยวกับวัตถุประสงค์การมาเข้าร่วมกลุ่ม กิจกรรมที่จะทำ ข้อตกลงกลุ่ม และบทบาทของสมาชิก	**กิจกรรมการสร้างสัมพันธภาพ** - การสร้างสัมพันธภาพระหว่างผู้วิจัยกับผู้ป่วย จะทำให้เกิดความไว้วางใจ ความรู้สึกที่เป็นมิตร และเกิดความร่วมมือในการทำกิจกรรม - วัตถุประสงค์ของการเข้าร่วมกิจกรรม คือ 1. เพื่อให้ผู้ป่วยโรคความดันโลหิตสูง สามารถระบุปัญหา รวมทั้งสาเหตุของปัญหาที่ส่งผลให้ไม่สามารถควบคุมความดันโลหิตได้.....	<u>ขั้นนำ</u> ผู้วิจัยพบสมาชิกกลุ่ม กล่าวต้อนรับสมาชิกผู้ป่วย โดยแนะนำตัว แจกป้ายชื่อให้กับผู้ป่วย และให้ผู้ป่วยแนะนำตัวเองทีละคน บอกระยะเวลาที่เป็นโรคและเป้าหมายในชีวิต เพื่อให้ผู้เข้าร่วมกิจกรรมทำความรู้จักซึ่งกันและกัน (ใช้เวลา 5 นาที) -ผู้วิจัยชี้แจงวัตถุประสงค์การมาเข้าร่วมกลุ่ม กิจกรรมที่จะทำ ข้อตกลงกลุ่ม และบทบาทของสมาชิก (ใช้เวลา 5 นาที)	- ป้ายชื่อผู้ป่วย - ภาพพลิก	- กิจกรรมการแนะนำตัวระหว่างผู้เข้าร่วมกิจกรรม - บรรยาย	- สังเกตความสนใจและความร่วมมือในการแนะนำตัวเอง - สังเกตความสนใจ

Appendix G

The Hypertensive Self Management test

(แบบวัดความรู้เกี่ยวกับการจัดการตนเองสำหรับผู้ป่วยความดันโลหิตสูง)

แบบประเมินความรู้หลังเข้าร่วมโปรแกรมการจัดการตนเอง
เรื่อง “โรคและการใช้ยาความดันโลหิตสูง”

หมายเลข ..... HN.....

<u>คำชี้แจง</u> ให้ผู้ป่วยตอบคำถามแต่ละข้อ โดยทำเครื่องหมาย √ ในช่องว่างที่ “ถูกต้อง” หรือ “ไม่ถูกต้อง” เพียงอย่างใดอย่างหนึ่งที่ตรงกับความคิดของท่าน (กรุณาตอบให้ครบทุกข้อ)

ข้อที่	แบบทดสอบ	ถูกต้อง	ไม่ถูกต้อง
1.	โรคความดันโลหิตสูงเป็นโรคที่มีความผิดปกติเกี่ยวกับหัวใจและหลอดเลือด		
2.	ค่าความดันโลหิตที่ควบคุมได้ สำหรับผู้ป่วยที่ไม่มีโรคอื่นร่วม คือ ค่าความดันโลหิตตัวบนน้อยกว่าหรือเท่ากับ 140 และตัวล่างน้อยกว่าหรือเท่ากับ 90 มิลลิเมตรปรอท		
3.	หากมีอาการอ่อนแรงครึ่งซีก พูดไม่ชัด ลิ้นแข็ง แสดงถึงสัญญาณเตือนของอัมพาต		
. . .			
9.	ถ้าท่านลืมกินยาขับปัสสาวะมื้อเช้า ควรกินยาทันทีที่นึกได้ แต่ไม่เกินเวลา 14.00 น.ของวันนั้น		
10.	ถ้าท่านลืมกินยาลดความดันโลหิต ให้กินยาชดเชย 2 เท่าของมื้อถัดไป		

แบบประเมินความรู้หลังเข้าร่วมโปรแกรมการจัดการตนเอง
เรื่อง “อาหารต้านความดันโลหิตสูง”

หมายเลข …….. HN……..……คำชี้แจง ให้ผู้ป่วยตอบคำถามแต่ละข้อ โดยให้ทำเครื่องหมาย √ ในช่องว่างที่ “ถูกต้อง” หรือ “ไม่ถูกต้อง” เพียงอย่างใดอย่างหนึ่งที่ตรงกับความคิดของท่าน (กรุณาตอบให้ครบทุกข้อ)

ข้อที่	แบบทดสอบ	ถูกต้อง	ไม่ถูกต้อง
1.	อาหารต้านความดันโลหิตสูง ได้แก่ อาหารไขมันต่ำ ผักผลไม้ ธัญพืช แต่จำกัดปริมาณเครื่องดื่มแอลกอฮอล์		
2.	การกินผักวันละ 4-5 ทัพพีจะทำให้ลดความดันโลหิตได้ดีกว่าการกินอาหารประเภทแป้งและน้ำตาล		
3.	การใช้วิธีต้ม นึ่ง หรือย่างปรุงอาหาร แทนการผัดหรือทอดน้ำมันเป็นการช่วยลดการเกาะของไขมันในหลอดเลือด		
. . . .			
8.	สามารถใช้ซีอิ๊วขาว หรือซอสปรุงรส แทนเกลือในการปรุงอาหาร เพราะมีปริมาณโซเดียมน้อย		
9.	ควรกินผลไม้หรือน้ำผลไม้ แทนขนมหวาน		
10.	ควรกินอาหารเจอย่างน้อยสัปดาห์ละ 2 มื้อ		

แบบประเมินความรู้ หลังเข้าร่วมโปรแกรมการจัดการตนเอง
เรื่อง “ออกกำลังกายวันนี้...เพื่อชีวีที่มีสุข”

หมายเลข …… HN……..……

<u>คำชี้แจง</u> ให้ผู้ป่วยตอบคำถามแต่ละข้อ โดยให้ทำเครื่องหมาย √ ในช่องว่างที่ “ถูกต้อง” หรือ “ไม่ถูกต้อง” เพียงอย่างใดอย่างหนึ่งที่ตรงกับความคิดของท่าน (กรุณาตอบให้ครบทุกข้อ)

ข้อที่	แบบทดสอบ	ถูกต้อง	ไม่ถูกต้อง
1.	การออกกำลังกายทำให้ กล้ามเนื้อแข็งแรง เพิ่มการทรงตัว และเพิ่มความยืดหยุ่นของเอ็นและข้อต่อ ป้องกันการหกล้มได้		
2.	การออกกำลังกายช่วยลดความดันโลหิตได้ เพราะทำให้หัวใจทำงานดี และหลอดเลือดยืดหยุ่น		
. . .			
8.	ควรหายใจเข้า-ออก ตามปกติ ไม่กลั้นหายใจ ขณะออกกำลังกายในท่าที่ใช้แรงต้าน เช่น ยกน้ำหนัก ดันกำแพง เป็นต้น		
9.	หลีกเลี่ยงการวิ่งเร็ว กระโดด หรือขึ้นลงบันไดบ่อยๆ เพื่อป้องกันข้อเข่าเสื่อม		
10.	การออกกำลังกายสามารถหยุดได้ เมื่อระดับความดันโลหิตปกติ		

Appendix H

Hypertensive self managements' knowledge score among participants in the experimental group

ID	Medication	Exercise	Diet
1	10	8	9
2	9	10	8
3	10	9	10
4	10	9	8
5	9	8	8
6	9	10	9
7	10	9	8
8	8	10	9
9	9	10	10
10	8	9	9
11	10	10	9
12	9	10	8
13	8	9	10
14	9	8	9
15	10	9	8
16	9	9	10
17	9	8	9
18	8	9	9
19	10	9	8
20	9	9	10
21	9	9	10
22	9	9	9
23	10	9	8
24	10	9	8
25	9	9	8

ID	Medication	Exercise	Diet
26	9	9	9
27	9	10	8
28	9	9	10
29	8	8	9
30	9	10	8
31	9	10	8
32	9	9	9
33	8	10	9
34	9	9	8
35	10	9	9
36	10	8	9
37	9	9	8
38	8	7	10
39	8	7	9
40	9	10	7
41	8	7	9
42	9	10	9
43	9	9	9
44	8	7	9
45	9	9	9
46	8	7	8
47	9	9	9
48	10	8	9
49	10	8	9
50	9	9	8

Scores	Medication	Exercise	Diet
Min-Max	8-10	7-10	7-10
Mean	9.04	8.88	8.78
SD	0.69	0.89	0.74

Appendix I

Number and percentage of participants categorized by self-management behavior daily self-report

Self-management behavior	**Number**	**%**
Taking Medication		
Adherence (80% of total number of medication)	48	96
Non adherence (< 80% of total number of medication)	2	4
Type of exercise		
Walking	27	54
Jogging	20	40
Bicycle	2	4
Others	1	2
Intensity and Frequency		
Performed met recommendation	50	100
Performed unmet recommendation	0	0
DASH diet consumption		
Everyday	32	64
≥ 3 day per week	18	36
< 3 day per week	0	0

Appendix J

Patient/participant information sheet

and

Informed consent form

ข้อมูลสำหรับประชากรตัวอย่างหรือผู้มีส่วนร่วมในการวิจัย

(Participant information sheet)

เอกสารชี้แจงข้อมูล

ชื่อโครงการวิจัย ผลของโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง

หัวหน้าโครงการวิจัย พ.ต.ท.หญิง สุขฤดี ธัชศฤงคารสกุล

สถานที่วิจัย แผนกผู้ป่วยนอกอายุรกรรม โรงพยาบาลตำรวจ

ทำไมต้องศึกษาเรื่องนี้

ความดันโลหิตสูงเป็นโรคเรื้อรังที่เป็นปัญหาสาธารณสุข ทั้งในประเทศที่พัฒนาแล้วและประเทศที่กำลังพัฒนา โดยเฉพาะอย่างยิ่งความดันโลหิตสูงชนิดไม่ทราบสาเหตุ เป็นปัญหาที่สำคัญระดับชาติ เนื่องจากการไม่สามารถควบคุมความดันโลหิตให้อยู่ในระดับที่ยอมรับได้คือไม่เกิน 140/90 มิลลิเมตรปรอท จากการสำรวจภาวะสุขภาพทั่วโลกมีผู้ป่วยความดันโลหิตสูงประมาณ 1,000 ล้านคน โดยเป็นสาเหตุการเจ็บป่วยลำดับที่ 3 ในจำนวน 10 ลำดับแรก สำหรับในประเทศไทย ผู้ป่วยความดันโลหิตสูงก็มีแนวโน้มเพิ่มมากขึ้นในทุกๆปีเช่นกัน ซึ่งผลที่ตามมามีมากมาย เช่น ภาวะทุพพลภาพจากโรคเรื้อรัง เกิดค่าใช้จ่ายในการรักษา และอาจเกิดภาวะแทรกซ้อนตามมา เช่น การเกิดโรคหลอดเลือดสมอง โรคหลอดเลือดหัวใจและโรคไต แนวทางการดูแลรักษาความดันโลหิตสูงเริ่มจากการรักษาโดยไม่ใช้ยา การปรับเปลี่ยนพฤติกรรมและควบคุมปัจจัยต่างๆ เช่น การรับประทานอาหารประเภทลดเค็ม ลดไขมัน การควบคุมน้ำหนัก การออกกำลังกาย การจัดการความเครียด การงดสูบบุหรี่และลดการดื่มเครื่องดื่มที่มีแอลกอฮอล์ เป็นต้น เมื่อไม่สามารถควบคุมความดันโลหิตได้จึงเริ่มใช้ยาควบคู่กับการจัดการตนเองโดยการปรับเปลี่ยนพฤติกรรม เพราะหากผู้ป่วยโรคความดันโลหิตสูง สามารถที่จะจัดการตนเอง โดยมีความรู้ความเข้าใจที่ถูกต้อง มีทักษะในการจัดการกับพฤติกรรมที่เป็นปัญหาสุขภาพ โดยเฉพาะอย่างยิ่งพฤติกรรมการรับประทานอาหาร พฤติกรรมการออกกำลังกาย และพฤติกรรมการรับประทานยา จะช่วยให้ผลของการรักษาเป็นไปอย่างมีประสิทธิภาพมากขึ้น

ดังนั้น ผู้วิจัยจึงสนใจศึกษาโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง โดยมุ่งเน้นที่พฤติกรรมการรับประทานอาหาร พฤติกรรมการออกกำลังกาย และพฤติกรรมการรับประทานยา ผลการศึกษาที่ได้จะเป็นประโยชน์ในการนำไปใช้กับผู้ป่วยความดันโลหิตสูงอื่น รวมถึงสามารถนำไปประยุกต์ใช้กับผู้ป่วยโรคเรื้อรังอื่นได้

เช่น ผู้ป่วยโรคเบาหวาน เป็นต้น ซึ่งจะทำให้ป้องกันภาวะแทรกซ้อนและภาวะทุพพลภาพอันเกิดจากความดันโลหิตสูงได้

วัตถุประสงค์

เพื่อศึกษาผลของโปรแกรมการจัดการตนเองในผู้ป่วยโรคความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมองต่อการควบคุมความดันโลหิตของผู้ป่วย

จะปฏิบัติต่อท่านอย่างไร

ผู้วิจัยอธิบายถึงข้อมูลวัตถุประสงค์ของการเข้าร่วมวิจัย หลังจากท่านให้ความยินยอม จะให้ตอบแบบสอบถามข้อมูลโดยใช้เวลา 15-20 นาที โดยผู้วิจัยจะเป็นผู้เก็บรวบรวมแบบสอบถามด้วยตนเอง

ประโยชน์

1. เป็นประโยชน์ในการออกแบบโปรแกรมการพยาบาลที่มีประสิทธิภาพ

2. เป็นข้อมูลในการวางแผนให้การพยาบาลแก่ผู้ป่วยโรคความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง ให้มีความรู้ความเข้าใจในการจัดการตนเองเพื่อสามารถควบคุมความดันโลหิตได้

3. ผู้ป่วยโรคความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง สามารถนำความรู้ที่ได้รับไปปฏิบัติการจัดการตนเองได้อย่างมีประสิทธิภาพ อันจะเป็นประโยชน์ต่อการป้องกันภาวะแทรกซ้อนและภาวะทุพพลภาพอันเกิดจากความดันโลหิตสูง

ท่านจำเป็นต้องเข้าร่วมโครงการหรือไม่

การเข้าร่วมโครงการวิจัยนี้เป็นไปตามความสมัครใจของท่าน แม้ท่านจะปฏิเสธไม่เข้าร่วมโครงการ ก็จะไม่มีผลต่อการรักษาพยาบาลของท่าน

หากท่านสมัครใจเข้าร่วมโครงการวิจัย ใบยินยอมนี้เป็นสิ่งที่บอกถึงความเข้าใจของท่านและท่านจะบอกเลิกการเข้าร่วมโครงการวิจัยได้ตลอดเวลา

ค่าตอบแทน

ของที่ระลึก คนละ 1 ชิ้น ราคาประมาณ 100 บาท

การรักษาความลับของท่าน

ในแบบสอบถามจะไม่มีการระบุชื่อของท่าน ข้อมูลที่ท่านตอบจะถูกเก็บไว้สำหรับการวิจัยโดยเฉพาะและจะเปิดเผยต่อหน่วยงานหรือสาธารณชนในลักษณะที่เป็นภาพรวม และสรุปผลการวิจัยด้วยเหตุผลทางวิชาการ โดยไม่มีระบุรายละเอียดเกี่ยวกับตัวบุคคลแต่อย่างใด

เจ้าหน้าที่โครงการวิจัยที่ท่านสามารถติดต่อได้

หากท่านมีข้อสงสัยประการใด โปรดสอบถามหรือติดต่อได้ที่ พ.ต.ท.หญิง สุขฤดี ธัชศฤงคารสกุล คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย โทร. 08-9110-7622

หนังสือให้ความยินยอมเข้าร่วมในโครงการวิจัย

ทำที่……

วันที่.....

ข้าพเจ้า.....อายุ.....ปี บ้านเลขที่.....
ถนน.....
หมู่ที่.....แขวง/ตำบล.....เขต/อำเภอ.....
จังหวัด.....ขอทำหนังสือนี้ให้ไว้ต่อหัวหน้าโครงการวิจัยเพื่อเป็นหลักฐานแสดงว่า

ข้อ 1 ข้าพเจ้าได้รับทราบโครงการวิจัยของ (หัวหน้าผู้วิจัย) พ.ต.ท.หญิง สุขฤดี ธัชศฤงคารสกุล เรื่อง ผลของโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง

ข้อ 2 ข้าพเจ้ายินยอมเข้าร่วมโครงการวิจัยด้วยความสมัครใจ โดยมิได้มีการบังคับขู่เข็ญหลอกลวงแต่ประการใด และพร้อมจะให้ความร่วมมือในการวิจัย

ข้อ 3 ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยเกี่ยวกับวัตถุประสงค์ของการวิจัย วิธีการวิจัย ประสิทธิภาพความปลอดภัย อันตรายหรืออาการที่อาจจะเกิดขึ้น รวมทั้งประโยชน์ที่จะได้รับจากการวิจัยโดยละเอียดแล้วจากเอกสารการวิจัยที่แนบท้ายหนังสือให้ความยินยอมนี้

ข้อ 4 ข้าพเจ้าได้รับการรับรองจากผู้วิจัยว่า จะเก็บข้อมูลส่วนตัวของข้าพเจ้าเป็นความลับ และจะเปิดเผยเฉพาะผลสรุปการวิจัยเท่านั้น

ข้อ 5 ข้าพเจ้าได้รับทราบจากผู้วิจัยแล้วว่าหากมีอันตรายใดๆในระหว่างการวิจัยหรือภายหลังการวิจัยอันพิสูจน์ได้จากผู้เชี่ยวชาญของสถาบันที่ควบคุมวิชาชีพนั้นๆได้ว่าเกิดจากการวิจัยดังกล่าว ข้าพเจ้าจะได้รับการดูแลและค่าใช้จ่ายในการรักษาพยาบาลจากผู้วิจัยและ/หรือผู้สนับสนุนการวิจัย และจะได้รับค่าชดเชยรายได้ที่สูญเสียไปในระหว่างการรักษาพยาบาลดังกล่าวตามมาตรฐานค่าแรงขั้นต่ำตามกฎหมาย ตลอดจนมีสิทธ์ได้รับค่าทดแทนความพิการที่อาจจะเกิดขึ้นจากการวิจัยตามมาตรฐานค่าแรงขั้นต่ำตามกฎหมายและในกรณีที่ข้าพเจ้าได้รับอันตรายจากการวิจัยถึงแก่ความตาย ทายาทของข้าพเจ้ามีสิทธิ์ได้รับค่าชดเชยและค่าทดแทนดังกล่าวจากผู้วิจัยและ/หรือผู้สนับสนุนการวิจัยแทนตัวข้าพเจ้า

ข้อ 6 ข้าพเจ้ารับทราบแล้วว่า ข้าพเจ้ามีสิทธิจะบอกเลิกการร่วมโครงการวิจัยนี้เมื่อใดก็ได้ และการบอกเลิกการร่วมโครงการวิจัยจะไม่มีผลกระทบต่อการได้รับบรรดาค่าใช้จ่าย ค่าชดเชยและค่าทดแทนตามข้อ 5 ทุกประการ

ข้อ 7 หัวหน้าวิจัยได้อธิบายเกี่ยวกับรายละเอียดต่างๆของโครงการ ตลอดจนประโยชน์ของการวิจัย รวมทั้งความเสี่ยงและอันตรายต่างๆที่อาจเกิดขึ้นในการเข้าโครงการนี้ให้ข้าพเจ้าได้ทราบ และตกลงรับผิดชอบตามคำรับรองในข้อ 5 ทุกประการ

ข้าพเจ้าได้อ่านและเข้าใจข้อความตามหนังสือนี้โดยตลอดแล้ว เห็นว่าถูกต้องตามเจตนาของข้าพเจ้า จึงได้ลงลายมือชื่อไว้เป็นสำคัญ พร้อมกับหัวหน้าผู้วิจัยและต่อหน้าพยาน

ลงชื่อ.....ผู้ยินยอม

(.....)

ลงชื่อ.....หัวหน้าผู้วิจัย

(.....)

ลงชื่อ.....พยาน

(.....)

ลงชื่อ..... .....พยาน

(.....)

หมายเหตุ กรณีผู้ยินยอมตนให้ทำวิจัย ไม่สามารถอ่านหนังสือได้ ให้ผู้วิจัยอ่านข้อความในหนังสือให้ความยินยอมนี้ ให้แก่ผู้ยินยอมให้ทำวิจัยฟังจนเข้าใจดีแล้ว ให้ผู้ยินยอมตนให้ทำวิจัยลงนาม หรือพิมพ์ลายนิ้วมือรับทราบในการให้ความยินยอม ดังกล่าวด้วย

Appendix K
Human Subjects Approval Document

โรงพยาบาลตำรวจ
สำนักงานแพทย์ใหญ่
492/1 ถนนพระรามที่ 1 แขวงวังใหม่
เขตปทุมวัน กรุงเทพฯ 10330

เอกสารรับรองโครงการวิจัย

โดย

คณะกรรมการจริยธรรมและวิจัยในมนุษย์ โรงพยาบาลตำรวจ

เลขที่หนังสือรับรอง ๒๐.๐๙/๒๕๕๔

ชื่อโครงการ/ภาษาไทย	-ผลของโปรแกรมการจัดการตนเองต่อการควบคุมความดันโลหิตสูงในผู้ป่วยความดันโลหิตสูงที่เสี่ยงต่อโรคหลอดเลือดสมอง
ชื่อโครงการ/ภาษาอังกฤษ	- THE EFFECTS OF SELF-MANAGEMENT PROGRAM ON BLOOD PRESSURE CONTROL IN HYPERTENSIVE PATIENTS AT RISK FOR STROKE
ชื่อหัวหน้าโครงการ / หน่วยงานที่สังกัด	พ.ต.ท.หญิง สุชฎดี รัชตฤงการสกุล โรงพยาบาลตำรวจ
รหัสโครงการ	-
สถานที่ทำการวิจัย	โรงพยาบาลตำรวจ
เอกสารรับรอง	1. โครงร่างวิทยานิพนธ์ Version 1.0 Date 20 May 2011 2. หนังสือยินยอมเข้าร่วมในโครงการวิจัย Version 1.0 Date 20 May 2011 3. เอกสารชี้แจงข้อมูล Version 2.0 Date 20 May 2011 4. แบบสอบถามสุขภาพ 5. คู่มือโปรแกรมการจัดการตนเอง 6. แผนการสอนผู้ป่วยโรคความดันโลหิตสูง 7. สมุดบันทึกพฤติกรรมการรับประทานอาหารด้านความดันโลหิตสูง
รับรองโดย	คณะกรรมการจริยธรรมและวิจัยในมนุษย์ โรงพยาบาลตำรวจ
วันที่รับรอง	20 พฤษภาคม 2554
วันหมดอายุ	19 พฤษภาคม 2555

หนังสือรับรองฉบับนี้ออกโดยความเห็นชอบในการพิจารณาจากคณะกรรมการจริยธรรมและวิจัยของโรงพยาบาลตำรวจ ตามกฎเกณฑ์สากล

พลตำรวจตรี

(ทรงชัย สิมะโรจน์)

ประธานคณะกรรมการจริยธรรม และวิจัยในมนุษย์โรงพยาบาลตำรวจ

Appendix L

List of Experts

List of experts:

1. Associate Professor Sureeporn Thanasilp, Ph.D., APN, RN

Faculty of Nursing, Chulalongkorn University

2. Assisstant Professor Daroonwan Suksom, D.S. (Physiology)

Faculty of Sport Science, Chulalongkorn University

3. Assistant Professor Tipayanet Ariyapitiphan, Ph.D. (Food Science)

Faculty of Allied Health, Chulalongkorn University

4. Assistant Professor Wasana Roysoongnurn, Ph.D., RN

Faculty of Nursing, Khon KaenUniversity

5. Assistant Professor Wanpen Pinyopasakul, Ph.D., RN

Faculty of Nursing, Mahidol University

6. Pol. Col. Kasaem Ratanasumawong, M.D.

Department of Medicine, Police General Hospital

7. Assisstant Professor Porntip Malatham, Ph.D, RN

Department of Nursing, Faculty of Medicine

Mahidol University

BIOGRAPHY

Sookruadee Thutsaringkarnsakul was born in 1967 at Prachuap Khiri Khan province. She received a Bachelor of Nursing Science from Police Nursing College in 1989. She has been a nurse instructor at Police Nursing College, 1992 to present. She had received research grant support from Graduated School, Chulalongkorn University. She had studied Philosophy Program in Nursing Science, Faculty of Nursing, Chulalongkorn University since 2007-2012.