Effectiveness of a Self-Management Program for Thais with Essential Hypertension

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Abstract: This randomized controlled trial study aimed to examine the effectiveness of a self-care management program for Thais with essential hypertension. The program was based on self-care demands, self-care ability and blood pressure control. The study involved 96 purposively selected, Thais with hypertension who received care at a community hospital in Thailand. Subjects were randomly assigned to either the experimental (n = 50) or control group (n = 46). Those in the experimental group received a 10-week self-management program, plus routine care, while those in the control group received only routine care. The self-management program consisted of three small group education sessions, wherein cognitive restructuring was used to increase the subjects' knowledge about, and ability to carry out, self-care for hypertension.

Data were collected via interview-administered questionnaires and blood pressure measurements, before and after participation in the program. Data were analyzed via use of the: descriptive statistics; Chi-square; Mann-Whitney U test; and, independent t-test. Results indicated the experimental group, four weeks after completion of the program, had a significantly higher mean rank of knowledge of self-care demands and self-care ability regarding medication-taking, dietary control, exercise and self-monitoring, as well as significantly lower mean systolic and diastolic blood pressures, than the control group. Findings suggest the program was effective in enhancing subjects' knowledge regarding hypertension, as well as self-management and control of their blood pressure.

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Key Words: Blood pressure control; Hypertension; Self-care ability; Self-management program

Introduction

Unlike acute illness, persons with a chronic illness (i.e. essential hypertension) often have to self-manage the disease process for a prolonged period of time. In other words, individuals with hypertension need ability to manage the: symptoms; treatments; and, physical, psychosocial and lifestyle changes inherent in living with a chronic condition.[1]

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Self-management implies those with a chronic illness, such as hypertension, should be active participants in the management or control of their blood pressure. Therefore, they need to learn to appropriately manage their blood pressure through lifestyle modifications and take prescribed antihypertensive medications.[2]

However, both internal and external factors affect development of self-care abilities of persons with hypertension, often resulting in inadequate self-care management. Only 64% of Westerners with hypertension have been found to be able to manage, via self-care, their illness at a moderate level.[3] Poor adherence to long-term therapy often is due to individuals: experiencing asymptomatic and lifelong characteristics of hypertension; having a lack of knowledge and understanding about hypertension; and, lacking self-management skills.[4] In addition, persons with hypertension often fail to understand the need to take prescribed antihypertensive medications even though they are not experiencing noticeable symptoms or abnormalities.[5]

With the increased prevalence in the number of Thais experiencing hypertension (5.4% in 1992 to 20% in 2004), the control of hypertension has become a major public health challenge.[6,7] Among Thais known to be hypertensive, only 5.7% of men and 11.7% of women have blood pressure readings of 140/90 mmHg or lower.[7] Although Thais with hypertension have been reported to have good self-care behaviors,[8-13] they are known to experience difficulty performing needed self-care.[14,15] For example, without consultation with their physicians, Thais often self-adjust medication dosages and/or stop taking medications when they do not experience abnormal symptoms or feel they cannot tolerate the medications' actions and/or side effects.[14] On the other hand, Thais with hypertension have been noted, upon accumulation of knowledge, experience and self-care abilities, to demonstrate increased self-care management.[14]

Acceptance of and adjustment to the chronicity of the disease, as well as the role of self in dealing with the illness, have been recognized as important factors in living with and managing hypertension.[15] Prior studies have revealed illness recognition, symptom definition and management abilities effect healthcare-seeking behavior of women with hypertension.[16] Similarly, family members have been found to serve as important resources for informational support regarding self-treatment and healthcare-seeking for those with a chronic illness.[16] Thus, adequate and appropriate knowledge, skills and resources appear necessary for persons with hypertension to understand and perform necessary self-care.

According to Wagner's Chronic Care Model, control of chronic illness requires active participation on the part of patients and healthcare providers, since improved outcomes are known to result from active interaction between informed activated patients, and a prepared and proactive healthcare team.[17] Healthcare providers can assist patients in control of their illness by helping them and their families: acquire knowledge and skills necessary to engage in self-care; develop self-efficacy and social support to assist in resolving identified barriers; and, increase motivation to perform self-care.[17] In addition, implementation of a self-management program, in combination with traditional educational approaches that encourage self-care support, might result in more effective self-care engagement by individuals with hypertension.

Review of Literature

Traditionally, educational programs regarding hypertension have focused on improving knowledge via a didactic format. Although teaching has been recognized as necessary for improving knowledge, in Western cultures, didactic instruction alone has been found to insufficiently alter one's behavior

(i.e., adherence to taking medications and blood pressure monitoring).[18,19] However, a combination of didactic instruction and behavioral interventions (i.e., reminders, self-monitoring and skill training) has been noted to provide desired outcomes (i.e., dietary control, exercise, follow-up visits and blood pressure monitoring).[20-23]

The effectiveness of a self-management program has been demonstrated, using Orem's Self-Care Deficit Nursing Theory (SCDNT)[24] and Cognitive-Behavioral Therapy (CBT),[25] among Westerns with asthma,[17,26] arthritis,[17, 26] and diabetes,[26] as well as among Thais with diabetes.[27] The SCDNT proposes self-care is a deliberate action one initiates and performs to maintain life, health and well-being, while CBT states there is reciprocal interaction between cognition, emotion, behavior and the environment of human functions.

No study could be located that has examined the effect of a self-management program, using CBT, among Thais with hypertension. Although prior research has investigated the effect of knowledge in regards to disease, none could be located that have focused on self-care management of a chronic illness (i.e., how to manage daily self-care). In addition, even though prior studies have addressed skills related to exercise and relaxation, none appear to have provided information regarding self-care management skills. Also, few investigations appear to have focused on the role of family support in intervention programs.[27,28] Self-care studies, conducted in Thailand, predominantly, have examined the frequency of medication-taking,[8,12,29] dietary control,[8,9,12,29] exercise[8,12, 13,29] and stress management over time.[27,28] In addition, investigations of blood pressure control, usually, have not examined both systolic and diastolic measurements.[8,9,13,27] The use of single group designs,[30-32] non-random assignments [8,12,13,29] and immediate evaluation[12] also has lead to methodological problems among self-care studies.

Persons with hypertension appear to need to effectively engage in taking prescribed medications and modifying their lifestyle to control their blood pressure, just as those with diabetes mellitus have to do to control their blood glucose.[4] Thus, development of a self-management program, which uses the same conceptual framework shown to be effective in treatment of individuals with diabetes mellitus, may be appropriate to use with Thais with hypertension.[33] However, due to the fact persons with hypertension have different characteristics from those with diabetes mellitus (i.e., asymptomatic characteristic of hypertension,[4] decision-making based on internal warning[5] and family members' suggestions[16]), family support also may need to be provided so as to increase the individuals' motivation to perform self-care.[4] Cognitive-behavioral techniques (cognitive restructuring, problem-solving, goal-setting and self-monitoring) are approaches shown to be effective means of assisting patients in understanding their illnesses, making informed decisions and therapeutically performing self-care.[34,35]

Therefore, the purpose of this study was to determine, among Thais with uncontrolled essential hypertension, the effectiveness of a self-management program, based on SCDNT[24] and CBT,[25] along with usual care, regarding: knowledge of self-care demands; self-care ability; and, blood pressure control. Two specific hypotheses were formulated for this study.

1. Thais, with uncontrolled essential hypertension, who have received a self-management program, plus usual care, will have, four weeks after completing the program, higher scores regarding knowledge of self-care demands and self-care ability than those, with uncontrolled essential hypertension, who have received only usual care.

2. Thais, with uncontrolled essential hypertension, who have received a self-management program, plus usual care, will have, four weeks after completing the program, lower levels of systolic and

diastolic blood pressure than those, with uncontrolled essential hypertension, who have received only usual care.

Method

Design: An experimental, randomized, control-trial design was used in the study.

Ethical considerations: Approval to conduct the study was granted by the Human Subjects Committee, Mahidol University and the administrators of the out-patient clinic used as a data gathering site. All potential subjects were informed about: the purpose, potential risks and benefits of the study; voluntary participation; what participation would entail; confidentiality and anonymity issues; withdrawal from the study without repercussions; and, use of a tape-recorder during data gathering. All potential subjects who consented to participate were asked to sign a consent form.

Sample and setting: The study sample consisted of Thais receiving treatment, between January and July, 2009, for essential hypertension, in the out-patient clinic of a primary care hospital in the central region of Thailand. The clinic was selected because it treated 250 to 400 out-patients daily (Monday – Friday).

The primary investigator (PI) reviewed the clinic's medical records and posted, in the clinic, information about the study, to recruit potential subjects. Inclusion criteria consisted of being a Thai who: was diagnosed with essential hypertension; was being treated with prescribed antihypertensive medications; had a systolic blood pressure (SBP) of 140 mmHg or greater, and/or a diastolic blood pressure (DBP) of 90 mmHg or greater, during two or more blood pressure measurements prior to the study; was not diagnosed with diabetes, stroke, heart failure or end-stage renal disease; was able to communicate in Thai; was willing to participate in the study; and, if more than 60 years of age, achieved at least eight points on the *Short Portable Mental Status Questionnaire (SPSMQ).*[36] The *SPSMQ* was verbally administered, by the PI, to assure adequate cognitive function, at the time of each potential subject's expressed interest. Individuals who were hospitalized, pregnant, disabled or unable to care for themselves were excluded from the study.

The PI approached 155 potential subjects about the study. However, only109 consented to participate. No significant differences in demographic data (obtained from medical records) were noted between those who agreed to participate and those who refused to take part. Via use of an unordered sealed envelope, 54 subjects were randomly assigned to the experimental group, and 55 subjects were randomly assigned to the control group. During the data gathering process, 13 subjects dropped out (four from the experimental group and nine from the control group) because of personal life demands or relocated to another hospital clinic. Thus, 50 experimental group subjects and 46 control group subjects participated in the study. No significant demographic differences were noted between the subjects who remained in the study and those who withdrew.

No significant demographic differences were noted between the experimental group or control group. The average age in the experimental group was 61.2 years (range = 39-78 years), while average age in the control group was 60.9 years (range = 33-82 years). Most subjects in the experimental and control groups were, respectively: female (n = 28; 56% and n = 30; 65.2%); married (n = 31; 62% and n = 25; 54.3%); Buddhist (n = 50; 100% and n = 43; 93.5%); unemployed (n = 31; 62% and n = 25; 54.3%); and, graduates of a primary school (n = 38; 76% and n = 34; 73.9%). In addition the majority in the experimental and control groups, respectively: had health insurance

(n = 48; 96% and n = 46; 100%); had gotten to the hospital by themselves (n = 38; 76% and n = 32; 69.6%); and, perceived having family support (n = 22; 44% and n = 20; 43.5%). The source of income for those in the experimental group tended to be from family members (n = 32; 64%), while the source of income among the control group primarily was from their occupation (n = 31; 67.4%).

Most subjects in the experimental and control groups, respectively: lived with their families (n = 48; 96% and n = 41; 89.1%); and, had co-morbidity (n = 31; 62% and n = 31; 67.4%). The average income in the experimental group was 5,608 Baht per month (range = 300-30,000 Baht per month) and 5,418.5 Baht per month (range = 300-15,000 Baht per month) in the control group. Those in the experimental group had hypertension an average of 6 years (range = 1-20 years), while those in the control group had hypertension an average of 6.6 years (range = 1-21 years). The experimental group had received treatment for an average of 5.86 years (range = 1-20 years), while those in the control group had received treatment for an average of 6.2 years (range = 1-21 years).

One's perceived stage of hypertensive self-care management can be classified, based on Panpakdee and colleagues' criteria,[14] as one of four stages: stage 1 (following medication regimens as prescribed); stage 2 (modifying the prescribed regimens); stage 3 (having good self-discipline with self-care needs); and stage 4 (meeting self-care needs with flexibility when perceiving hypertension as a permanent illness). The experimental group subjects had a perceived stage of hypertensive self-care management that could be classified as: stage 1 (n = 5; 10%); stage 2 (n = 15; 30%); stage 3 (n = 15; 30%); or, stage 4 (n = 15; 30%). On the other hand, the control group subjects had a perceived stage of hypertensive self-care management that could be classified as: stage 1 (n = 3; 6.5%); stage 2 (n = 12; 26.1%); stage 3 (n = 9; 19.6%); or, stage 4 (n = 22; 47.8%).

The *Self-Management Essential Hypertension Program* was designed by the PI as a two-part educational program based on Orem's Self-Care Deficit Theory[24] and Cognitive-Behavioral Therapy.[25] The two parts included: 1) cognitive restructuring related to knowledge about hypertension and self-care action; and 2) motivation to engage in self-care action. The program was offered to the experimental group and consisted of three, 2-hour, group education sessions and six motivational letters. The group education sessions were conducted, on Tuesday, Wednesday or Thursday, by way of eight subgroups of 6 or 7 subjects each.

During the first session (1st week of the program), misunderstandings about hypertension and non-therapeutic self-care experiences were identified and resolved through lecture, group discussion and demonstration. For example, skills related to reading food labels, brisk walking and deep-breathing exercises were taught, by the PI, and then practiced by the subjects. To further facilitate knowledge regarding these skills, a booklet ("Self-Care When Living with Hypertension"), developed by Panpakdee and colleagues,[37] and three pamphlets ("Breathing Exercise"; "Brisk Walking"; and, "Body Exercise"), developed by the Thailand Department of Health, Ministry of Public Health,[38-40] were distributed to the subjects for self-study. To foster cognitive restructuring, problem solving and communication, problematic situations (i.e. taking medications) were presented and discussed. So as to set realistic goals regarding self-care of their hypertension, as well as how they would meet their goals, each subject was assisted in the development and writing of personal goals, on a PI-developed work sheet, and action plans he/she planned to use to meet the goals. As a way to improve self-monitoring of blood pressure, subjects were shown how to take

and record their blood pressure, on a graph, in a PI-provided blood pressure booklet. In addition, subjects were shown how to record their daily self-care activities on a PI-developed work sheet. At the close of the first session, subjects were asked to bring their blood pressure booklets, daily self-care activities and goals/action plans to the next session for the PI to review.

During session two (4th week of the program), the skills (i.e. reading food labels, doing brisk walking, and deep-breathing exercises), presented during session one, were reviewed by the PI and practiced by the subjects. A discussion of problematic scenarios related to dietary control was carried out to enhance subjects' cognitive restructuring, problem-solving and communication skills. Sharing of experiences was encouraged, among group members, related to meeting their goals and action plans (written during session 1), as well as receiving feedback from the PI. After sharing experiences, subjects were asked, under the guidance of the PI, to review his/her goals, related actions plans, daily recorded self-care activities and blood pressure readings, and to make revisions, if needed, to their goals and action plans. At the close of session two, subjects were reminded to bring their blood pressure and daily self-care activities recordings, as well as their goals and actions plans, to the next session for review.

During session three (8th week of the program), skills used in reading food labels, brisk walking and deep-breathing, presented during session one and reviewed during session two, were reviewed by the PI and practiced by the subjects. A discussion of problematic scenarios related to exercise was conducted to enhance subjects' cognitive restructuring, as well as their problem-solving and communication skills. Experience sharing, among the subjects, related to meeting their goals and action plans (written during session 1 and revised during session 2), as well as feedback from the PI occurred. Similar to session 2, after subjects shared their experiences, they were asked, under the guidance of the PI, to review their goals, related actions plans, daily recorded self-care activities and blood pressure readings, as well as to make revisions, if needed, to their goals and action plans.

To encourage their motivation for self-care, experimental group subjects were sent, during the 3rd, 6th and 10th week of the program, three motivational letters that contained information regarding how to perform self-care action. In addition, each experimental group subject's designated family member was sent a letter, during the 1st, 4th and 8th week of the program, containing information regarding how to support self-care actions of their respective family member. For ethical reasons, upon completion of the research, those in the control group were offered the "Self-Management Essential Hypertension Program."

Usual care, for both the experimental and control group subjects, occurred during a regular clinic visits, and consisted of: a) blood pressure and weight measurements; b) meeting with and/or receiving brief advice from the physician regarding how to deal with hypertension; and, c) receiving prescribed medications, a laboratory request for dyslipidemia measurement, and written information regarding the time and date of the next clinic appointment. To avoid cross-contamination between the two groups, the PI scheduled the three *Self-Management Essential Hypertension Program* sessions and usual care clinic appointments, for those in the experimental group, on Tuesday, Wednesday or Thursday, and scheduled the usual care clinic appointments for those in the control group on Monday or Friday.

Instruments: Data gathered, from the experimental and control group subjects, involved the use of: a) blood pressure measurements; and, b) four interview-administered questionnaires. The

questionnaires included the: Short Portable Mental Status Questionnaire (SPMSQ);[36] Personal Information Questionnaire (PIQ); Knowledge of Self-Care Demands Questionnaire (KSCDQ); and, Self-Care Ability for Blood Pressure Control Questionnaire (SCABPQ). Standard, automated, blood pressure (SBP and DBP) measurements were conducted via use of a Health Mate (Model # HL888GF) that measures blood pressure by way of oscillometrics.[41]

The Health Mate was calibrated against a standardized sphygmomanometer before the start of the program, as well as each month thereafter. A clinical nursing aide who was trained in taking blood pressures with a standardized sphygmomanometer and Health Mate, using an appropriately sized cuff, served as a research assistant (RA) and measured the subjects' blood pressures. Prior to the start of the study, subjects were advised to avoid caffeine intake, exercise and smoking 30 minutes prior to their blood pressure measurements. In addition, subjects were asked to sit in a quiet room, for at least five minutes, immediately prior to their blood pressure measurements. Each subject's blood pressure was measured twice. The results then were averaged and recorded. Since blood pressure can be classified as either being controlled (SBP lower than 140 mmHg and DBP lower than 90 mmHg) or uncontrolled (SBP of 140 mmHg and above and DBP of 90 mmHg and above),[2] a comparison was made between the percent of subjects, in the experimental and control group, who had a SBP lower than 140 mmHg and a DBP lower than 90 mmHg, both prior to and upon completion of the Self-Management Essential Hypertension Program.

The *Short Portable Mental Status Questionnaire (SPMSQ),* developed by Pfeiffer[36] and translated into Thai by Yamwong,[42] was a 10-item questionnaire used to assess short and long-term memory, orientation to surroundings, knowledge of current events and ability to perform mathematical tasks. An example of an item was: "Currently, who is the Prime Minister of Thailand?" The instrument was verbally administered to assure potential subjects, 60 years of age and older, were not cognitively impaired. Each item was assigned a score of one (right answer) or zero (wrong answer). A total score was calculated by summing the results of the responses to all items. A score of 8 to 10 was interpreted as evidence of a lack of cognitive impairment. In prior studies, Cronbach's alpha has been found to be 0.83 among Western populations[36] and 0.94 among Thais.[42] A Cronbach's alpha for the instrument, in this study, was not calculated.

The *Personal Information Questionnaire (PIQ)* was used to collect information regarding each subject's: age, gender, marital status, religion, employment status, level of education, source of income, living arrangement, presence of co-morbidity, income, duration of hypertension, duration of treatment, type of healthcare payment, if accompanied to the hospital, perceived family support and stage of self-care management. The mailing address each subject provided was recorded so motivational letters could be sent, later, to them and their self-selected family members.

The *Knowledge of Self-Care Demands Questionnaire (KSCDQ)* was developed by the PI and based upon review of the literature. The KSCDQ consisted of 36 items and served as a cognitive measure of each subject's knowledge about hypertension and self-care actions. Examples of items included: "Persons who have parents or siblings with hypertension have greater risk of hypertension than those who do not have them?" and "Persons with hypertension can stop antihypertensive medications when they have no abnormal symptom or can work as usual?" Possible responses to each item were "yes" or "no." Each correct answer received a score of 1, while each incorrect answer received a score of 0. A total score was calculated

by summing the score of all items. Higher scores indicated a better level of knowledge about hypertension and self-care actions.

The *Self-Care Ability for Blood Pressure Control Questionnaire (SCABPCQ)* was developed by the PI and based upon review of the literature. The SCABPCQ contained 14 open-ended questions designed to measure each subject's ability to use knowledge in performance of six dimensions of self-care: medication-taking; dietary control; aerobic exercise; stress management; risk behavior avoidance; and, self-monitoring. Examples of the open-ended questions were: "How do you take care of yourself when you receive treatment for hypertension?"; "How do you take your antihypertensive medications?"; and, "How do you solve a problem related to taking your medications?" Data, obtained by interview, were noted and recorded on a cassette-tape recorder. Data from each dimension then were classified into five categories, based on Orem's self-care agency development,[26] and scored, on a scale of 0 to 3, based on the PI's criteria of: 0 = undeveloped; 1 = developing; 2 = developed-but-not stabilized; 2 = developed-but-declining; and, 3= developed-and-stabilized. The score for each of the six dimensions could range from 0 to 3. A higher score indicated a more developed level of self-care ability for blood pressure control.

Prior to use in this study, the content validity index (CVI) of both the *KSCDQ* and *SCABPCQ* was assessed by 5 experts (one cardiovascular disease physician and four nurse instructors experienced in care of patients with hypertension). Minor changes in the content and wording of both the KSCDQ and *SCABPCQ* was made in accord with the experts' suggestions (i.e., "such as six hour per day," was removed from the KSCDQ item, "Persons with hypertension should have adequate sleeping, such as six hours per day?" and, "How much beer do you drink each time you drink?" was added to the SCABPCQ.). The CVI for the *SCABPCQ* was found to be 0.95, while the CVI for the *KSCDQ* was found to be 0.97. In addition, a KR-20 reliability coefficient, for the *KSCDQ,* was determined (using 30 persons with uncontrolled hypertension who had demographic characteristics similar to the study sample) to be 0.84. For the actual study, the KR-20 reliability coefficient was found to be 0.76.

Finally, the criteria for the levels of self-care development ability, for the *SCABPCQ,* were reviewed by 3 experts (two experts in hypertension and chronic care and a nurse educator) who agreed the levels were acceptable and appropriate. Prior to use of the SCABPCQ, in this study, inter-rater reliabilities, via use of Cohen's Kappa statistic,[43] were assessed using 30 individuals with essential hypertension, who had demographic characteristics similar to the study sample. The inter-rater reliabilities were found to be: 0.76 for medication-taking; 0.72 for dietary control; 0.83 for aerobic exercise; 0.75 for stress management; 0.67 for risk behavior avoidance; and, 0.49 for self-monitoring.

Procedure: At a mutually convenient time and date, in a private room in the clinic, prior to implementation of the *Self-Management Essential Hypertension Program,* pre-test data were obtained, for each subject, via administration of the *SCABPCQ, KSCDQ* and *PIQ* and two blood pressure measurements. The questionnaires were verbally administered to prevent response bias related to self-care ability. The entire process took approximately 30 minutes.

The experimental group subjects were provided, when they had their pre-test data collected, a written time and date schedule for their three assigned sessions of the *Self-Management Essential Hypertension Program.* Those in the control group did not receive the schedule, since they did not participate in the program. Four weeks after the experimental group subjects completed the *Self-Management Essential Hypertension Program,* post-test data, were collected, using the same procedure used to collect the pre-test data, from the experimental and control group

subjects. Thereafter, those who had been assigned to the control group were invited to participate in the *Self-Management Essential Hypertension Program.*

Data Analysis: Descriptive statistics were used to analyze the demographic characteristics and calculate the instruments' scores. Chi-square and the Mann-Whitney U test were used to evaluate differences in demographic characteristics between the experimental and control groups. Because knowledge of self-care demands violated the assumption of normal distribution, and self-care ability was measured at the ordinal level, the Mann-Whitney U test was used for testing hypothesis 1. Hypothesis 2 was tested using the independent t-test. This was done because the SBP and DBP, measured at the ratio level, passed the assumption of normality and homogeneity of variance using the Shapiro-Wilk test and Levene's test, respectively.

Results

As shown in **Table 1**, prior to implementation of the self-management program, no significant differences were found, between the experimental and control groups': knowledge of self-care demands; and, self-care ability. However, significant differences were found, between the experimental and control group, four weeks after the experimental group completed the self-management program, with respect to knowledge of self-care demands and four of the six dimensions in self-care ability. The experimental group was found to have higher scores, than the control group, regarding knowledge of self-care demands and specific dimensions of self-care ability (i.e., medication-taking, dietary control, aerobic exercise and self-monitoring). Thus, hypothesis 1 was partially supported.

Table 1 Comparison of Mean Rank Scores in Knowledge of Self-Care Demands and Self-Care Ability between the Experimental and Control Groups

Variables		Experimental group (n = 50)	Control group (n = 46)	Z	*p*
		Mean Rank	Mean Rank		
Knowledge of self-care	Pretest	48.95	48.01	-.166	.868
demands	Posttest	54.02	42.50	-2.041	.041
Self-care ability					
Medication taking	Pretest	47.99	49.05	-.211	.833
	Posttest	54.88	41.57	-2.608	.009
Dietary control	Pretest	52.42	44.24	-1.595	.111
	Posttest	55.04	41.39	-2.562	.010
Aerobic exercise	Pretest	50.86	45.93	-.920	.358
	Posttest	58.23	37.92	-3.694	.001
Stress management	Pretest	48.74	48.24	-.153	.878
	Posttest	49.00	47.96	-1.043	.297
Risk behavior avoidance	Pretest	47.55	49.53	-.372	.710
	Posttest	50.46	46.37	-.777	.437
Self-monitoring	Pretest	47.15	49.97	-.572	.567
	Posttest	54.25	42.25	-2.550	.011

Z = Mann-Whitney U test

No significant differences in SBP and DBP, between the experimental group and control group, were found prior to the self-management program. However, the SBP and DBP of the experimental group were found to be lower than the SBP and DBP of the control group, upon completion of the self-management program by the experimental group (see **Table 2**). Thus, hypothesis 2 was supported.

Table 2 Comparison of Mean Scores in Systolic and Diastolic Blood Pressures between the Experimental and Control Groups

Variables		Experimental group (n = 50)	Control group (n = 46)	t	*p*
		Mean	Mean		
Systolic blood pressure	Pretest	152.15	150.61	.745	.458
	Posttest	128.56	144.67	-5.499	.001
Diastolic blood pressure	Pretest	80.73	79.86	.538	.592
	Posttest	73.98	78.37	-2.140	.035

t = Independent t-Test

Discussion

The self-management program was effective in improving knowledge of self-care demands, some self-care ability and blood pressure control in Thais with uncontrolled essential hypertension. The findings are congruent with prior findings regarding the effectiveness of a complex intervention program on: knowledge of hypertension;[12,13] self-care behaviors in medication-taking;[8,12,13,44] aerobic exercise;[9,12,13,28-29] and, blood pressure control,[11-13, 23, 44] However, the findings are incongruent with prior findings regarding the effectiveness of a complex intervention program on stress management[9, 12, 13, 28- 29] and risk behavior avoidance.[29, 44]

The results may be explained in regards to the fact the self-management program was based on Orem's Self-Care Deficit Nursing Theory[24] and Cognitive-Behavioral Therapy.[25] Orem proposed that a supportive-educative nursing system and helping methods are useful for patients who lack sufficient knowledge and/or skills to perform needed courses of action. The subjects' requirements for help, in this study, were confined to decision making, behavioral control and acquisition of particular knowledge and skills. In addition, CBT postulates that persons' negative emotions and behavior are strongly influenced by their cognitions and, thus, can be changed via use of cognitive and behavioral techniques.[34] The findings revealed the self-management program helped experimental group subjects understand hypertension, the need to control their blood pressure and the means to meet their self-care goals.

During the program, experimental group subjects' misunderstandings about hypertension and non-therapeutic self-care experiences were identified and corrected via use of a combination of methods. In addition to formal instructions, the sharing of experiences with one another, especially those regarding success, appeared to help validate accumulated knowledge and experiences,[45] as well as motivate and enhance self-confidence to perform daily self-care. Because subjects in the experimental group had established short-term goals and action plans to meet their goals, they seemed to grasp what they needed

to do and how to do it. Thus, their self-monitoring, through the interaction of awareness, measurement and observation, appeared to enhance their self-management by providing continual information for the actions they needed to take.[46] Because they were able to track a decrease in their blood pressure over time, via plotting, experimental group subjects seemed to be motivated to perform therapeutic self-care. In addition, their daily self-care monitoring allowed them to stay informed regarding how often they needed to perform various self-care actions. This led to them self-imposing changes in their self-care. For example, when experimental group subjects noticed the assigned amount of aerobic exercise was not recorded, they reviewed their daily activities and planned how to make time for aerobic exercise. Moreover, their appointed family members were encouraged, via the three motivational letters regarding how to support their respective family member's self-care actions, to provide family support. Experimental group subjects reported family members reminded them about their scheduled time for brisk walking, and the frequency and quantity of high-sodium food and seasoning intake.

However, no significance differences were found, between the experimental and control group, regarding their self-care ability regarding stress management and risk behavior avoidance. This may be because prior to the self-management program, most subjects in both groups had high scores in their self-care ability regarding stress management and risk behavior avoidance. The subjects indicated they predominantly used coping methods that were not harmful to their health (i.e., not having too many negative thoughts, making merit, and watching television) when managing stress. With respect to risk behavior avoidance, the subjects, predominantly, were Thai females, who, because of the Thai culture, were not accustomed to smoking or drinking alcoholic beverages.

The self-management program also provided specific knowledge, skills and motivation to help those in the experimental group, through active participation in self-care, identify problems, find possible solutions, take action and self-evaluate their actions. By so doing, they were better able to understand the self-care demands of their illness and how to transition their self-care ability from lower to higher levels. In addition, the program provided motivation and support from available resources (i.e. family members and the PI). Consequently, the experimental group subjects improved their knowledge of self-care demands, self-care ability and blood pressure control four weeks after completion of the program and recommended the program be offered to others with uncontrolled essential hypertension.

Limitations and Recommendations

This study, as do all studies, had limitations. Predominantly, the effectiveness of the self-management program only was examined over a 4 week period with individuals who were older and able to take care of themselves without being concerned about an occupation. Thus, the long-term effects of the self-management program needs to be examined, as well as do the effectiveness of the program with young, employed, adults and older individuals who utilize a dependent care agent. Also, subjects were obtained only from one healthcare institution, thus future studies need to utilize multiple institutions, located in various regions, across Thailand.

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ประสิทธิภาพของโปรแกรมการจัดการตนเองสำหรับผู้เป็นความดันโลหิตสูง

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บทคัดย่อ: การศึกษานี้มีวัตถุประสงค์เพื่อศึกษาประสิทธิภาพของโปรแกรมการจัดการตนเองต่อความรู้เรื่องความจำเป็นในการดูแลตนเองความสามารถในการดูแลตนเอง และการควบคุมความดันโลหิตในผู้เป็นความดันโลหิตสูงชนิดไม่ทราบสาเหตุที่ควบคุมโรคไม่ได้ กลุ่มตัวอย่างซึ่งคัดเลือกแบบเจาะจงคุณสมบัติจำนวน 96 ราย จากโรงพยาบาลชุมชนหนึ่งแห่งในประเทศไทย ถูกสุ่มเข้ากลุ่มทดลอง 50 คน หรือกลุ่มควบคุม 46 คน ด้วยวิธีสุ่มแบบง่าย กลุ่มทดลองได้รับโปรแกรมการจัดการตนเอง 10 สัปดาห์ และการดูแลตามปกติ ในขณะที่กลุ่มควบคุมได้รับการดูแลตามปกติเท่านั้น โปรแกรมการจัดการตนเองประกอบด้วยการเข้าร่วมกลุ่มเรียนรู้แบบกลุ่มย่อย 3 ครั้ง เพื่อปรับกระบวนการคิด เพิ่มความรู้เรื่องความดันโลหิตสูงและความสามารถในการดูแลตนเอง เก็บรวมรวมข้อมูลโดยวิธีการสัมภาษณ์ตามแบบสอบถามและการวัดความดันโลหิตก่อนและ 4 สัปดาห์หลังสิ้นสุดโปรแกรม การวิเคราะห์ข้อมูลใช้ Mann-Whitney U test และ independent t-test ผลการศึกษาพบว่า 4 สัปดาห์หลังสิ้นสุดโปรแกรม กลุ่มทดลองมีค่าเฉลี่ยอันดับของความรู้เรื่องความจำเป็นในการดูแลตนเองและความสามารถในการดูแลตนเองด้านการกินยา การควบคุมอาหาร การออกกำลังกาย และการประเมินตนเองสูงกว่ากลุ่มควบคุม และมีค่าเฉลี่ยความดันโลหิตซิสโตลิคและไดแอสโตลิตต่ำกว่ากลุ่มควบคุม ผลการศึกษานี้แสดงว่าโปรแกรมการจัดการตนเองสำหรับผู้เป็นความดันโลหิตสูง มีประสิทธิภาพต่อการเพิ่มความรู้เรื่องความจำเป็นในการดูแลตนเองความสามารถในการดูแลตนเอง และการควบคุมความดันโลหิต

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คำสำคัญ: การควบคุมความดันโลหิต ความดันโลหิตสูง ความสามารถในการดูแลตนเอง โปรแกรมการจัดการตนเอง

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