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The Advantages of Self-Management Program on Controlling Blood Pressure for Vietnamese People

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Abstract
Objective*: 1) To explore the lifestyle and living conditions of Vietnamese people including their challenges and barriers to control blood pressure as perceived by patients and nurses. 2) To determine the effect of the self-management program on blood pressure among persons with hypertension in Vietnam*
Design*: This was a mixed-method study with a sequential exploratory design, which was characterized by an initial qualitative phase followed by a quantitative phase. For the qualitative part, the data computed by the individual interviewing with nurses and hypertension patients. The data of the quantitative part analyzed by pretest and posttest from experimental and control groups. The self-management included diary record, physical fitness record, and medication record was completed every day by the participants.*
Setting: *This study took place at Thu Duc Hospital and Can Tho Cardiology Hospital, two secondary hospitals in the South of Vietnam*
Result*: There were 8 points emerged from qualitative data mostly related to misunderstanding of blood pressure, knowledge of hypertension, diet for hypertension, poor medication adherence, and standardized guideline for nursing. The quantitative results showed that Self-Management Program was effective to control blood pressure among persons with hypertension in Vietnam with significant differences in blood pressure between the experiment and the control group (p<.001).*
Conclusion*: The Self-management program in this study improved patients' awareness using self-monitoring, self-evaluation, and self-reinforcement to control blood pressure.*

Keywords: Blood pressure, self-management, nursing care

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I. Introduction

Hypertension prevalence among adults is high, whereas the proportions of hypertensive awareness, treated and controlled were low.[1] The national survey of Vietnam supports the overall prevalence of approximately 20% to 25%.[2,3] The prevalence of this disease was diverse from the different regions of Vietnam such as 23%-31% in the North, 33% in urban areas Ho Chi Minh and 44% in Hue the centre.[4-7]

Hypertension is one of the significant non-communicable diseases that cause many complications and is the most cost of treatment from the government budget. The average total cost per patient was 8,112,458.7 ± 285.499 VND (approximately 400 USD) in which direct cost was accounted for as 77% and the indirect cost was 23%.[8] In the structure of hypertension, there was a higher percentage occurrence in men than women increasing with age [1,8] Among hypertensive people, the awareness of their disease and symptoms varies from 34% to 48.4%. 29.6%-43% of patients had treatment and 10.7%-39% of them achieved targeted BP control (<140/90mmHg).[1,2,4]

The hypertension prevalence was significantly higher in urban whereas hypertension awareness and treatment or control were lower in rural areas in Vietnam. [3,5] The risk factors of hypertension in Vietnam are mostly related to the lifestyle in which age, gender, body mass index (BMI), living in rural areas, low physical fitness, salty diet. [2,6,7] The reason for lowing control or treatment of hypertension in Vietnam is also relevant to the ready access to the primary health care system. The Vietnam's National campaign was managed as a vertical program integrated into the public sector about different levels and short timespans for dispensing medication at primary healthcare facilities.[9] Although the government established many steps to help patients, it still has not set up the national standard interventions integrated care, especially for patients in the rural areas.

To lead and achieve this success requires the important roles of both local authorities and the cardiac care network, led by an outstanding cardiac referral center.[10]

The self-management program was a significantly effective way to maintain and improve both health behaviors and health status.[11] Previous studies found that self-management programs were an effective way to reduce hypertension and other non-communicable diseases, with effective change behaviors and lower blood pressure in various populations, which included prehypertension, hypertension, and obesity.[12,13] The self-management program refers to the performance of preventive or treatment health care activities, which is composed of self-monitoring, self-evaluation, and self-reinforcement. [11]

Conceptually, self-management is defined as learning and practicing the necessary skills to change behaviors [14], and it is a dynamic, interactive, and daily process in which individuals engage to manage a chronic illness.[15] Self-management is designed to help the client to accept the necessity for change and to develop a clear objective for treatment through collaboration with health care providers.[11] .The client sets their goals about behavioral changes; identifies their risk behaviors problems, and gains understanding and confidence to accomplish their new health behaviors through help from the health care provider. Self-management is recognized as a necessary method for maintaining and improving a patient's health behavior and health status.[16]

In this study, the self-management promotion program is developed based on the self-management model [11] that provides participants with essential components and is accompanied by mutual activities for participants and nurses. This program provided the knowledge and practice skills for persons with hypertension to manage their risk behaviors by using self-monitoring, self-evaluation, and self-reinforcement for lowering blood pressure.

II. Methods

This study constituted a mixed method with sequential exploratory design, which is characterized by an initial qualitative phase of data collection and analysis, followed by a quantitative phase of data collection and analysis, with a final phase of integration or linking of data from two separate strands of data.[17] In this study, we explain the methods based on two different objectives.

Qualitative Phase

Objective 1: **To explore lifestyle and living condition of the community including their challenges and barriers to control blood pressure in Vietnam as perceived by patients and nurses**

2.1 Study Design

This was a phenomenological study, as outlined by Van Manen's approach [18], to explore the lived experience of patients with hypertension as well as the experiences of nurses in the management of these patients in public health centers or secondary level hospitals.

2.2 Sample and Settings

The study was conducted in 2 secondary-level hospitals in the south of Vietnam. The total of the sample was 12, with 1 hospital manager, 7 nurses, and 5 patients.

2.3 Data Collection

An appointment with each participant was made for an interview after they gave oral or written informed consent. Data were collected from in-depth interviews with patients and focus group discussions (FGD) with nurses in each hospital. The process was in the Vietnamese language. FGDs and interviews ranged between 50 minutes and 100 minutes, which was held in the meeting room in each setting. The interviews were audio-recorded, transcribed verbatim, and validated by re-listening to the recording by researchers.The informants in this study were provided with open-ended questions. All questions in table 1 were just examples, more questions were asked following the answers from the respondents and continued until the data reached saturation. All researchers analyzed, reviewed, and discussed each interview and transcript collaboratively.

Table 1: Interview guideline.

Questions to ask patients
• *Please tell me how you manage your hypertension?*
• *What kind of strategies do you use at home to manage your symptoms?*
• *Do you have a diet program for hypertension?*
• *How do you manage your food with your family?*
• *What kind of food do you like?*
• *Do you join the exercise program from the public health center? Are you also doing exercise at home?*
• *Do nurses explain your diet and program to decrease your blood pressure? Do you follow them? If not,*

why?

- *What are barriers and challenges to manage your diet, exercise and lifestyle?*
- *Do you take medicine in accordance to the order from health practitioners?*
- *When the drugs run out, do you come to public health centers again to control or do you just buy the drugs by yourself?*
- *How often do you control your blood pressure? How and where?*

Questions to ask nurses

- *What kind of nursing program from this public health center exists to manage hypertension?*
- *Based on your experiences, what are the barriers or difficulties to manage those who suffer from hypertension?*
- *How much do the community follow the program? Why?*
- *If the community does not follow the hypertension program? What do you do next? Do you pick them up or any other strategies?*
- *How do you do screening for hypertension in community?*

2.4 Data analysis

This study employed Van Manen's interpretive phenomenology [18]to explore the lived experiences of patients and nurses. Using a thematic approach, we firstly read carefully and repeated the whole interview transcripts line-by-line, then highlighted essential sentences. From those sentences, we then developed the keywords and subthemes, which then combined to be major themes. We ensured that each major theme represents subthemes and all components of the lived experience of the participants. All of the themes were then translated from the original language into English.

Issues of trustworthiness were addressed through internal member checking after the interview by the principal investigators. We also compared and contrasted the findings with experienced researchers to prevent personal bias and ensure the quality of data as well as noted that documented all methodological issues and decisions.

Quantitative Phase

***Objective 2:*To determine the effect of self-management program on blood pressure among persons with hypertension in Vietnam**

2.5 Study Design

This study employs a quasi-experimental study with a pretest-posttest with a control group design [19] examines the effects of the self-management promotion program on blood pressure among persons with hypertension after 8 weeks.

2.6 Settings

This study was conducted in 2 secondary-level hospitals in the south of Vietnam. The study was approved by the Ethical Board of University and Pharmacy at Ho Chi Minh number 455/UMP-BOARD September 2019.

2.7 Population and Sample

Population

The population of the study is adults with blood pressure classification by the Seven Report of the National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC7)

Sample selection

The participants are purposively selected based on their eligibility. The researcher first reviewed health assessment records and reassessed their blood pressure to determine whether the participants are eligible or not. Prospective participants fulfilling all the following criteria are invited to participate in this study. The inclusion criteria of the participants are 1) aged at least twenty years of age or older in both male and female, 2) blood pressure starts from 140 (systole) and/or 90 mmHg and more (diastole), 3) being able to communicate, read, and write an original language, 4) willing to participate in the program.

Sample size

The sample size of this study is determined based on the power analysis and effect size. The significance criteria will set =.05, power = .80 based on the accepted value of power. Most nursing studies could not expect effect sizes over .50 as medium effect size.[21] Giving a medium to large effect size, 30 participants per group would be sufficient for a comparison of differences between the experimental and control groups by using the independent t-test.[22] Besides, an attrition rate of 10% was anticipated. Therefore, the participants of the experimental and control groups needed for this study should be 33 participants in each group.

2.8 Intervention

The intervention or experimental procedure is adopted from the work of Tongvichean. [16] There are three phases of the experimental procedure, namely: the preparation phase, implementation phase, and evaluation phase.

Phase 1: The preparation phase

Researchers informed the director of community health centers or hospitals about the objectives, procedures, and the approximate length of time for data collection. Nurses in each setting were assigned as research assistants with the inclusion criteria included nurses with the experiences caring for patients with chronic diseases and have certification in the nurse practitioner program. The research assistance's role in obtaining the pretest and posttest data in both the experimental and control groups. The research assistants also train the participants about measuring the heart rate and observing exhaustion during exercise. Before the implementation of this study, the research assistants were instructed in all of the instruments and procedures of the study by the researchers.

Phase 2: Implementation phase

Procedures in the experimental group

Participants in the experimental group received the SMP which comprises of three strategies of self-management method including self-monitoring, self-evaluation, and self-reinforcement. This program composes three phases including 1) problem assessment and motivation phase, 2) self-management skill training phase, and 3) self-management practice and monitoring phase which cover seven sessions of implementation for 8 weeks. All activities of this program were implemented into seven sessions described in the self-management program (SMP)

Procedures in the control group

The participants in the control group were provided conventional care by a community health nurse. They were given a booklet like the participants in the experimental group after the data collection was completed. The contents of the booklet are hypertension, healthy diet, and exercise

Phase 3:Evaluation phase

The evaluation phase was implemented at the 8^{th} week and aimed to 1) evaluate the effect of the SMP in the experimental group and evaluate the effect of conventional care in the control group; 2) obtain blood pressure for posttest both experimental and control groups.

2.9 Research Instruments

1. Personal information sheet. 1) demographic data include gender, age, marital status, educational level, occupation, family history of hypertension, and health conditions; 2) health information related to hypertension consisting of blood pressure and present illness; 3) health risk behaviors for hypertension consisting of diet eating, exercise, smoking, and alcohol drinking.

2.A sphygmomanometer. 1 Digital sphygmomanometer was used for measuring systolic and diastolic blood pressure.

3. Instruments for monitoring experiments included: (1) Self-management knowledge scale to prevent hypertensionincluded three parts: hypertension, the eating healthy diet, and exercise to lower blood pressure. It consists of 27 items with a dichotomous answer for choosing: "yes or no" (yes= 1 point, no= 0 point). The total score ranges from 0-27. A higher score represented greater self-management knowledge for hypertension prevention. The participants had to get a score that passes the criterion (70% of the full score of knowledge test). In the case that they could not meet this criterion, the researcher explained more about the issue that the participant could not answer and led him/her to answer again. Finally, all participants met the criterion of the test. (2) Self-management diary monitors participant's eating and exercise behavior. In each part, the participants must check for setting their goal, activities, the result of their behaviors weekly. The participants monitored themselves according to the checklist in this instrument for 8 weeks after recruitment to the program. Researchers collected this instrument at the $4^{th}$and 8^{th}weeks to ensure that each participant kept track of this procedure. Telephone calls were used to remind and encourage the participants to record in this instrument. The criterion is that the participants performed healthy eating and exercise following their goal.(3) Exercise records measured from the duration of exercise and its frequency, and (4) medication records measured their compliance to take the medication.

III. Results

The majority of patients in this study were male, an average age of 54.53 years and a standard of deviation of 7.50. There were 88.3 percent of them had education under high school. The average income of patients was at 300 USD/month in various occupations such as farmer, worker, officer staff, some running a small business, do housework or retired. Forty-four percent of patients in this study had comorbidities such as heart disease, diabetes mellitus, and stroke. For nurses, half of them were at the secondary level and half in the bachelor level. The average age was 31 years old and the experience was more than 5 years.

Table 2: Characteristics of patients with hypertension and nurses in Vietnam

Characteristics	Category	Gender		Total
		Female (%)	Male (%)	
Characteristics of Patients (N=60)				
Education	Elementary School	7 (11.7)	9 (15.0)	16 (26.7)
	Junior High School	14 (23.3)	10 (16.7)	24 (40.0)
	Senior High School	3 (5.0)	10 (16.7)	13 (21.7)
	Higher education	3 (4.9)	4 (6.7)	7 (11.6)
Age (year)	(Mean ± SD)	54.53 ± 7.50		
Income	200usd/m	14 (23.3)	11 (18.4)	25 (41.7)
	300usd/m	9 (14.9)	17 (28.4)	26 (43.3)
	400usd/m	4 (6.7)	5 (8.3)	9 (15)
Occupation	Farmer	7 (11.6)	8 (13.4)	15 (25.0)
	Worker	7 (11.7)	12 (20.0)	19 (31.7)
	Office staff	1 (1.7)	4 (6.6)	5 (8.3)
	Own business	5 (8.3)	3 (5.0)	8 (13.3)
	Stay home	7 (11.7)	6 (10.0)	13 (21.7)
Other diseases	None	28 (46.6)	16 (26.7)	44 (73.3)
	Yes (Heart disease, diabetes mellitus, stroke)	9 (15)	7 (11.7)	16 (26.7)
Characteristics of Nurses (N=7)				
Education	Secondary degree	1	1	2
	Bachelor degree	5	0	5
Experiences	>5 years			
Age (year)	(Mean ± SD)	31.25 ± 1.5		

Eight points emerged from qualitative data from participants of 2 hospitals (X and Y)

1.Majority of patients have a misunderstanding of blood pressure measurements, which are most likely to concern in systolic than diastolic blood pressure. When asked "Did you know your blood pressure?" they all answered that:

"My blood pressure was fourteen" (Patient X1)

"My blood pressure was twelve when I took medicine and sixteen when I did not take medicine" (Patient X2)

2.Lack of knowledge in signs and symptoms of hypertension and its complication among patients. They expressed this in the following statements:

"I did not know the other symptoms of hypertension; I just think it was a headache" (Patients Y1)

"*My son sent me to hospital when I felt tired, and doctor said that my blood pressure was high*" (Patient Y2)

3.Diet for hypertension is most likely dependent on family members of patients. They answered in the following statements:

"*I cooked for my son and his wife, so I have to cook well for them, cooked what they like*" (Patients Y2)

"*My wife cooked for me and the whole family, so I did not know how much salt, but I think my wife cooked well for me*" (Patients Y1)

4.Confusion in defining "less salty" for diet among patients. They did not know how to measure salt in their food. Participants said:

"*I didn't know how it was salty. When I cooked I just taste suitable with me, and I think it was ok"* (Patients Y3)

"I like to deem food with more fish sauce, It's yummy, I like it" (Patients X1)

5.Poor medication adherence (always buy the medicine based on previous prescription). And some of patients did not follow the physician's advice :

"*When I finished my medication, I did not want to go to hospital again because it was too crowded, I spent the whole day waiting for meeting the doctor. I can buy the same medicine at the pharmacy nearby"* (Patients X1)

"If I went to the hospital, the doctor gave me the same prescription, So I think I could buy the same medication in the pharmacy" (Patients Y1)

6. Elderly people often do exercises at home such as walking, biking more than young people. Young people think that they must work, which is more than enough for exercise :

"I walked 60 minutes every day, that is my routine behavior"

"I go around my garden every morning to take care plants and animals, so I think I had worked enough"

"I have to work all day, I don't need to do exercises"

7. No standardized guideline for nursing in caring for patients with hypertension among nurses. All nurses in outpatient physical examination departments said that there is no standardized guideline for instructing the patients. Nurses advised patients individually based on their experiences.

8. Lack of management for patients' consultation among nurses. Nurses are too busy, they must take blood pressure and type documents to help doctor in the examination room, there are around 200 patients per day, so they have no time for giving consultation for patients.

***Objective 2:*To determine the effect of self-management program on blood pressure among persons with hypertension in Vietnam.**

The majority of participants in Vietnam are males rather than females, with junior high school as their educational background. Their income ranges between 200-400 USD per month, and most are working as laborers. The average age of participants was 53.47 years in the experiment group and 55.60 years in the control group. There were no significant differences of the demographic characteristics of participants in both groups.

Table 3:Characteristics of Participants in Vietnam (N=60)

Characteristics	Experimental Group (n=30)	Control Group (n=30)	F	*p*-value
	f (%)	f (%)		
Age (year)	53.47(SD=7.52)	55.60(SD=7.44)	.460	.500
Gender				
Male	16	17	.236	.629
Female	14	13		
Income				
200usd/m	9	16		
300usd/m	14	12	.256	.615
400usd/m	7	2		
Educational level				
Elementary	9	7		
Junior high school	13	11	.008	.927
Senior high school	5	8		
University level	3	4		
Occupation				
Farmer	6	9		
laborers	9	10		
Officer	5	0	2.793	.100
Own business	5	3		
Stay home	5	8		

The result shows that the average of kilocalories that have been consumed by the experimental group for 8 weeks were 1806.25 with standard of deviation of 303.67. The participants were likely to follow the diet in 6-7 days per week.

Table 4: Descriptive Data of Energy and Days for Diet in the Experimental Group in Vietnam (n=30)

Week	Energy (Kilocalorie)	Days Per Week for Diet
	Mean (SD)	Mean (SD)
Week 1	1816.67 (286.57)	6.73 (0.82)
Week 2	1846.67 (321.34)	7.00 (0.00)
Week 3	1816.67 (305.22)	7.00 (0.00)
Week 4	1770.00 (326.05)	7.00 (0.00)
Week 5	1776.67 (283.67)	7.00 (0.00)
Week 6	1816.67 (304.09)	6.93 (0.36)
Week 7	1796.67 (310.15)	7.00 (0.00)
Week 8	1806.25 (303.67)	7.00 (0.00)
Total	1806.25 (303.67)	6.96 (0.32)

It was surprising that most participants did the exercise every day a week with an average of 6.94 days and standard of deviation of .399. The average duration in each session of exercise was 36.13 min with a standard of deviation of 18.35 min. it considers high compliance with the self-management program at home of all participants.

Table 5: Descriptive Data of Exercise (Brisk Walk/Muscle Stretching) For Experimental Group in Vietnam

Week	Days per week	Duration (min)
	Mean (SD)	Mean (SD)
Week 1	6.67 (1.02)	36.50 (18.39)
Week 2	6.97 (.183)	36.33 (18.00)
Week 3	6.93 (.254)	36.50 (18.89)
Week 4	7.00 (0.00)	36.17 (18.03)
Week 5	7.00 (0.00)	36.67 (18.81)
Week 6	6.97 (.183)	35.17 (19.18)
Week 7	7.00 (0.00)	35.50 (19.53)
Week 8	6.97 (.183)	36.13 (18.03)
Total	6.94 (.399)	36.13 (18.35)

The findings of this study reported that there was a significant effect of health education given in both the experiment and control group on knowledge. There was also a significant difference between both groups. It could be explained that patients acquire knowledge of hypertension disease over time, however, with the supporting knowledge from healthcare providers, knowledge of the experimental group could increase higher.

Table 6: Effect of health education on knowledge of patients with hypertension in the experimental and control group in Vietnam (N=60)

Group	**Knowledge**		**P-value**
	Pretest	**Posttest**	
	Mean (SD)	**Mean (SD)**	
Experimental group (n=30)	85.42 (3.58)	87.04 (1.30)	.022[a]
Control group (n=30)	80.25 (5.87)	82.00 (3.90)	.014[a]
P-value	.000[b]	.000[b]	

[a]Dependent t-test | [b]Independent t-test

Findings were also shown that, in the experiment group, there was a significant effect of the intervention on systolic and diastolic blood pressure. But in the control group, a significant effect of the intervention was only found in diastolic blood pressure.

Table 7: Effect of Intervention on Blood pressure in the Experiment and Control Group in Vietnam (Dependent t-test)

Group	**SBP, *mmHg***		**P-value**	**DBP, *mmHg***		**P-value**
	Pretest	**Posttest**		**Pretest**	**Posttest**	
	Mean (SD)	**Mean (SD)**		**Mean (SD)**	**Mean (SD)**	
Experimental group (n=30)	139.20 (11.77)	126.50 (12.44)	.000*	82.16 (13.60)	75.26 (9.78)	.005*
Control group (n=30)	143.53 (5.41)	145.30 (10.34)	.225	83.66 (5.40)	81.53 (3.54)	.008*

Table 8: Difference in Blood pressure in the Experiment and Control Groupin Vietnam

Blood Pressure	**Group**	**Mean (SD)**	**P-value**
Pretest SBP	Experimental group (n=30)	139.20 (11.77)	.74
	Control group (n=30)	143.53 (5.41)	
Posttest SBP	Experimental group (n=30)	126.50 (12.44)	.000*
	Control group (n=30)	145.30 (10.34)	
Pretest DBP	Experimental group (n=30)	82.16 13.60)	.578
	Control group (n=30)	83.66 (5.40)	
Posttest DBP	Experimental group (n=30)	75.26 (9.78)	.002*
	Control group (n=30)	81.53 (3.54)	

IV. Conclusion

In Vietnam, the majority of patients have misunderstood of blood pressure index, and lack of knowledge regard to signs and symptoms of hypertension and its complications. Diet likely relied on family members and confuse how to measure "less salty" in consuming food daily. Another, most patients have low medication adherence, and they likely buy the medicine according to previous prescriptions. For the behavior, interestingly, the elderly tend to exercise more than young people. Concerning the management of hypertension in the hospital setting, as perceived by nurses, there is no standardized guideline in caring for patients with hypertension, and lack of management for patients' consultation, which tells the hospital managers to develop the guideline and developing a counseling center for nurses and patients.

Self-Management Program is effective to control blood pressure among persons with hypertension in Vietnam. The self-management program is devoted to complementary medicine. Brisk walking with a duration of at least 30 minutes per day and dietary modification specifically focusing on weight loss and anti-hypertensive foods are the key self-management program to help controlling blood pressure. Monitoring and motivation programs should be implemented by community nurses to control and maintain healthy life behavior among persons with hypertension, either by telephone follow-up or by home visits. Health education using individual approach should be performed regularly to enhance more understanding in the treatment of hypertension.

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