

The Effects of a Training Program for the Development of Hypertension Knowledge and Basic Skills Practice (HKBSP) for Thai Community Healthcare Volunteers

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ABSTRACT

Objective: This action research used a one group pre-post test design in 75 samples and used both quantitative and qualitative methods. The study was designed to develop knowledge and basic skill practice in a hypertension program among 240 healthcare volunteers obtained as samples randomly chosen from four communities.

Methods: The instrumentation employed comprised of the hypertension knowledge questionnaires, observational guide form and group discussion. All these aspects of knowledge were good quality for all volunteers in terms of discrimination = 0.48 ± 0.18, difficulty = 0.72 ± 0.49 and reliability Kuder-Richarson 20 = 0.74 with split-half = 0.81.

Results: Following participation in the program, the quantitative data were the knowledge of the volunteers was increased with statistical significance ($p < .001$) and which was positively correlated with the level of education, but was negatively correlated with age ($r = 0.224$, $p < .01$ and $r = -0.289$ respectively). The qualitative data were peoples problems, needs and preferences for eating foods high in sodium and cholesterol, forgetting or refusing to take medication, lack of awareness about the severity of the disease and no motivation to exercise especially for elderly patients.

Conclusion: This program should be useful for other healthcare volunteers in monitoring, supervising and supporting the teamwork in collaboration with community network development.

Keywords: Knowledge and skill practice, hypertension, healthcare volunteers

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Hypertension damages arteries throughout the body, causing complications with major organs, e.g. kidney failure, blindness, heart failure, stroke, and paralysis. In the world, it is estimated that more than 1.5 million people will be afflicted with hypertension by the year 2025 and 17 million will find themselves at high risk of heart disease.¹ This is a study which examined the effect of a program aimed at developing the knowledge and basic skill practice of healthcare volunteers randomly chosen from four communities. This is an important issue in the low awareness rate of hypertension which makes

the treated and control rate far away from optimal even in the era of modern medicine. The program was structured and assessments were convincing. Therefore, knowledge and skill education strategies must be sought for the primary and secondary prevention of this disease, and risk groups must be detected. With the concept of democracy of public health promotion for people and by people, this research concerned healthcare volunteers, who could care for people in communities. They were the leadership potential in community society by their knowledge and skill which induced cognitive changes, attitudes and practices or psychomotor motivations.²⁻⁵ Therefore, the outcomes of this study were the effective results from learning motivation such as their amount of knowledge, factors relevant to the knowledge, the problems and the needs of people in community practice.

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MATERIALS AND METHODS

After the protocol and informed consent were approved by the Research Ethics Committee of Thammasat University, permission was obtained to conduct the study, then the objectives, and the details of the patients rights were developed before any research-related procedures were undertaken.

The population in this study consisted of males and females who were healthcare volunteers in Pathumthani Province.

The sample group comprised of healthy public healthcare volunteers, and the sample required was random selected from four communities who applied and agreed with this program.

The instrumentation comprised the program, hypertension knowledge questionnaires, and observational records form. These were tested for validity and accuracy contents in terms of medical and behavioral experts fields. The instrumentation was as follows:

1. Data collection instruments:

1.1. Questions on the patients general personal data such as gender, age, educational level, characteristics of occupation, income, and chronic disease.

1.2. Questionnaires about hypertension were divided into 5 aspects, i.e. 1) causes, risk factors, and risk level for blood pressure, 2) signs, symptoms and complications regarding target organs for damage, 3) dietary consumption behavior; cooking strategies, food categories, proportion of fresh fruit and vegetables consumed in the reduction of blood pressure, 4) emotion and stress management and 5) compliance with exercise and avoidance. The questionnaires were closed questions using multiple choice (16 items) and true or false (18 items). The good pass criteria of score was 60% up. Also, the instrument was tested for validity with a Kuder-Richarson (KR20) of 0.74 and a split-half of 0.81. Q quality tests for discrimination equaled $0.48 + 0.18$ and for difficulty came to $0.72 + 0.49$.

1.3. Observational records on basic health screening practice skills for measurement and on the performance in three skill categories were: 1) Blood pressure measurement in compliance with the standards of the World Health Organization.⁶⁻¹⁰ 2) Body Mass Index and 3) Waist and hip circumference. The observational records were pass or not pass in steps, with normal interpretations and risk-taking. The good pass criteria was a score of 60% up.

2. Instruments for health assessment were: medical equipment, weighing scale, tape measuring devices, digital blood pressure monitor (Micro life model 3BTO-AP), all of which were calibrated before use and the same devices were used throughout the entire study.

Study design

This action research used a one group pre-post test design and used both quantitative and qualitative methods. This study aimed at developing knowledge and basic skills practice of 240 healthcare volunteers randomly sampled from four communities. The pilot study group of seventy-five samples were tested for pre- and post-program knowledge, skills. Then the program was updated and applied to other healthcare volunteers so that in total this study included 240 participants, who participated in this knowledge and skills program, and proceeded with counseling and screening for hypertension, and applied this to people in their communities. After 6 months, the group

discussion was set up to find out about the problems and needs in practice.

Methods, program principles and activities A health promotion instrument, namely the Hypertension Knowledge and Basic Skills Practice program composed strategies for health education and practice with a guide for six steps of health promotion behaviors, while health education and practice were divided into five bases. The six steps to health promotion behaviors were as follows: (1) Create a friendly atmosphere for learning about good health by greeting the volunteers, introducing the researcher and volunteers, building relationships with the volunteers, and stating the research objectives and information about the project (approximately 15 minutes). (2) Awareness of the importance and necessity of health promotion by health education and media presentation showing the severity of the situation, the complications of hypertension, and joining groups and presenting real-life situations encountered in their daily living in the communities. (approximately 30 minutes) (3) Building motivation to initiate behavior and health promotion by presentation of materials, model and typical healthy figure e.g. demonstration of basic exercise and breathing methods, control of respiratory rate and opportunities to exchange ideas, and ask questions between activities. (approximately 15 minutes) (4) Practice of basic health screening in 5 bases; base 1- Skills for blood pressure measurement skills, base 2- Skills for body mass index and metabolic measurements around the waist and hip circumference base 3- Skills for good food consumption, base 4- Relaxation skills, building relationships and psychological development, base 5- Skills in body movement and exercises (5) Process of knowledge and skills exchanges between the group and network developed by exchanging experiences on arranging community health services (6) Monitoring and evaluation of knowledge and skills by following the training in caring for hypertension in the community program using a focus group for the next 6 months.

Quantitative data analysis used paired t-test in pre-post knowledge scores and correlation in factors relative to the knowledge and problem in practice. Qualitative data analysis used content analysis of problems and needs of the healthcare volunteers in counseling and screening people in their communities.

RESULTS

When seventy five pilot healthcare volunteers participated in the program, their results for 4 out of 5 knowledge categories showed a statistically significant difference from before training ($p < .001$) as shown in Table 1. Then the program was updated and applied to 165 volunteers with a total of 240, with the general demographic data for the 240 healthcare volunteers as shown in Table 2. The good pass criteria of score 60% up was obtained on overall knowledge scores except the motion and stress management was only 50%. The following scores were signs of symptoms and complications on target organs damage (95.2%), dietary consumption behavior; cooking strategies, food categories, fresh fruit and vegetables to reduce blood pressure (91.5%), and compliance with exercise and avoidance (86.2%), respectively as shown in Table 3. In the basic screening skills, the post-training assessment guide, showed 99% all of the volunteers had passed these three skills, including methods and interpretation, preferred from the World Health Organization and metabolic adults

TABLE 1. Comparison of the average values for categorized hypertension knowledge scores before and after training the pilot healthcare volunteers (n = 75 per group).

Knowledge score	Pre-training $\bar{X} \pm S.D.$	Post-training $\bar{X} \pm S.D.$	Difference (Mean \pm SE)	95% CI	t	p-value 2-tailed
Overall	11.04 \pm 3.09	12.88 \pm 2.82	1.84 \pm 0.27	-2.39,-1.29	-6.72	.001**
Categorized						
Causes, risk factors and hypertension risk levels	2.98 \pm 1.52	3.72 \pm 1.15	0.7 \pm 0.21	-1.16,-0.31	3.46	.001**
Signs, symptoms and complications of target organ damage	2.91 \pm 1.32	3.39 \pm 0.99	0.48 \pm 0.17	-0.82,-0.14	2.28	.007*
Dietary consumption behavior; cooking strategies, food categories, fresh fruit and vegetables reduce blood pressure	2.07 \pm 0.69	2.40 \pm 0.76	0.33 \pm 0.09	-0.53,-0.13	3.37	.001**
Emotion and stress management	0.28 \pm 0.45	0.35 \pm 0.48	0.07 \pm 0.07	-0.22, 0.07	1.0	.332
Compliance with exercise and avoidance	1.68 \pm 0.98	2.24 \pm 0.98	0.55 \pm 0.15	-0.85,-0.25	3.67	.001**

*p <.05 **p< .01 statistics using a paired t-test

in Asia such as 1) blood pressure measurement 2) Body mass index and 3) waist to hip circumference ratio.

The relationship between the knowledge of hypertension and the general demographic data was positively correlated with the level of education, but was negatively correlated with age (r = 0.224, p <.01 and r = -0.289 respectively). It was also found that gender, characteristics of occupation and income shared no statistically significant relationships with the score level as shown in Table 4.

The qualitative data were content analysis of group discussion about problems and needs about care of hy-

pertension in their community and it was found that the peoples problems and needs showed preferences for eating foods high in sodium and cholesterol, forgetting or refusing to take medication, lack of awareness about the severity of the disease, and no motivation to exercise, especially for elderly patients.

DISCUSSION

Knowledge about prevention and self-care of hypertension: Seventy-five healthcare volunteers had

TABLE 2. Number, percentage of demographic data for all volunteers (n = 240).

General characteristics	Number of volunteers	%	$\bar{X} \pm S.D.$
Gender (n = 240)			
Male	60	25	
Female	180	75	
Age; min 20 years: max 72 years			49.5 \pm 8.6
Education level (n = 236)			
Primary level	133	56.4	
Secondary level	71	30.1	
Diploma: Advanced diploma level	23	9.7	
Bachelor's degree	9	3.8	
Characteristic of occupation (n = 221)			
Sedentary movement	154	69.7	
Light to moderate movement	39	17.6	
Heavy movement	28	12.7	
Income (n = 88)			
Sufficient with savings	3	3.4	
Sufficient without savings	49	55.7	
Insufficient	36	40.9	
Blood pressure levels (SBP/DBP; mmHg)			134.7 \pm 30 / 81.4 \pm 12.6
Body Mass Index (kg/m ²)			
Male			30.5 \pm 4.6
Female			26.9 \pm 4.6
Waist : hip circumference (cm)			
Male			56.6 \pm 27.3 : 75.0 \pm 33.7
Female			64.2 \pm 26.9 : 74.8 \pm 29.9
No chronic disease	119	49.7	
Chronic disease	121	50.6	
Only one chronic disease	84	69.4	
Two or more chronic diseases	37	30.6	

TABLE 3. Number, percentage of volunteers and minimum, maximum and average values of categorized hypertension knowledge scores following training in all volunteers (n = 240).

Categorized knowledge scores	Number of volunteers	%	Minimum score	Maximum score	$\bar{X} \pm S.D.$
Causes, risk factors and hypertension risk levels	115	82.6	2	10	7.14 \pm 1.68
Signs, symptoms and complications of target organ damage	125	95.2	1	9	7.12 \pm 1.45
Dietary consumption behavior; cooking strategies, food categories, fresh fruit and vegetables reduce blood pressure	118	91.5	0	6	4.77 \pm 1.14
Emotion and stress management	114	50.0	0	3	1.5 \pm 0.63
Compliance with exercise and avoidance	116	86.2	1	6	4.84 \pm 1.185

higher knowledge scores than before training with statistical significance ($p < .001$), which explained that the effects of the six main activities in the HKBSP program helped supplement old and new experiences through group education and counseling health strategies, participation in demonstrations and practice in all volunteers. These concepts were concurrent with Pender NJ,³ that interactions between knowledge, beliefs and motivation toward the goal of promoting healthy behaviors, the concept of learning through teaching activities and acting together with concrete actions were beneficial.^{4,5} These results agreed with the findings of research from comparing two training methods on healthcare volunteers between participation and regular lectures in which the first method increased knowledge, teamwork efficiency and increased satisfaction of healthcare volunteers, which were statistically significant ($p < .05$).¹¹

In this study, one good questionnaire was suitable for volunteers and this was tested for validity, yielding a Kuder-Richarson (KR20) of 0.74 and a split-half of 0.81, while the average for quality tests by discrimination was 0.48 ± 0.18 and difficulty was 0.72 ± 0.49 . The aims for this research were not about overly difficult testing, but aimed at promoting development in learning the correct answers to be applied to real life in daily living. The post-training passing scores were 60% up except for the motion and stress management which was 50% which should be developed in further study as shown in Table 3. In another study, Suchinda Sukumnud¹² found that 55.4% of healthcare volunteers who had been trained in overall health promotion were able to later improve upon their foundations in general prevention knowledge, but 71.6% of the community leaders recommendations lacked in basic healthcare knowledge while 64.8% had problems with knowledge transfer to the people.¹² The study of Yupa Chotikapat¹³ found that 49.6% of 320 healthcare volunteers, who had participated in training for community mental health had greater knowledge than a group which did not.

TABLE 3. Relationships between the categorized hypertension knowledge scores with general demographic data following training in all volunteers (n = 240).

General demographic Data	Spearman's Rank Correlation Coefficient	p-value (2-tailed)
Gender	.083 ^{ns}	.362
Age	-.286*	.002
Educational level	.224*	.007
Occupation	-.001 ^{ns}	.905
Income	.273 ^{ns}	.077

**p < .01, ns = non significant

Basic screening skills had very good pass scores including methods and interpretation, which explained that the actual acts of the volunteers self help group together with equipment used in familiar practice in daily life were easier to apply. Since these focus on the accuracy, based on principles set forth by the World Health Organization, the total average measurements could be used as real values for preliminary screening. For example the body mass index in Asia, can be considered high if $>23 \text{ kg/m}^2$ and overweight if $>30 \text{ kg/m}^2$, blood pressure can be measured and interpreted as high if $>140/90 \text{ mmHg}$ and mens waists should not exceed 36 inches, while women should not exceed 32 inches when patients should be recommended to see a doctor in combination.^{7,8,10} Values out of the normal range can lead to risks for hypertension, heart disease and stroke. Besides, another study, found that 62.6% were accustomed to blood pressure equipment and 68.9% had incorrect skills.¹²

In addition, two outcomes of this program process were found; 1) factors related with knowledge and 2) results of applying knowledge and skills to community people, which showed that age was found to be negatively related to the score level of hypertension knowledge with statistical significance, but educational level of knowledge was positively correlated with the score level ($p < .01$, $r = -.289^{**}$ and $r = .224$, respectively). The youngest volunteers in this research were found to be approximately 20 and the oldest approximately 72 years. Although with age a person would acquire and recognize increasingly more knowledge, the memory performance of the brain was likely to decrease with age, while education has a direct positive effect on the increasing awareness of experiences and knowledge of the learners, which might also affect test scores. However, we found that these potential effects were extremely minimal and that the problem could be solved by continued periodic reviews of the training, and innovative strategies for stimulating the brain or memory, although each age group needs different training. One finding concurred with the findings of another study which found that gender and duration of volunteer work were not related to knowledge with statistical significance, but age was related to knowledge ($p < .01$, $r = 0.159^{**}$) in which the older volunteers had less knowledge than the younger volunteers.¹²

The consumption and lack of awareness problems in hypertensive patients in a community were the result of applying knowledge and skill, which led to consideration about the methods to innovatively motivate them.

Conclusion and recommendations for the further study

The data findings should be useful for other healthcare teams in monitoring, supervising and supporting the teamwork of volunteers, who will also help with the ad-

vantage of participation in psycho-community development training to decrease the risks and increase awareness for hypertension.

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