Factors Influencing Self-Care Behavior in Older Persons with Hypertension

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Abstract

Background of the Study: Hypertension and self-care behavior in older persons with hypertension are chronic health problems and this continues to increase in the Thai population.

Objectives of the Study: To identify factors influencing self-care behavior among older persons with hypertension in relation to personal factors and risk factors pertaining to illness and treatment.

Method: This was a prospective observational study design. The samples were to be 60 years of age, diagnosed with hypertension more than six months, and receiving the treatment at aTambol Health Promotion Hospital. The 127 patients were enrolled in the study. Data were collected during March – September 2020. Finally, data were analyzed using binary logistic regression analysis method.

Result: There were 127 patient included in the present study, it was found that the samples who are farmers had dietary behavior score 6.74 times higher than other occupations (AOR = 6.74, 95% CI:1.47-30.97, p=0.01). The female subjects with waist circumference over 80 cm had a adherence score of stress management 5.69 times higher than those with waist circumference less than 80 cm (AOR = 5.69, 95%CI: 1.19-27.17, p=0.020) and the older persons with a good level of knowledge of hypertension had proper self-care behavior better than those with a lower level of the knowledge with statistical significance at 0.05. In addition, factors not associated with self-care behavior included age, gender, body mass and duration of hypertension.

Conclusion: Personal factors and factors related to illness that influence of self-care behavior included farmers, waist circumference and knowledge of hypertension.

Keywords: *Self-Care behavior, Older, Hypertension.*

Introduction

Hypertension, which is caused by vascular abnormalities of large and small vessels in critical organs, has been persistently reported over the world. This disease accounts for the increasing mortality rate every year and is considered a major risk for CVD and stroke[1]. According to worldwide data, there are 1.13 patients with hypertension[2]. It is found to be a major cause of premature mortality worldwide; in that, one fourth of en and one fifth of women are diagnosed with hypertension, and less than one fifth population are in the condition of uncontrolled hypertension[3].

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In Thailand, the number of hypertension-associated patients increased from four million in 2013 to six million in 2018. The patients who died from hypertension increased from 5,186 in 2013 to 8,525 in 2017. Expenditure on treatment of hypertension patients rose by as high as TB 8 billion per 10 million populations [4]. Hypertension develops when systolic pressure is elevated over 140 mmHg and that of diastolic pressure over 90 mmHg. Hypertension is attributed to elevated diastolic pressure, resulting in the damage of the walls of blood vessels. Consequently, the endothelial layer is ruined and leads to fibrin formation, localized swelling and thrombosis. Thus, this reduces artery to cardio, brain, kidney and retina, resulting in abnormality of organs[1]. There are both controlled and uncontrolled causative association of high blood pressure. Underlying risk factors in hypertension and complications in cardiovascular systems, brain and kidney include excess salt and fat, lack of exercise, smoking, alcohol consumption, overweight and stress [2]. It seems that these factors could, indeed, be mitigated or addressed through self-care behavior change. Meanwhile, uncontrolled risk factors include family history of hypertension, age and co-occurring disease (e.g., diabetics, kidney disease).

Hypertension is reported to affect physical, mental and socio- economic conditions. In relation to physical impacts, hypertension is considered a silent killer in that no symptoms of death are expressed. In addition, prolonged hypertension may result in consequent complications such as cardiovascular complications, load of cardiac functions, which leads to arterial wall thickness. Unless left untreated for prolonged period of time, the patients are likely to develop heart attack or even cost their life. In addition, complications of cardiovascular diseases could also lead to stroke, and cerebral artery stenosis, likely to paralysis. Furthermore, nephrotic complications and chronic kidney disease also cause the patients dead. The impact of the disease may extend to physical, mental, and socio-economic aspects. Its effect accounts for increasing treatment expenses and expenditures [4]. In particular, among older persons with hypertension, not only age itself is one of the disease risk factors, but is self-care behavior a cofactor in prognosis as they have a likelihood of less self-care due to such conditions as deteriorating body functions, living alone, less socialization, insufficient income, depression, and lack of caregivers[5]. The objective of the current research aimed to investigate factors influencing self-care behavior among older persons with hypertension in relation to personal factors and risk factors pertaining to illness and treatment (i.e., sex, age, waist circumference, BMI, and older persons' knowledge on hypertension).

Material and Method

Study Design: The current study employed the descriptive approach through observation and prospective study. The subjects eligible to the study included having systolic blood pressure (SBP) above 140 mmHg and diastolic blood pressure (DBP) above 90 mmHg, being diagnosed with hypertension more than six months and receiving the treatment at a Tambol Health Promotion Hospital. As for inclusion criteria, the subjects were to be 60 years of age, diagnosed with hypertension more than six months, conscious, able to communicate and understand Thai, consent to research participation. However, those unable or unwilling to participate in the research through the course of research were excluded from the study.

As for size sample calculation, as the number of population was unknown, the sample size was calculated using G*power. This analysis program is reported of reliability. The test power was tested at .80, the level of statistical significance at .05 ($\alpha = .05$) and the level of effect sizes at .25 [5]. According to the calculation, 127 samples, the total of the subjects was 127 cases. Data were collected during March – September 2020.

Outcome Measures

Research Tools: Three research tools employed to collect data are as follows.

1. General data record of aged patients with hypertension. The record designed to obtain information on personal data (i.e., age, sex, marital status, education, occupation, family income), illness (i.e., underlying disease), medical history, body mass, waist circumference, decease diagnosis, the course of experiencing high blood pressure, medication and dose, blood sugar level before breakfast and the level of hypertension.
2. Questionnaires about hypertension. The questionnaire comprises 10 questions in which the three choices shown to the respondents who were to give a tick either *correct*, *incorrect* or *not know*. In the event that they gave a correct answer, that question is scored 1 point; conversely, any questions given an incorrect answer and not know are given no score. A total score is 10 points.

3. Assessment tool of self-care behavior. The author underwent the relevant literature review provided by Bureau of Non-communicable Disease, the department of disease control, Ministry of Public Health[6]. Its contents cover health behavior, dietary behavior (14 items), exercise behavior(5 items), stress management (8 items), adherence to medication and treatment (8 items). There is a total of 35 items. The questionnaire is rated ranging from 1 to 5 level, namely *Unable to practice at all, Able to practice but ignore it, Able to practice sometimes, Able to practice almost every time,* and *Able to practice every time*, respectively.

Validation of Measurement Tools: Research tools employed in this study included a questionnaire testing on hypertension knowledge and self-care behavior assessment test. Its content validity was verified by three experts in the field and CVI was 0.65. Afterward, the tools was subjected to modification and test for reliability. The tool underwent a trial in 20 hypertension older persons whose conditions were similar to those of the subjects of study[7]. The Cronbach's score was 0.72.

Data Collection: After the ethic committee had granted the research approval, the population underwent sampling among older persons with blood pressure, qualification meeting the specified criteria and residing in Tambol, comprising 11 villages, each of which had 12-13 cases. The recruited samples were offered the account of research objectives. As for protection of patients' rights, once agreeing to participate in the project, the eligible samples signed the consent form pertaining to rights protection and cooperation for responding questionnaire. Personal data were collected from the record forms; the knowledge on hypertension was collected by interview. Following questionnaire responding, the samples were measured for blood pressure in a sitting position three times at a five-minute break[2] and underwent waist circumference.

Results

Characteristics of the participants: The characteristics of the subject is summarized in Table 1. There were a total of 127 samples, the majority of whom were females (70.9%), aged 60-69 ($\bar{x}$=69.13). Eighty percent of the subjects practiced agriculture as the main occupation. On the basis of mass index, the subjects (37.1%) were associated with obesity. The subjects were reported of duration of diabetic ($\bar{x}$ = 6.7) and hypertension ($\bar{x}$=4.6). According to waist circumference, the waist size of the male subjects was less than 90 cm and bigger waist circumference above 80 cm in the females (Table 1).

Table No. 1: Characteristics of the participants (n=127)

Variables	Number	Percent
Age-years (Mean= 69.13, SD = 7.6)		
60-69	76	61.1
70-79	38	29.5
>_80	13	10.4
Gender		
Male	37	29.1
Female	90	70.9
Occupation		
Farmers	106	83.5
Employment	4	3.1
civil servants	4	3.1
Other	13	10.3
Body Mass Index (Mean= 23.47, SD = 3.9)		
Underweight(<18.5 km/m.^{2})	13	10.2
normal(18.5-22.9km/m.^{2})	45	35.4
Overweight(23.0-24.9km/m.^{2})	22	17.3
obesity (≥25.0 km/m^2)	47	37.1
Duration of Diabetic (Years) (Mean= 6.7, SD = 8.2)		
<5 year	69	54.3
≥ 5 year	58	45.7
Duration of Hypertension (Years) (Mean= 4.6, SD = 5.1)		
<5 year	75	59.1
≥ 5 year	52	40.9
Waist (cm)		
Men		
<90 cm	115	90.6
≥90 cm	12	9.4
Women		
<80 cm	51	40.2
≥80 cm	76	59.8

Table No. 2: Knowledge of hypertensive and self-care behavior (n=127)

Variables	Number	Percent
Knowledge of hypertensive(Mean = 8.62 SD = 1.57)		
1-8 (poor)	44	34.6
9-10 (good)	83	65.4
Self-care behavior		
Dietary behavior (14 items)		
Adherent	8	6.3
Nonadherent	119	93.7
Exercise behavior (5 items)		
Adherent	21	16.54
Nonadherent	106	83.46
Adherence to medication and treatment (8 items)		
Adherent	111	87.4
Nonadherent	16	12.6
Stress management (8 items)		
Adherent	74	58.27
Nonadherent	53	41.73

Knowledge of Hypertensive and self-care behavior: Table 2 shows the total scores of hypertension knowledge and self-care behavior. The knowledge regarding hypertension of 83 older persons (65.4%) with hypertension was ranged good, which is higher than the median score, while the other 44 older persons (34.6%) had a poor score, which is lower than the median score[8]. Regarding self-care behavior, out of 127, 111 subjects (84.4%) were adherent to medications and 74 (58.27%) to stress management. In addition, there were 119 (93.7%) subjects nonadherent to dietary behavior and 106 (83.46%) nonadherent to exercise behavior.

Factors predicting self-care behavior: Farmers had dietary behavior score 6.74 times higher than other occupations with statistical significance at 0.05(AOR = 6.74, 95%CI:1.47-30.97, p=0.01), while civil servants had the lowest score in relation to other occupations with statistical significance at 0.05(AOR = 0.02, 95%CI:0.001-0.25, p=0.003). The female subjects with waist circumference over 80 cm had a adherence score of stress management 5.69 times higher than those with waist circumference less than 80 cm with statistical significance at 0.05(AOR = 5.69, 95%CI: 1.19-27.17, p=0.020). Factors not associated with self-care behavior included age, gender, body mass and duration of hypertension (Table 3).

Table No. 3: Factors predicting self-care behavior using binary logistic regression (n=127)

Variables	Dietary behavior Adjust OR (95%cl)/p-value	Exercise behavior Adjust OR (95%cl)/p-value	Adherence to medication and treatment Adjust OR (95%cl)/p-value	Stress management Adjust OR (95%cl)/p-value
Age				
60-69	1.48 (0.35-6.23)/0.59	0.53 (0.19-1.48)/0.22	0.49 (0.17-1.40)/0.18	0.98 (0.48-2.02)/0.96
70-79	0.70 (0.16-3.08)/0.64	1.98 (0.62-6.36)/0.25	1.49 (0.50-4.45)/0.47	1.02 (0.48-2.19)/0.95
>_80	Undefined	2.26 (0.27-18.63)/0.45	2.66 (0.63-11.16)/0.63	0.97 (0.29-3.23) 0/.95
Gender				
Male	2.92 (0.35-24.69)/0.32	0.75 (0.27-2.07)/0.58	1.14 (0.37-3.52)/0.82	0.79 (0.36-1.73)/0.54
Female	0.34 (0.04-2.90)/0.32	1.33 (0.48-3.65)/0.58	0.88 (0.28-2.73)/0.82	1.27 (0.58-2.80)/0.54
Occupation				
Farmers	6.74 (1.47-30.97)/0.01*	0.49 (0.10-2.35)/0.3	0.53 (0.15-1.85)/0.31	2.04 (0.75-5.57)/0.16
Employment	0.21 (0.02-2.48)/0.21	0.19 (0.03-1.39)/0.10	2.27 (0.21-24.12)/0.49	1.41 (0.19-10.52)/0.73
Civil servants	0.02(0.001-0.25)/0.003*	Undefined	2.86 (0.26-31.33)/0.39	4.26 (0.47-38.89)/0.19
Body Mass Index				
Underweight/normal	2.14 (0.49-9.37)/0.31	1.51 (0.59-3.85)/0.39	0.76 (0.27-2.17)/0.60	1.58 (0.77-3.25)/0.21
Overweight/obesity	1	1	1	1

Variables	Dietary behavior Adjust OR (95%cl)/p-value	Exercise behavior Adjust OR (95%cl)/p-value	Adherence to medication and treatment Adjust OR (95%cl)/p-value	Stress management Adjust OR (95%cl)/p-value
Duration of hypertension (Years)				
<5 year	1.11 (0.25-4.94)/0.89	0.58 (0.23-1.49)/0.25	0.43 (0.13-1.43)/0.16	0.70 (0.34-1.45)/0.34
≥ 5 year	1	1	1	1
Waist (cm)				
Men				
<90 cm	Undefined	1.25 (0.21-7.62)/0.80	0.48 (0.05-4.81)/0.53	2.13 (0.52-8.70)/0.29
≥90 cm		1	1	1
Women				
<80 cm	0.16 (0.02-1.48)/0.10	0.89 (0.18-4.49)/0.88	0.81 (0.16-4.20)/0.79	5.69 (1.19-27.17)/0.02*
≥80 cm	1	1	1	1

Adjust OR: Adjusted odds ratio, CI: Confidence Interval, **P*=0.05

Knowledge of hypertensive predicting self-care behavior: The older persons with a good level of knowledge of hypertension had proper self-care behavior better than those with a lower level of the knowledge 19.75 times with statistical significance at 0.05. (AOR = 19.75, 95%CI:1.61-242.58, p=0.020) (Table 3).

Table No. 4: Knowledge of hypertensive predicting self-care behavior all level using binary logistic regression (n=127)

Knowledge of hypertensive	Adjusted odds ratio (95% confidence interval)	*P*-value
< 9 scores (poor)	1	
≥ 9 scores (good)	19.75 (1.61 – 242.58)	0.020*

**P*=0.05

Discussion

The current study was designed to investigate factors associated with self-care behavior among older persons with hypertension. It emphasizes both personal factors and factors related to illness and treatment that influence four domains of health behavior: dietary behavior, exercise behavior, adherence to medication and treatment, and stress management.

Given occupation, the farmers had a higher score of self-care behavior on dietary behavior in relation to other occupations (i.e., employee and civil servants). This may be explained that they have poor self-care behavior concerning eating habits; in that, they may have high intake of excess salt diet, excess fat diet and dessert, while they have low intake of fruits and vegetables. This finding supports a study, which found that among 205 subjects, a great number of farmers usually add salt, seasoning powder and sauce and consume high fat diet in relation to employment [9]. Another explanation is that older persons residing in the country rarely prepare meals for themselves but food is provided or cooked by their caregivers whose food taste (e.g., spicy or sweet dishes) may depend on their personal preferences regardless of age. Furthermore, older persons tend to participate less in physical activity and exercise. These factors could contribute to increasing hypertension.

The female subjects with waist circumference over 80 cm had more practice of undergoing stress management compared to those with waist circumference below 80 cm. Several previous studies have confirmed that body mass index (BMI) and waist circumference (WC) could

be one of the clinical indicators of obesity. In addition, the prevalence of hypertension increase with waist circumference [10]. Self- care behavior of older persons in stress management has correlation with females with waist circumference over 80 cm; in that, obese females have a high risk of hypertension. This finding matches with a study which suggests that a middle level of stress and waist circumference over 90 cm is associated with hypertension [11].

The older persons with a good level of hypertension knowledge had self-care behavior better than those with inferior knowledge of hypertension. Thus, it may be argued from the current study that patients with a good level of hypertension knowledge had better self-care practices [8]. This finding confirms a study which assessed hypertension among 152 cases and found that a level of knowledge and self-care behavior could predict weight management and medication regimes[12].

Limitations of the study: Our study was showed the small sample size might not be generalized of the total population.

Conclusions

The results of this research showed that farmers, female with waist circumference and knowledge of hypertension were identified to be contributing factors of self-care behavior four domains: dietary behavior, exercise behavior, adherence to medication and treatment, and stress management. In addition, the role of nurses in preventing and promoting for older persons' health were significant effects to promote a good quality of life.

Ethical Approval: The ethic committee had granted the research approval and it was numbered NKP REC NO HE 630001.

Conflict of Interest: No potential conflict of interest relevant to this article was reported.

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Reference

1. Benjamin EJ, Muntner P, Alonso A, et al. Heart disease and stroke statistics–2019 update: a report from the American heart association. Circulation 2019;139(10):e56–e528.
2. World Health Organization. Hypertension [Internet].2020[cited 2020 October 12]. Available from: https://www.who.int/health-topics/hypertension/#tab=tab_1
3. World Health Organization. World Hypertension Day. 2019[cited 2020 October 12]. Available from: https://www.who.int/news-room/events/world-hypertension-day-2019
4. Phanmung N, Yuulertlub A, Saranrat. World hypertension day campaign message. Bureau of Non-Communicable Disease, Department of Disease Control [Internet]. 2019[cited 2020 October 12].Available from: https://pr.moph.go.th/?url=pr/detail/2/07/127178/
5. Yang SO, Jeong GH, Kim SJ, et al. Correlates of self-care behaviorsamong Low-Income elderly women with hypertension in South Korea. JOGNN2014; 43: 97-106.
6. Bureau of Non-Communicable Disease, Department of Disease Control, Ministry of Public Health. 2010[cited 2020 October 10]. http://e-lib.ddc.moph.go.th/pdf/eb430/eb430.pdf
7. Burns N, Grove SK. The practice of nursing research: Appraisal, synthesis, and generation of evidence (6th ed.). New York: Saunders Elsevier. 2009.
8. Kassahun WC, Asasahegn A, Hagos D, et al. Knowledge on hypertension and self-care practice among adulthypertensive patients at University of Gondar Comprehensive Specialized Hospital, Ethiopia, 2019. Int J Hypertens2020. [cited 2020 October 12].Available from: https://doi.org/10.1155/2020/5649165
9. Parvin R, Fariba A, Mehrangiz EM, et al. The predictors of high dietary salt intake among hypertensivepatients in Iran. Int J Hypertens2020. [cited 2020 October 12].Available from: https://doi.org/10.1155/2020/6748696
10. Momin M, Fan F, Li J, et al. Joint effects of body mass index andwaist circumference on the

incidence ofhypertension in a Community-Based ChinesePopulation.Obes Facts2020; 13: 245–255.

11. GaneshKS, Naresh AGV, Bammigatti C. Prevalence and risk factors of hypertension among male police personnel in Urban Puducherry, India. Kathmandu Univ Med J2014; 48(4):242-6.
12. Larki A, Tahmasebi R, Reisi M. Factors predicting self-care behaviors among low healthliteracy hypertensive patients based on health belief model in Bushehr District, South of Iran. Int J Hypertens 2018. [cited 2020 October 12]. Available from: https://doi.org/10.1155/2018/9752736