ความสัมพันธ์ระหว่างความรู้เรื่องความดันโลหิตสูง สมรรถนะแห่งตน ความเชื่อด้านการรักษา และพฤติกรรมการจัดการตนเองในผู้ป่วยความดันโลหิตสูงที่ควบคุมไม่ได้ เมืองดานัง ประเทศเวียดนาม*

ทรัน ทิ มาย B.N.S.** นงลักษณ์ เมธากาญจนศักดิ์ Ph.D.*** ฮึน แวน มินธ์ MD., Ph.D.****

บทคัดย่อ

การวิจัยเชิงพรรณนาในครั้งนี้มีจุดประสงค์เพื่อศึกษาระดับของพฤติกรรมการจัดการตนเองและความสัมพันธ์กับปัจจัยคัดสรรของผู้ป่วยโรคความดันโลหิตสูงที่ไม่สามารถควบคุมได้ในเมืองดานัง ประเทศเวียดนาม กลุ่มตัวอย่างเป็นผู้ป่วยที่มีคุณสมบัติตามที่ต้องการศึกษาจำนวน 85 คน เก็บรวบรวมข้อมูลโดยใช้แบบสอบถามข้อมูลทั่วไป แบบสอบถามการจัดการตนเองโรคความดันโลหิตสูง แบบสอบถามความเชื่อต่อการรักษาทางการแพทย์ แบบสอบถามสมรรถนะแห่งตนสำหรับการจัดการโรคเรื้อรัง และแบบสอบถามความรู้ที่แท้จริงเกี่ยวกับโรคความดันโลหิตสูง ค่าดัชนีความเที่ยงของแบบสอบถามเป็น 0.95, 0.73, 0.93 และ 0.73 ตามลำดับ วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนาและค่าสัมประสิทธิ์สหสัมพันธ์ของเพียร์สัน ผลการศึกษาพบว่าคะแนนพฤติกรรมการจัดการตนเองในกลุ่มตัวอย่างอยู่ในระดับปานกลาง (2.37± 0.54) มีเพียงร้อยละ 17.6 ของกลุ่มตัวอย่างที่มีค่าคะแนนการจัดการตนเองในระดับสูง

ผลการวิเคราะห์ค่าสัมประสิทธิ์สหสัมพันธ์ของเพียร์สันพบความสัมพันธ์ที่มีนัยสำคัญทางสถิติระหว่างพฤติกรรมการจัดการตนเองกับความรู้เกี่ยวกับโรคความดันโลหิตสูง ($r=0.617$, $p<0.01$) และกับสมรรถนะแห่งตน ($r=0.675$, $p<0.01$) ผลการศึกษาให้ข้อเสนอแนะว่าการที่จะเพิ่มระดับพฤติกรรมการจัดการตนเองในผู้ป่วยได้ทีมสุขภาพควรให้ความสำคัญต่อการส่งเสริมความรู้และสมรรถนะแห่งตน

คำสำคัญ: ความดันโลหิตสูงที่ไม่สามารถควบคุมได้ พฤติกรรมการจัดการตนเอง สมรรถนะของตนเอง ความรู้ต่อภาวะความดันโลหิตสูง ความเชื่อด้านการรักษา ประเทศเวียดนาม

วันที่รับบทความ 9 มิถุนายน 2563 วันที่แก้ไขบทความเสร็จ 16 กันยายน 2563 วันที่ตอบรับบทความ 17 กันยายน 2563

***ได้รับการสนับสนุนศูนย์วิจัยและฝึกอบรมเพื่อส่งเสริมคุณภาพชีวิตคนวัยแรงงาน คณะพยาบาลศาสตร์ มหาวิทยาลัยขอนแก่น ประเทศไทย**

****นักศึกษาพยาบาลศาสตรมหาบัณฑิต คณะพยาบาลศาสตร์ มหาวิทยาลัยขอนแก่น ประเทศไทย**

*****ผู้จัดทำบทความต้นฉบับ ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยขอนแก่น ประเทศไทย E-mail: nonchu@kku.ac.th**

******ศาสตราจารย์ มหาวิทยาลัยแพทยศาสตร์และเภสัชศาสตร์ เมืองเว้ ประเทศเวียดนาม**

Relationships between Hypertension knowledge, Self-efficacy, Treatment beliefs and Self-management behaviors among uncontrolled hypertension patients in Da Nang city, Vietnam*

Tran Thi My B.N.S.** Nonglak Methakajanasak Ph.D.*** Huynh Van Minh MD., PhD.****

Abstract

This descriptive research aimed to investigate level of self-management behaviors (SMBs) and its relationships with selected factors among patients with uncontrolled hypertension in Da Nang, Vietnam. A total of 85 eligible patients were surveyed using a demographic data questionnaire, the hypertension fact knowledge questionnaire (HFQ), the self-efficacy for managing chronic disease 6-item scale (SEMCD 6), the beliefs about medicines questionnaire (BMQ)-specific, and the hypertension self-management behavior questionnaire (HSMBQ). The reliability index of the HFQ, SEMCD 6, BMQ, HSMBQ were 0.95, 0.73, 0.93 and 0.73, respectively. Data were analyzed using descriptive statistics and Pearson's correlation coefficient. The results revealed that self-management behaviors of participants were at moderate level (2.37± 0.54). Only 17.6 % of the participants had self-management behaviors at high level. A statistically significant correlation was found between SMBs, and hypertension knowledge ($r=0.617$, $p<0.01$) and self-efficacy ($r=0.675$, $p<0.01$). The results implied that in order to promote self-management behavior of patients, health care providers should place emphasis on improvement of knowledge and self-efficacy.

keywords: uncontrolled hypertension; self-management behaviors; self-efficacy; hypertension knowledge; treatment beliefs; Vietnam

Received 9 June 2020 Revised 16 September 2020 Accepted 17 September 2020

***Scholarships: Research and Training Center for Enhancing Quality of Life of Working-Age People, Faculty of Nursing, Khon Kaen University, Thailand**

****Master's degree Nursing Science student, Faculty of Nursing, Khon Kaen University, Thailand**

*****Assistant Professor, Faculty of Nursing, Khon Kaen University, Thailand, Corresponding author, E-mail: nonchu@kku.ac.th**

******Professor, Hue University of Medicine and Pharmacy, Hue City, Vietnam**

Introduction

Hypertension (HTN) has been a main long-standing health issue in the community across the world. More than 30 percent of adults experience hypertension of which three quarter are located in economically developing countries.[1] In Vietnam, a recent cross-sectional study on 2203 community-dwelling aged 18 years or older showed that the prevalence of hypertension was more than 24%.[2] Moreover, another report from blood pressure screening campaign covering 10 cities including Da Nang revealed that about 29% of the participant were having hypertension.[3] Da Nang city is the economic and cultural center of Vietnam Central Region-Central Highlands, with the highest urbanization ratio among provinces and municipalities in the country. The city has witnessed two-fold increase in hypertension patients between the years 2011 to 2015.[4] This is critical because uncontrolled hypertension is associate with several negative health consequences such as renal failure, heart disease and stroke and also health care cost.[5-7]

Although the incidence of hypertension is soaring in Vietnam, blood pressure control among patients is on reverse trend.[6,8,9] It has been reported that up to 62% of the patients on anti-hypertensive medication were present with uncontrolled blood pressure.[10] Similarly, a national surveys in 2015 showed a low percentage of people with controlled hypertension.[9] Published report suggest that one of the most common reasons for uncontrolled hypertension is inadequate self-management behaviors (SMBs).[11] In this study, we conceptualized self-management behaviors based on the work of Akhter[12] with five aspects: self-integration, self-regulation, interaction with professional and significant others; self-monitoring and adherence to a recommended regimen.[12] SMBs are an important activities undertaken by an individual in order to control blood pressure and reduce hypertension related complications.[13,14] An effective self-management not only significantly reduces blood pressure in uncontrolled hypertension patients but also result in more cost-effective use of healthcare resources.[15,16]

However, a variety of factors make hypertensive patients to skip medical recommendation during self-management. Of those, some important related factors are self-efficacy, hypertension knowledge, and treatment beliefs.[15,17,18] Self-efficacy, which is an individual's confidence in carrying out a special task or behavior in a given situation has a significant association with SMBs in hypertension patients[15,18,19] It is been found that an individuals with higher self-efficacy have about 90 fold more probability to perform better in SMBs than individuals with low self-efficacy.[19] Hypertension knowledge refers to the understanding by adult patients on hypertension, risk factors, manage threshold and complications of hypertension.[20] It is also associated with self-management behaviors in hypertensive patients, such that individuals with high knowledge have 6.5 times better chances in carrying out self-management behaviors compared to individual with inadequate knowledge.[19]

Treatment beliefs is defined as patients' beliefs about the necessity of their antihypertensive medications and patients' concerns about negative effects from taking their medications.[21] Previous studies have revealed the relationship between

treatment beliefs and self-management behaviors in in chronic disease patients.[22,23] The study of MacInnes (2013) mentioned that beliefs about the necessity of medication were moderately correlated with self-management behaviors.[22] Also, Niriayo et al., (2019) found that patients with negative medication beliefs were less adherent to self-management behaviors compared to their counterparts.[23]

There were many studies examined related factors of self-management behaviors in hypertension patients. However, the differences in culture and society between Vietnam and other countries may limit generalization. Moreover to the best of our knowledge, none of the studies have explored about the self-management behaviors among patients with uncontrolled hypertension in Vietnam. For this reason, better understanding about self-management behaviors among uncontrolled hypertension patients in Vietnam and its related factors are essential for deepening our understanding of the conditions.

Objective of the study

The objective of the study was to investigate levels of self-management behaviors and the relationships between factors such as hypertension knowledge, self-efficacy, treatment beliefs and self-management behaviors among patients with uncontrolled hypertension in Da Nang city, Vietnam.

Materials and Methods

Study design and population: The target population of this study was uncontrolled hypertension patients receiving health services at the Out-patient Department of Hai Chau District Health Center, Da Nang city. On average, the outpatient department of the center has daily flow of 224 hypertensive patients and a total of 6700 patients in a monthly.

The inclusion criteria set for this study were: willingness to participate, adult (≥18 years old) with uncontrolled hypertension and/or on anti-hypertensive medication for at least 6 months, had no cognitive impairments (investigated by Vietnamese version of Mini Mental State Examination scoring more than 24 points).[24] On the other hand, patients who could not read and communicate in Vietnamese language, pregnant or breastfeeding, diagnosed with secondary hypertension, patients with diabetes mellitus or chronic kidney disease were excluded. The uncontrolled hypertension was defined as systolic blood pressure greater than or equal to 140 mmHg and/or diastolic blood pressure of greater than or equal to 90 mmHg for general hypertensive population when measured two time.[25]

Sample size and selection: The sample size was estimated using formula of Hulley (2007) with correlation-coefficient.[26] The formula was $n=([Z_{\alpha} + Z_{\beta})/C)^2 + 3$, where, n = minimum sample size, α is threshold probability for rejecting the null hypothesis (Type I error rate), β is probability of failing to reject the null hypothesis under the alternative hypothesis (Type II error rate), Z_{β} = the standard devitation for α, Z_{β} = the standard devitation for β, C = 0.5. ln ([1 + r]/[1 - r]), r = expected correlation coefficient. The accepted minimum level of significance (α) to estimate the number of sample size was 0.05 with power of 0.80 (1-β).

The minimum effect size or correlation coefficient was set at 0.3.[27] The estimated sample size was 85. A systematic random sampling technique was applied to include participants into the study. The sampling fraction (k) was obtained by dividing daily average number of patients attending outpatient department for the maximum sample in one day, 244/6 = 37. Based on the patients' medical registration number, the first patient in each day was selected according to a random number for the lottery "k", and the rest were selected at a regular interval using systematic random sampling method. Data was collected during February and March, 2019.

This study was approved by the Ethical Committee for Human research at Khon Kaen University, Thailand (HE622258) and Institutional Ethics Committee of Hue University of Medicine and Pharmacy, Vietnam (H2019/385). The participants were explained about purpose, benefit, protection of human subject and their right to withdraw. A written informed consent was obtained from all the participants during their enrolment in the study.

Research instruments: The research instruments included Demographic Data Questionnaire, Hypertension Fact Knowledge Questionnaire (HFQ), Self-efficacy for Managing Chronic Disease 6-item Scale (SEMCD 6), Beliefs about Medicines Questionnaire (BMQ)-Specific and Hypertension Self-Management Behavior Questionnaire (HSMBQ). The original English questionnaire was translated into the Vietnamese language by using back-translation method.[28] The reliability index of the questionnaires was 0.73, 0.93, 0.73, and 0.95, respectively. The questionnaire on demographic data were designed to collect data such as age, gender, education level, personal income, time since hypertension diagnosis, employment status, marital status, insurance and living status. Hypertension knowledge was measured by the HFQ.[29] It consists of fifteen questions, each response was interpreted as "yes", "no" or "do not know", when correct response was given a score of 1, and incorrect or "do not know" response was given score of 0. A total score for the HFQ was calculated by summing up the 15 question scores to create a continuous variable, with possible score ranging from 0 to 15.

The Self-Efficacy for Managing Chronic Disease 6 (SEMCD 6)-item scale developed by Stanford Patient Education Center was applied to evaluate self-efficacy.[30] Next, SEMCD 6 is made up of 6-items on a visual analog scale, ranging from 1 (not at all confident) to 10 (totally confident). The score for the scale is the mean of the six items. Higher number indicates higher self-efficacy.

Treatment beliefs were assessed using the BMQ-Specific developed by Horne et al., (1999).[21] The BMQ-Specific is a 10-item scale that evaluates two aspects: patients' beliefs about their medications necessary (Specific-Necessity subscale) and patients' concerns about the adverse effects of taking their medicines (Specific-Concerns subscale). A 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used for scoring. Total score was calculated by summing all items on each subscale, ranging between 5 and 25. A greater scores on the Specific-Necessity subscale shows stronger beliefs in the medications necessity, while higher scores on the Specific-Concerns subscale

illustrates that patients are more concerned about their medication. The overall treatment beliefs was identified by calculating the difference between the Necessity and Concern subscale scores.

Furthermore, SMBs measurements was conducted using the Hypertension Self-Management Behavior Questionnaire (HSMBQ), which was modified by Akhter[12] from an existing tool.[31] In brief, HSMBQ consists of 40 item-questions that have different aspects of self-management behaviors under 5 components. The participants were asked to answer how often they have performed things related to SMBs in the last months. Answers to all items were recorded on a 4 point scale as 1 (never), 2 (rarely), 3 (sometimes) and 4 (always). An overall score was derived from the mean of all questions to create a continuous variable, with possible scored ranging from 1.00 to 4.00 and categorized as a low level (1.00-2.00), moderate (2.01-3.00) and high level (3.01-4.00) to assess the level of self-management behaviors.

Data collection and analysis: The individuals with history of uncontrolled hypertension and/or under hypertension management were selected with the help of head nurse. Next, patients were asked for their interest to participate in the study, after which a consent form to access medical records and blood pressure measurement was signed. Blood pressure was measured manually using mercury sphygmomanometer after resting for 5 minutes in the seating position. Next, immediate past blood pressure was extracted from patient's medical record; average of current and past reading was calculated and tallied with our criteria for uncontrolled hypertension. The questionnaire was filled up and dropped into the collection box by the participants. A private section of the outpatient department was designated for the study to maintain privacy and proper environment for data collection. The approximate time taken for entire procedure was about 55 minutes. This process was repeated until the sample size was achieved. Finally, data were analyzed with the Statistical Package for Social Science (SPSS version 23). The independent variables were hypertension knowledge, self-efficacy, and treatment beliefs while self-management behaviors was the dependent variable. Descriptive statistics such as frequency, percentage, range, Mean, Standard deviation (SD) was used for all variables. Continuous variables were analyzed for bivariate relationships by Pearson's correlation coefficient. A p value of <0.05 was considered statistically significant in all analyses.

Results

Demographic data: The Mean age of the participants was 59.3 years. Half of the participants (51.6%) were in 51-60 years age, but 37.6% were elderly. Only 23.5% of participants had post high school education. The number of retired participants was 37 (43.5%) and 7 (1.2%) were unemployed. Over 94% of patients were married and most of them (91.8%) were living with their spouse and/or children. In term of income, 33% had a monthly income of less than 2,440,000 Vietnamese Dong (VND). Moreover, most of participants were covered by insurance. Nearly half of the participants (48.2%) were on anti-hypertension treatment for 1 to 5 years (Table 1).

Table 1 Demographic characteristics of the study's participants (N=85)

Factor	Characteristics	Frequency	Percentage
Gender	Male	39	45.9
	Female	46	54.1
Age	< 40 years	2	2.4
	40-50 years	7	8.2
	51-60 years	44	51.8
	61-70 years	28	32.9
	>70 years	4	4.7
	Mean ± SD 59.3 ±7.2		
Marital status	Not yet married	2	2.4
	Married	80	94.1
	Separated/Divorced	2	2.4
	Widowed	1	1.2
Education level	Primary school	11	12.9
	Secondary school	26	30.6
	High school	28	32.9
	Intermediate colleges or technical school	8	9.4
	College graduate/University	12	14.1
Income	≤ 2.440.000 VND	28	32.9
	2.441.000 - 3.266.000 VND	16	18.8
	3.267.000 - 4.730.000 VND	11	12.9
	4.731.000 - 10.211.000 VND	25	29.4
	≥ 10.212.000 VND	5	5.9
Living status	Alone	7	8.2
	Family	78	91.8
Employment status	Unemployed	1	1.2
	Full-time employed	22	25.9
	Part-time employed	22	25.9
	Retired	37	43.5
	Other	3	3.5
Duration of illness	< 12 months	15	17.6
	12 - 60 months	41	48.2
	61 - 120 months	21	24.7
	> 120 months	8	9.4
	Mean ± SD 61.06 ±53.3		
Health insurance	Government insurance totally covers	73	85.9
	Government insurance cover a part	11	12.9
	No insurance	1	1.2

Level of self-management behaviors: The total Mean score of self-management was 2.37 (SD=0.54), indicating a moderate level of SMBs. The highest score was for adherence to recommended regime (2.89±0.58), followed by self-integration (2.41±0.56), interaction with health professionals and significant others (2.34±0.61), self-mornitoring (2.18±0.75) and self-regulation was the lowest (2.01±0.64). The SMBs of more than half of the participants was in moderate level, but 17.6 % displayed a high level (Table 2).

Table 2 The level of SMBs among participants (N=85)

Mean of SMBs	Frequency	Percentage	Level
1.00 - 2.00	23	27.1	Poor
2.01 - 3.00	47	55.3	Moderate
3.01 - 4.00	15	17.6	High

The relationships between selected factors and SMBs: As shown in Table 3, there was a strong positive relationship between hypertension knowledge (r=0.617, p<0.01), self-efficacy (r=0.675, p<0.01) and SMBs. However, treatment beliefs (r=0.172, p>0.05) had no association with SMBs.

Table 3 Relationships between selected factors and SMBs (N=85)

Variables	Knowledge	Self-efficacy	Treatment beliefs
Knowledge	1.000		
Self-efficacy	0.727**	1.000	
Treatment beliefs	0.112	0.087	1.000
SMBs	0.617**	0.675**	0.172

*** Correlation is significant at the 0.01 level (2-tailed).*

Discussion

Complications and mortalities associated with hypertension can be reduced with proper adherence to SMBs.[32] However, literature shows that motivating patients to achieve high adherence to SMBs is challenging.[33] In this point of view, assessment of patients' engagement to SMBs and related factors is crucial for clinicians working in the management of hypertension. This study found that the level of self-management behaviors in uncontrolled hypertension was at moderate level and there were positively correlated between hypertension knowledge and self-efficacy with self-management behaviors, by contrast, treatment beliefs were not related to self-management behaviors.

In this study, we found that SMBs in uncontrolled hypertension was at a moderate level, which were similar to those obtained by Akhter, (2010) who investigated self-management

behaviors in hypertensive patients in Bangladesh.[12] However, in comparison with the finding of Jandeekaewsakul et al., (2018) in patients with uncontrolled essential hypertension in Thailand our result was higher.[34] The possible reasons for this difference could be the differences in the sources of information, culture and society among countries.

Compared to another study in Vietnam, our finding matched with a recently published local study but using a different questionnaire.[35] Contrarily, our score was lower than the study using same research tool in elderly hypertension patients in Vietnam.[18] However, the results from both the above studies are not comparable with current study, as they used different tool or populations. Hospitals in Vietnam have shortage for healthcare professionals.[36] The patients flow at our study setting was around 220 per day and single nurse was responsible for consultation and administrative work of patients. It was beyond the capacity of nurse to efficiently deal each patient. As a result, patients might been unable to discuss their health and self-management strategies, and get comprehensive education. Beside, in our study, most of patients are at secondary and high school (63.5%), just only 23.5% of the respondents had intermediate, college education (or higher level). Patients with less education may not fully understand the information given by health care providers. Most importantly, financial concerns influencing the ability to self-management has also been reported.[37] In our study, most of patients were having low to middle income. Insufficient income might have limited their ability to purchase healthy food, medications, equipment to check blood pressure and transportation to healthcare provider appointments.

We observed a significant positive correlation between hypertension knowledge and SMBs ($r=0.617$, $p<0.01$). This finding is supported by previous studies mentioning that more knowledgeable patients have shown to be more likely to implement positive lifestyle and SMBs.[15,38] It was also conveyed that education advantages to understand, prevent and control disease resulting in better self-management.[17] Similar findings were reported among elderly hypertension patients in Vietnam.[18] Contrarily, some studies state that knowledge received may not be translated into behavior change and do not predict an individuals' ability to adopt SMBs.[35,39] Our results showed that self-efficacy have a significant positive correlation with SMBs ($r=0.675$, $p<0.01$). The positive relationship between Self-efficacy and self-management behaviors was also confirmed in diverse hypertensive groups, that a higher level of confidence in patients' ability to develop management behaviors can significantly contribute to better self-management and hypertension control.[15,19,40,41] This result was also supported by the theory of Bandura, which mention that self-efficacy is a focal determiner factor having effect on health behavior by impacting determiner factors both directly and indirectly. Self-efficacy is an individual's confidence in carrying out a special task or behavior in a given situation. Those of high efficacy consider obstacles as surmountable by improving self-management abilities and persevering efforts.[42] A higher level of confidence in patient to develop management behaviors is shown to significantly contribute in better self-management and hypertension control.[15,40]

There was no correlation between treatment beliefs and SMBs in the current study (r=0.172, p>0.05).This finding does not corroborate to a study in which patients with strong beliefs in necessity of their medication and with fewer concerns about taking their medication have a lower frequency of non-adherence behaviors.[43] Moreover, a cross-sectional research conducted among patients treated for chronic disease reported that negative beliefs toward medications have a substantial negative effect with about 25 percent of the variance in adherence to treatment regimen.[44] It should be noted that SMBs include not only medication but also right behaviors of lifestyle modification. In addition, the results from both the above studies are not comparable with our study, as they are different in target populations. This could explain our negative correlation compared to other reports.

This study has some limitations. Our descriptive design can only identify the relationship between variables. Thereby, the ability to identify the relationship of cause and effect between variables were limited. So future studies are recommended to investigate relationship in a higher level as directly or indirectly each factors or predicting factors affect self-management behaviors in uncontrolled hypertension patients.

Conclusions

The current study revealed that the uncontrolled hypertension patients were having moderate level of SMBs. A positive relationship between hypertension knowledge, self-efficacy and self-management behaviors was revealed among patients. Our findings can play a fundamental role as a collection of evidence for future nursing research, especially in interventional research.

Implications

The findings of this research can help nurse and other healthcare provider to have an overview of the level of self-management behaviors in Vietnamese population. The research can be expanded to have a bigger view in the country. Moreover, it can aid to design and implement interventions to increase hypertension knowledge among the patients.

Acknowledgement

The authors would like to thank Research and Training Center for Enhancing Quality of Life of Working-Age People, Faculty of Nursing, KKU for research funding.

References

1. Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, et al. Global disparities of hypertension prevalence and control: A systematic analysis of population-based studies from 90 countries. Circulation 2016; 134(6): 441-50.
2. Quoc CT, Van BL, Anh TN, Van TV, Minh QN, Yang SH, et al. Associated factors of hypertension in women and men in Vietnam: A cross-sectional study. Int J Environ Res Public Health 2019; 16(23): 4714.
3. Van MH, Viet NL, Sinh CT, Hung PN, Mong NNT, Hung NV, et al. Blood pressure screening during the May Measurement Month 2017 programme in Vietnam-South-East Asia and Australasia. Eur Heart J Suppl 2019; 21(Suppl D): 127-9.

4. Hoa N, Ich TD, That TT. Prevalence trend of hypertension and risk factors of cardiovascular disease among people aged 25 and older in Da Nang city between 2011 and 2015. Vietnam Journal of Preventive Medicine 2017; 27(8): 55.
5. Nguyen TPL, Nguyen TBY, Nguyen TT, Vinh HV, Le HH, Schuiling-Veninga CCM, et al. Direct costs of hypertensive patients admitted to hospital in Vietnam' a bottom-up micro-costing analysis. BMC Health Services Research 2014; 14(1): 514.
6. Son PT, Quang NN, Viet NL, Khai PG, Wall S, Weinehall L, et al. Prevalence, awareness, treatment and control of hypertension in Vietnam-results from a national survey. Journal of Human Hypertension 2012; 26(4): 268-80.
7. World Health Organization. A global brief on hypertension : silent killer, global public health crisis: World Health Day 2013 [Internet]. 2013 [cited 2020 May 3]. Available from: https://apps.who.int/iris/handle/10665/79059.
8. Hien HA, Tam NM, Tam V, Derese A, Devroey D. Prevalence, awareness, treatment, and control of hypertension and its risk factors in (Central) Vietnam. International Journal of Hypertension 2018; 6326984: 1-13. Available from: https://doi.org/10.1155/2018/6326984
9. Hoang VM, Tran QB, Vu THL, Nguyen TKN, Kim BG, Pham QN, et al. Patterns of raised blood pressure in Vietnam: Findings from the WHO STEPS survey 2015. Int J Hypertens 2019; 1219783: 1-7. Available from: https://doi.org/10.1155/2019/1219783
10. Ha DA, Goldberg RJ, Allison JJ, Chu TH, Nguyen HL. Prevalence, awareness, treatment, and control of high blood pressure: A population-based survey in Thai Nguyen, Vietnam. PLoS One 2013; 8(6): e66792.
11. Qu Z, Parry M, Liu F, Wen X, Li J, Zhang Y, et al. Self-management and blood pressure control in China: A community-based multicentre cross-sectional study. BMJ Open 2019; 9(3): e025819.
12. Akhter N. Self-management among patient with hypertension in Bangladesh [thesis]. Hat Yai: Prince of Songkla Univ; 2010.
13. Intarakamhang U, Sutipan P, Kittipichai W, Macaskill A. Effects of self-management program on healthy lifestyle behaviors among elderly with hypertension. The Journal of Behavioral Science 2018; 13(2): 38-50.
14. Maciejewski ML, Bosworth HB, Olsen MK, Smith VA, Edelman D, Powers BJ, et al. Do the benefits of participation in a hypertension self-management trial persist after patients resume usual care? Circ Cardiovasc Qual Outcomes 2014; 7(2): 269-75.
15. Ding W, Li T, Su Q, Yuan M, Lin A. Integrating factors associated with hypertensive patients' self-management using structural equation modeling: a cross-sectional study in Guangdong, China. Patient Prefer Adherence 2018; 12: 2169-78.
16. Penaloza-Ramos MC, Jowett S, Mant J, Schwartz C, Bray EP, Sayeed Haque M, et al. Cost-effectiveness of self-management of blood pressure in hypertensive patients over 70 years with suboptimal control and established cardiovascular disease or additional cardiovascular risk diseases (TASMIN-SR). Eur J Prev Cardiol 2016; 23(9): 902-12.

17. Babaee Beigi MA, Zibaeenezhad MJ, Aghasadeghi K, Jokar A, Shekarforoush S, Khazraei H. The effect of educational programs on hypertension management. Int Cardiovasc Res J 2014; 8(3): 94-8.
18. Truong PV, Jullamate P, Piphatvanitcha N. Factors related to self-management behaviours in hypertensive older adults in Haiduong province, Vietnam. Journal of Nursing and Health Sciences 2016; 10(3): 56-64.
19. Ilkafah I, Titi Iswanti A, Nurul Anugrah R. Analysis of factors related to self management behavior (SMB) in hypertensive patients. Paper presented at 8th international nursing conference on education, practice and research development in nursing (INC);Surabaya, Indonesia; 2017.
20. Udlis KA. Self-management in chronic illness: concept and dimensional analysis. Journal of Nursing and Healthcare of Chronic Illness 2011; 3(2): 130-9.
21. Horne R, Weinman J, Hankins M. The beliefs about medicines questionnaire: The development and evaluation of a new method for assessing the cognitive representation of medication. Psychol Health 1999; 14(1): 1-24.
22. MacInnes J. Relationships between illness representations, treatment beliefs and the performance of self-care in heart failure: a cross-sectional survey. Eur J Cardiovasc Nurs 2013; 12(6): 536-43.
23. Niriayo YL, Ibrahim S, Kassa TD, Asgedom SW, Atey TM, Gidey K, et al. Practice and predictors of self-care behaviors among ambulatory patients with hypertension in Ethiopia. PLoS One 2019; 14(6): e0218947.
24. Pangman VC, Sloan J, Guse L. An examination of psychometric properties of the mini-mental state examination and the standardized mini-mental state examination: implications for clinical practice. Appl Nurs Res 2000; 13(4): 209-13.
25. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo Jr JL, et al. The seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure: The JNC 7 report. JAMA 2003; 289(19): 2560-72. doi: 10.1001/jama.289.19.2560.
26. Hulley SB. Designing clinical research. 3rd ed. Philadelphia: Lippincott Williams & Wilkins; 2007.
27. Cohen J. A power primer. Psychol Bull 1992; 112(1): 155-9.
28. Cha ES, Kim KH, Erlen JA. Translation of scales in cross-cultural research: Issues and techniques. J Adv Nurs 2007; 58(4): 386-95.
29. Saleem F, Hassali MA, Shafie AA, Atif M, Ul Haq N, Aljadhey H, el al. Disease related knowledge and quality of life: A descriptive study focusing on hypertensive population in Pakistan. South Med Rev 2012; 5(1): 47-52.
30. Lorig KR, Holman H. Self-management education: History, definition, outcomes, and mechanisms. Ann Behav Med 2003; 26(1): 1-7.
31. Lin CC, Anderson RM, Chang CS, Hagerty BM, Loveland-Cherry CJ. Development and testing of the diabetes self-management instrument: A confirmatory analysis. Res Nurs Health 2008; 31(4): 370-80.

32. James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, et al. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA 2014; 311(5): 507-20.
33. Flynn SJ, Ameling JM, Hill-Briggs F, Wolff JL, Bone LR, Levine DM, et al. Facilitators and barriers to hypertension self-management in urban African Americans: Perspectives of patients and family members. Patient Prefer Adherence 2013; 7: 741-9.
34. Jandeekaewsakul P, Watthayu N, Suwonnaroop N. Factors predicting self-management behavior among patients with uncontrolled essential hypertension. Nursing Science Journal of Thailand 2018; 36(1): 31-43.
35. Anh DTT, Shih YW, Miao NF, Liao YM, Chuang YH, Chang HJ, et al. Differences of self-management in controlling blood pressure between patients with hypertension and healthy people in Vietnam. POJ Nursing Practice & Research 2017; 1(1): 1-8.
36. WHO. Human resources for health country profiles: Viet Nam [Internet]. 2016 [cited 2020 May 3]. Available from https://iris.wpro.who.int/handle/10665.1/13476.
37. Long Y, Li LW. "How would we deserve better?" Rural-urban dichotomy in health seeking for the chronically ill elderly in China. Qual Health Res 2016; 26(12): 1689-704.
38. Huda S, Amatayakul A, Karuncharernpanit S. Factors associated with self-care management among adult people with hypertension in Jepara, central java, Indonesia. the 3rd annual conference of the Asian network for public opinion research (ANPOR) Bangkok, Thailand; 2015.
39. Lee JE, Han HR, Song H, Kim J, Kim KB, Ryu JP, et al. Correlates of self-care behaviors for managing hypertension among Korean Americans: A questionnaire survey. Int J Nurs Stud 2010; 47(4): 411-7.
40. Warren-Findlow J, Seymour RB, Brunner Huber LR. The association between self-efficacy and hypertension self-care activities among African American adults. J Community Health 2012; 37(1): 15-24.
41. Yoo H, Kim CJ, Jang Y, You M. Self-efficacy associated with self-management behaviours and health status of South Koreans with chronic diseases. International Journal of Nursing Practice 2011; 17(6): 599-606.
42. Bandura A. Health promotion by social cognitive means. Health Education & Behavior 2004; 31(2): 143-64.
43. Cea-Calvo L, Marin-Jimenez I, de Toro J, Fuster-RuizdeApodaca MJ, Fernandez G, Sanchez-Vega N, et al. Association between non-adherence behaviors, patients' experience with healthcare and beliefs in medications: a survey of patients with different chronic conditions. Curr Med Res Opin 2020; 36(2): 293-300.
44. Lemay J, Waheedi M, Al-Sharqawi S, Bayoud T. Medication adherence in chronic illness: do beliefs about medications play a role? Patient Prefer Adherence 2018; 12: 1687-98.