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ORIGINAL ARTICLE

Health literacy and self-management behaviors among poorly controlled hypertension patients at the primary care level in an urban community of Nakhon Ratchasima Province, Thailand

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Abstract

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Understanding the associated factors of self-management behaviors (SMBs) allows appropriate strategies to promote good SMBs to be formulated. This study aimed at exploring health literacy and other factors associated with SMBs among poorly controlled HT patients at the primary care level in an urban community of Nakhon Ratchasima Province, Thailand. A cross-sectional study was conducted from July to October 2017. The respondents were 122 poorly controlled HT patients, and the data were collected from face-to-face interviews. The data analysis was conducted using descriptive statistics, Chi-square tests, and multiple logistic regression with a significance level of 0.05.

The results revealed that 60.8% reported adequate SMBs. Of those, more than two-thirds had the following characteristics: female, elderly, living alone, and low education. Age group ($p = 0.047$) and drinking history ($p = 0.030$) were significantly associated with SMBs. Elderly patients were 3.77 times more likely to engage in adequate SMBs than younger ones (95%CI=1.44-9.88). Likewise, nondrinkers were 3.96 times more likely to have adequate SMBs than drinkers (95% CI=1.30-12.02). Poorly controlled HT patients who got a higher one score of a self-observation were 1.81 times more likely to enact adequate SMBs (95% CI=1.06-3.12).

In conclusion, older age, nondrinking status, and higher self-observation scores were predictors of adequate SMB among poorly controlled HT patients in an urban community. Promoting good SMB by enacting in self-care for poorly controlled HT, especially for drinkers and those aged under 60 years is essential.

Keywords: home blood pressure, health literacy, hypertensive, uncontrolled

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ความแตกฉานทางสุขภาพและพฤติกรรมการจัดการตนเองของผู้ป่วยความดันโลหิตสูงที่ควบคุมความดันโลหิตไม่ได้ในระดับบริการปฐมภูมิของชุมชนเขตเมือง จังหวัดนครราชสีมา ประเทศไทย

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บทคัดย่อ

สาวิตรี วิษณุโยธิน ฉวีวรรณ บุญสุยา สำลี เปลี่ยนบางช้าง รัตนา สำโรงทอง และเสาวนีย์ ทองนพคุณ ความแตกฉานทางสุขภาพและพฤติกรรมการจัดการตนเองของผู้ป่วยความดันโลหิตสูงที่ควบคุมความดันโลหิตไม่ได้ในระดับบริการปฐมภูมิของชุมชนเขตเมือง จังหวัดนครราชสีมา ประเทศไทย ว. สาธารณสุขและการพัฒนา 2562;17(1):1-13

การเข้าใจปัจจัยที่สัมพันธ์กับพฤติกรรมการจัดการตนเองจะทำให้สามารถจัดทำกลยุทธ์ที่เหมาะสมในการส่งเสริมพฤติกรรมการจัดการตนเอง การศึกษานี้มุ่งหวังในการหาปัจจัยที่สัมพันธ์กันระหว่างความแตกฉานทางสุขภาพและพฤติกรรมการจัดการตนเองของผู้ป่วยความดันโลหิตสูงที่ควบคุมความดันโลหิตไม่ได้ในระดับบริการปฐมภูมิของชุมชนเขตเมือง จังหวัดนครราชสีมา ประเทศไทย การศึกษาภาคตัดขวางได้ถูกดำเนินการระหว่างเดือนกรกฎาคมถึงเดือนตุลาคม พ.ศ. 2560 กลุ่มตัวอย่างเป็นผู้ป่วยความดันโลหิตสูงที่ควบคุมความดันโลหิตไม่ได้จำนวน 122 ราย และเก็บข้อมูลโดยวิธีการสัมภาษณ์จากผู้ให้คำตอบ สถิติที่ใช้ในการวิเคราะห์ข้อมูลเป็นสถิติเชิงพรรณนา การทดสอบไคสแควร์และการถดถอยโลจิสติคพหุคูณด้วยระดับนัยสำคัญทางสถิติเท่ากับ 0.05

ผลการศึกษาพบว่าร้อยละ 60.8 มีพฤติกรรมในการจัดการตนเองที่เพียงพอ ในจำนวนนี้พบมากกว่าสองในสามเป็นเพศหญิง อยู่ในวัยสูงอายุ อาศัยอยู่ในบ้านเพียงลำพังและมีระดับการศึกษาต่ำ พบช่วงอายุ (p = 0.047) ประวัติการดื่มเครื่องดื่มแอลกอฮอล์ (p=0.030) มีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับพฤติกรรมการจัดการตนเอง ผู้ป่วยสูงอายุมีแนวโน้มในการมีพฤติกรรมการจัดการตนเองเพียงพอ 3.77 เท่าเมื่อเปรียบเทียบกับผู้ป่วยที่มีช่วงอายุที่น้อยกว่า (95%CI=1.44-9.88) เช่นเดียวกับผู้ป่วยที่ไม่มีประวัติดื่มเครื่องดื่มแอลกอฮอล์มีแนวโน้มในการมีพฤติกรรมการจัดการตนเองเพียงพอ 3.96 เท่าเมื่อเปรียบเทียบกับผู้ป่วยที่มีประวัติดื่มเครื่องดื่มแอลกอฮอล์ (95% CI=1.30-12.02) ผู้ป่วยความดันโลหิตสูงที่ควบคุมความดันโลหิตไม่ได้ที่มีคะแนนความแตกฉานทางสุขภาพหมวดการสังเกตตนเองเพิ่มขึ้น 1 คะแนน จะมีแนวโน้ม 1.81 เท่าในการมีพฤติกรรมการจัดการตนเองเพียงพอ (95% CI=1.06-3.12)

สรุปว่าช่วงวัยสูงอายุ การไม่มีประวัติดื่มเครื่องดื่มแอลกอฮอล์ การเพิ่มขึ้นของคะแนนความแตกฉานทางสุขภาพหมวดการสังเกตตนเอง เป็นปัจจัยในการทำนายแนวโน้มการมีพฤติกรรมการจัดการตนเองเพียงพอของผู้ป่วยความดันโลหิตสูงที่ควบคุมความดันโลหิตไม่ได้ในระดับบริการปฐมภูมิของชุมชนเขตเมือง ดังนั้นการเพิ่มความแตกฉานทางสุขภาพหมวดการสังเกตตนเองของผู้ป่วยความดันโลหิตสูงที่ควบคุมความดันโลหิตไม่ได้มีความสำคัญต่อการส่งเสริมให้ผู้ป่วยมีพฤติกรรมการจัดการตนเองที่ดีและมีความสำคัญโดยเฉพาะกลุ่มผู้ป่วยที่มีประวัติดื่มเครื่องดื่มแอลกอฮอล์และอายุต่ำกว่า 60 ปี

คำสำคัญ: ความดันโลหิตที่บ้าน ความแตกฉานทางสุขภาพ ความดันโลหิตสูง ไม่มีการควบคุม

Introduction

The prevalence of hypertension (HT) and the rates of undiagnosed, untreated, and uncontrolled HT were higher in low- and middle-income countries than high-income countries[1]. HT is the major risk factor for cardiovascular disease (CVD), which results in coronary heart disease, congestive heart failure (CHF), stroke, renal failure, and peripheral arterial disease[2]. HT accounts for ≥ 45% of deaths from heart disease and 51% of deaths from stroke[1]. In Thailand, 69.8% of those who have HT are unaware of their condition; of those who are aware of the condition, only 36.6% can control their blood pressure (BP)[3]. The stroke- and ischemic heart disease (IHD)-specific death rates doubled in 2002–2014[4]. HT was the second leading cause of death in Thailand in 2009[5]. As the CVD risk doubles with each incremental BP increase of 20/10 mmHg,[6] poorly controlled HT is a challenge[7].

Health literacy is the ability of people in accessibility, understanding, evaluation and applying the information for making decision in health care, promote health and prevent the diseases[8-15]. Many factors are associated with poorly controlled HT[16-17] including health literacy, which is an essential factor associated with poorly controlled HT; hypertensive and coronary patients in urban primary care units (PCUs) with low levels of health literacy are 1.75 times more likely to have uncontrolled BP than those with higher scores[18]. A review presented the role of health literacy in chronic disease management on knowledge, self-efficacy, and belief except for self-management skills[19]. Self-management is the process of engaging in specific behaviors enhancing a person's ability to manage a chronic illness or risk behaviors[20]. Therefore SMB refer to participants' perception about the importance of healthy diet, regular exercise, and monitoring blood pressure; frequency of self-management behaviors including how often salt is added to meals, frequency and intensity of exercise, and how often participants check their blood pressure[21]. Lack of information about the disease and general knowledge of how to care for oneself to control it as well as lack of the ability to comprehend it is often problems in patients with poor health literacy. Such patients are less likely to comprehend the relationships between exercise, dietary salt, body weight, and BP[22]. In contrast, one study presented a 3-point increase in the Brief Health Literacy Screen scores is related to a 0.74 mmHg higher systolic BP (SBP) and 0.30 higher mmHg diastolic BP[23]. In a nonrandomized prospective cohort trial of uncontrolled HT patients, both the low and high health literacy groups showed a significant decrease in mean SBP, but there was no significant difference between the groups[24]. A study on the health literacy level of village health volunteers (VHVs) in Thailand showed that chronic patients' self-care scores were higher than the average results of the countrywide survey[25]. However, there was a contradiction in the relationship between health literacy and HT control, and little research has explored the associated factors of self-management behaviors (SMBs) especially health literacy in poorly controlled HT at the primary care level in Thai urban communities. Elucidating these factors can help developing appropriate interventions. Therefore, this cross-sectional study aimed to determine associated factors and health literacy with SMBs among poorly controlled HT patients at the primary care level in an urban community in Thailand.

Methods

Study area

A cross-sectional study was conducted from July to October 2017 in an urban community of Nakhon Ratchasima, which is the second largest province in Thailand. This community is in the center of this province, which comprises 66,000 inhabitants. It is under the accountability of five PCUs. Two catchment areas of the PCUs were purposively selected as the study area due to the high population and high prevalence of HT.

Sample size and sampling method

A formula of estimating a finite population proportion[26] was used to calculate the sample size, with a 95% confidence level (CI), proportion of good SMB of 0.074 (from pilot study), and maximum allowable error of 0.05. The minimum sample size was 96, and a sample size of 125 was determined after adding 30% to compensate for the expected attrition. Sample recruitment was performed by a computerized search in a health database and family nurse checking of the selection criteria, as follows: age of 30–70 years, registered patient, diagnosed with essential HT, and average clinical BP of ≥140/90 mmHg on the last three visits. The exclusion criteria were terminal illnesses, psychiatric conditions, postural hypotension, and the use of weight loss medication. An eligible sample of 1,029 poorly controlled HT patients was randomized using computer software. These 125 individuals were invited to enroll in the study, 122 respondents signed a consent form to indicate their willingness to participate.

Instruments

An adjusted questionnaire was employed in this study comprising the three following sections: 1) demographic data, 2) health literacy (adapted from a self-administered questionnaire on Thai people's health literacy level constructed by the Health Systems Research Institute [HSRI] of Thailand)[27], and 3) SMBs[21]. The questions were originally constructed in English and translated into Thai, except part 2, which was originally in Thai. Family nurses and related staff at urban PCUs read and edited the questions to make the language clearer. Following this, the questionnaire was sent to three experts for validity improvement, resulting in scores of 0.8 and 0.9 on the item objective congruence indexes for parts 1 and 3, respectively. Next, the questionnaire was adjusted and tested for reliability. There were 58 questions, as follows: 1) 16 questions on demographic characteristics, 2) 20 questions on health literacy (Cronbach's alpha of literacy and potential literacy: 0.960, self-care of chronic patients: 0.861), and 3) 22 questions on SMBs (Cronbach's alpha: 0.881). The questionnaire was applied to collect the data via face-to-face interviews, which took about 30 minutes. For smoking history in this study refer to the self-reporting of smoking which divided into never smoking, ever smoked, and currently smoking. Drinking history refer to the self-reporting of alcoholic drinking which divided into never drinking, ever drank, and currently drinking.

The total possible score for literacy and potential literacy was 4, and this was divided into poor (1.1–2.0), moderate (2.1–3.0), and good (3.1–4.0)[27]. The total possible score for self-care was 10, but the HSRI does not categorize this score into groups[27]. The total

possible score for SMBs was 3, grouped by interval into inadequate (1-1.67), moderate (1.68-2.34) and adequate (>2.34) then regrouped into inadequate (≤2.34) and adequate (>2.34)[28].

Data analyses

Data analyses were conducted using the SPSS statistical package version 16 (SPSS Inc., Chicago, IL). Descriptive statistics, including the percentage, minimum, maximum, mean and standard deviation (SD), and median, were used for the analysis of demographic data, health literacy, and SMBs. Chi-square testing was carried out with a significance level of 0.05. Multiple logistic regression was employed to determine the associations of the characteristics and health literacy with SMBs. Odds ratio (OR) and its 95% CI were also calculated.

Ethical considerations

This study was reviewed and approved by the Institutional Review Board of Maharat Nakhon Ratchasima Hospital's Ethics Committee. Each respondent provided written informed consent, code names were used to protect the subjects' privacy, and the data were kept confidential.

Results

In total, 122 patients with poorly controlled HT enrolled after in the study. Table 1 shows that 60.8% of poorly controlled HT patients had adequate SMBs. the study. Table 2 presents that the patients who had adequate SMBs had moderate levels almost literacy and potential literacy. But they had low level of writing messages for others to understand. Adequate SMBs patients tend to had slightly higher level of almost literacy and potential literacy than inadequate SMBs patients except clear vision and going out independently. The level of experience sharing was 8.2, and the 8.38 for self-observation in adequate SMBs patients. Both score were a little higher than those who were inadequate SMBs patients.

Table 3 shows that the percentage of the female respondents who had adequate SMB was 66.7%, which was slightly higher than the result for males. The proportion of adequate SMB in elderly people was two-thirds, which was significantly higher than that of 35–59.9 years. Regarding marital status, 66.7% of single/separated/divorced/widowed respondents had adequate SMBs, which was slightly higher than the percentage of married/cohabiting individuals. Nearly two-thirds of poorly controlled HT patients who had a primary school or lower education, 1–4 family members, employment, and a universal coverage scheme had adequate SMBs, which was minimally higher than for respondents with a high school or higher education, 5–14 family members, no employment, and no universal coverage scheme. In term of smoking history, the proportion of smokers who had adequate SMBs was comparable to that of nonsmokers, at two-thirds. The percentage of nondrinkers who had adequate SMBs was significantly higher than that of drinkers. Roughly half of the patients with comorbidities, such as hyperlipidemia, kidney disease, and cerebrovascular disease, had adequate SMBs. The proportion of poorly controlled HT patients with self-drug administration and self-drug reminder was two-thirds, which was comparable to that for BMI.

Table 4 presents the full SMB multiple logistic regression model, which shows sensitivity of 86.8%,

Table 1 Distribution of poorly controlled hypertension (HT) patients by self-management behaviors

Dependent Variable	Number (%)
Self-management behaviors	
(n = 120)	
Inadequate	47 (39.2)
Adequate	73 (60.8)

Table 2 Median and interquartile range of the health literacy for chronic diseases of poorly controlled hypertension (HT) patients

Variables	Self-management behaviors	
	Inadequate Median (Interquartile range)	Adequate Median (Interquartile range)
Health Literacy for Chronic Diseases (n=122)		
Literacy and Potential Literacy		
Writing messages for others to understand	1.00 (1.00–1.00)	1.00 (1.00–2.00)
Reading comprehension		
Talking to others understandably	1.00 (1.00–2.00)	2.00 (1.00–2.00)
Heard voices clearly	2.00 (1.00–2.00)	2.00 (1.00–3.00)
Clear vision	2.00 (1.00–2.00)	2.00 (2.00–2.75)
Daily activities	2.00 (1.00–2.00)	2.00 (1.00–2.00)
Going out independently	2.00 (1.00–2.00)	2.00 (1.00–3.00)
Self-care of Chronic Patients	2.00 (2.00–3.00)	2.00 (2.00–3.00)
Experience sharing	8.00 (6.60-9.00)	8.20 (6.60–9.40)
Self-observation	7.50 (6.88–8.75)	8.38 (7.28–9.22)

Table 3 Distributions of poorly controlled hypertension (HT) patients classified by self-management behaviors (SMBs)

Variables	SMBs		*p*-value of Chi-square test
	Inadequate Number (%)	Adequate Number (%)	
Sex			
Male	23 (47.9)	25 (52.1)	0.109
Female	24 (33.3)	48 (66.7)	
Age (years)			
35–59.9	21 (51.2)	20 (48.8)	0.047
≥ 60	25 (32.5)	52 (67.5)	
Marital Status			
Single/separated/divorced/widowed	14 (33.3)	28 (66.7)	0.337
Married/co-inhabiting	33 (42.3)	45 (57.7)	
Educational Levels			
Primary school or lower	33 (37.1)	56 (62.9)	0.427
High school or higher	14 (45.2)	17 (54.8)	
Number of family members (persons)			
1–4	24 (36.9)	41 (63.1)	0.548
5–14	23 (41.8)	32 (58.2)	
Occupation			
Unemployed	22 (45.8)	26 (54.2)	0.222
Self-employed/employed	25 (34.7)	47 (65.3)	
Health Insurance			
No universal coverage scheme	7 (46.7)	8 (53.3)	0.525
Universal coverage scheme	40 (38.1)	65 (61.9)	
Smoking History			
Smoker	2 (40.0)	3 (60.0)	1.000[f]
Nonsmoker	41 (37.6)	68 (62.4)	
Drinking History			
Drinker	16 (57.1)	12 (42.9)	0.030
Nondrinker	30 (34.1)	58 (65.9)	
Comorbidities			
1. Hyperlipidemia	34 (44.7)	42 (55.3)	0.100
2. Diabetes mellitus	23 (37.7)	38 (62.3)	0.739
3. Kidney disease	7 (50.0)	7 (50.0)	0.377
4. Ischemic heart disease (IHD)	4 (66.7)	2 (33.3)	0.209[f]
5. Cerebrovascular disease	2 (50.0)	2 (50.0)	0.647[f]
6. Arrhythmia	2 (66.7)	1 (33.3)	0.561[f]
Self-drug Administration	46 (39.0)	72 (61.0)	1.000
Self-drug Reminder	42 (37.8)	69 (62.2)	0.709
Body Mass Index (BMI)			
Normal	7 (41.2)	10 (58.8)	0.855
Overweight/obese	40 (38.8)	63 (61.2)	

[f] Fisher's exact test

Table 4 Association between independents variables and health literacy for chronic diseases with self-management behaviors (SMBs)[r] of poorly controlled hypertension (HT) patients

Independent variables	Adjusted odds ratio (95% CI)	p-value
Sex		
Male	1	0.393
Female	1.53 (0.58–4.07)	
Age (Years)		
35–59.9	1	0.007*
≥ 60	3.77 (1.44-9.88)	
Drinking history		
Drinker	1	0.015*
Nondrinker	3.96 (1.30–12.02)	
Ischemic heart disease (IHD)		
No IHD	1	0.114
IHD	0.20 (0.03–1.47)	
Hyperlipidemia		
No hyperlipidemia	1	0.020*
Hyperlipidemia	0.30 (0.11–0.83)	
Health literacy for chronic diseases		
Literacy and potential literacy (Score)		
Writing messages for others to understand	1.54 (0.84–2.81)	0.165
Daily activities	0.42 (0.15–1.17)	0.097
Going out independently	1.79 (0.77–4.17)	0.179
Self-care for chronic patients (Score)		
Experience sharing	0.65 (0.44–0.97)	0.035*
Self-observation	1.81 (1.06–3.12)	0.031*

* *p-value* < 0.05

[r] Reference: Inadequate self-management behaviors

specificity of 60.0%, and overall corrected prediction of adequate SMBs of 76.1%. Elderly poorly controlled HT patients were 3.77 times more likely to perform adequate SMB than those under 60 years, representing a significant result. In term of drinking history, nondrinkers were 3.96 times more likely to have adequate SMB than drinkers, again representing a significant result. Poorly controlled HT patients who got additional 1 score of self-observation were 1.81 times more likely to engage in adequate SMBs than those with a lower score. However, the poorly controlled HT patients with hyperlipidemia as a comorbidity performed adequate SMB only 30% of the time in comparison with non-hyperlipidemic poorly-controlled HT patients. Based on the experience sharing score, those who had an additional 1 score than those with a lower score showed adequate SMBs only 65% of the time compared with.

Discussion

This cross-sectional study was conducted in an urban community in Nakhon Ratchasima province, Thailand, using face-to-face questionnaire interviews in July–October 2017. The aim was to determine the association between the independent variables and SMBs among poorly controlled HT patients at the primary care level in a Thai urban community. A total of 122 questionnaires were completed.

It was found that 60.8% of the patients had adequate SMBs, especially those with the following characteristics: female, elderly, primary school graduation or lower, 1–4 family members, employment, single/separated/divorced/widowed, a universal coverage scheme, and nondrinking. Similarly, a study of factors related to self-care behavior in older patients with uncontrolled HT showed that female and single patients had higher scores than male and married patients did[29]. The sample characteristics of this study were nearly identical to the study developing and validating the hypertension self-care profile in term of sex, age, education, marital status, employment, health insurance, and BMI[21]. Moreover, more than two-thirds of the participants in the HT self-care profile study were female, elderly, poorly educated, living alone, unemployed, overweight or obese, and had health insurance, as in this study[21]. However, there were no characteristics of poorly controlled HT patients classified by SMBs for comparison with this study.

In terms of literacy and potential literacy levels, the poorly controlled HT patients had similar levels of writing, reading, hearing, vision, daily activities, and going out compared with the chronic patients in the Thai health literacy survey. However, the patients in this study had lower levels of talking to others understandably compared to those in the Thai health literacy survey did[27]. For self-care of chronic disease, the poorly controlled HT patients had higher levels of experience sharing, while self-observation was lower in our patients[27].

While many factors are associated with poorly controlled HT, such as male sex, comorbidities, and obesity[16, 17] this research suggested that age and drinking history are significantly associated with SMBs in these patients. After factor adjustment, including health literacy, older, nondrinking, and higher self-observation score were the predictors of having adequate SMBs, while having hyperlipidemia as a comorbidity and higher experience sharing predicted inadequate SMB.

Increased self-management behavior enhances a person's ability and entails self-regulation skills to manage chronic conditions or risk factors, including activities like goal setting, self-monitoring and planning for and engaging in specific behaviors. A model with predicted pathway from health literacy to health status of HT patients has been proposed. There were significant path from health literacy to knowledge, knowledge to self-efficacy, self-efficacy to physical activity and health status[30]. Self-observation in the self-care of chronic patients is measured with multiple items, including the following: "You know when the signs of your illness worsen," "You know that if you do not take care yourself well enough, you may develop complications that are more serious than your illness," and "When you have health problems, you know how to achieve better health."[27] The self-observation items present self-regulation behaviors that lead to self-efficacy and SMB[20, 30]; thus, participants with a higher self-observation score are likelier to have adequate SMB.

Elderly participants in this study had better SMBs than those aged 35–59.9 years, which contrasted with the study of factors related to self-care behavior in older patients with uncontrolled HT. The study showed that younger people had higher self-care behavior scores than older people did, but the result was not significant[29]. This could be explained in that the Thai primary care system supports the elderly's activities. Especially, in this study's urban area, there were VHVs to encourage health promotion and disease prevention. The healthcare system also seeks to target adults, but employment in the younger group poses time limitations, representing a barrier to SMB.

Alcoholism not only causes medical complications, but it can also affect behaviors[31], which is why the nondrinkers in this study were less likely to have medical complications or other comorbidities. Nondrinkers also exhibit better self-care behaviors. Avoidance of alcohol intake and other lifestyle modifications are recommended for reducing the risk of CHF when regularly taking medication[32].

HT is a risk factor for hyperlipidemia; however, hyperlipidemia causes increased BP via arteriosclerosis[32]; hyperlipidemia is the top-ranking comorbidity in poorly-controlled HT. Globalization, urbanization, and population ageing are the underlying determinants of chronic diseases. They influence the common modifiable risk factors (unhealthy diet, physical inactivity, and tobacco use) and nonmodifiable risk factors (age and heredity) of chronic diseases. Both types of risk factors induce intermediate risk factors (raised BP, raised blood glucose, abnormal blood lipids, and overweight/obesity), resulting in chronic diseases[33]. The modifiable risk factors for HT and hyperlipidemia are similar, and they can be managed through SMBs. This could be why hyperlipidemia is a predictor of inadequate SMB.

Although this study presented a positive association between self-observation and SMBs, experience sharing worked in the opposite direction. The result is similar to relationship study among heart failure cases[34]. This may have been because the level of talking to others clearly was lower in this study than it was among chronic patients in the Thai health literacy survey. There were five experience-sharing items[27], at least three of which used talking as a communication tool; this could limit the effectiveness of experience sharing or even result in miscommunication, thereby causing inadequate SMB performance.

Conclusion

This study described the characteristics of poorly controlled HT patients, where more those with better SMBs tended to be female, elderly, single/separated/divorced/widowed, employed, and nondrinkers, with a primary school education or lower, 1–4 family members, and a universal coverage scheme. The age group and drinking history were significantly associated with SMBs in poorly controlled HT patients. Elderly, nondrinking, and higher self-observation scores were the positive predictors of adequate SMBs, while hyperlipidemia and experience sharing were negative predictors.

Recommendations

This study underlined the important of health literacy in poorly controlled HT patients therefore policy maker should focus on that. To control HT, increased self-observation leads to the promotion of good SMB in poorly controlled HT patient, especially drinkers and those under 60 years of age. Creating intervention to up rise health literacy level especially in those patients need to be done. Furthermore, a future research should test the effectiveness of the program whether improve SMBs and HT control or not.

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