นิพนธ์ต้นฉบับ

ปัจจัยที่มีผลต่อพฤติกรรมการรับประทานยารักษาโรคความดันโลหิตสูงในผู้ป่วยสูงอายุ

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บทคัดย่อ

ความเป็นมา จากการศึกษาต่าง ๆ ที่ผ่านมาพบว่า ประมาณครึ่งหนึ่งของผู้ป่วยทั้งหมดไม่ให้ความร่วมมือในการรับประทานยา มีหลายปัจจัยที่มีผลต่อการรับประทานยาอย่างสม่ำเสมอต่อเนื่องในผู้ป่วย เช่น ความตระหนักถึงความสำคัญของการรักษา ความรู้ด้านสุขภาพ และพฤติกรรมสุขภาพที่ถูกต้อง การศึกษานี้เป็นการศึกษาเพื่อหาความสัมพันธ์ของปัจจัยที่มีผลต่อพฤติกรรมการรับประทานยา

วัตถุประสงค์: หาความสัมพันธ์ของปัจจัยที่มีผลต่อพฤติกรรมการรับประทานยาของผู้สูงอายุที่ควบคุมความดันโลหิตไม่ได้ตามเกณฑ์การรักษา

รูปแบบการวิจัย เป็นการศึกษาแบบภาคตัดขวาง เพื่อประเมินความร่วมมือในการใช้ยาของผู้ป่วย วัดความสม่ำเสมอในการใช้ยาโดยใช้แบบสอบถามมาตรฐาน ประกอบด้วยคำถาม 7 ข้อ

ผลการวิจัย จากการศึกษาผู้เข้าร่วมวิจัย จำนวน 120 ราย ผู้ป่วยร้อยละ60 ไม่ร่วมมือในการใช้ยา ผู้ป่วยที่มีผู้ดูแล และผู้ป่วยที่ตระหนักถึงความสำคัญของการรักษา พบว่ามีแนวโน้มที่จะมีพฤติกรรมการรับประทานยาที่ดี (odds ratio 2.71 [95% [CI]: (1.21-6.09)] และ 2.75 [95% [CI]: (1.07-7.05)]) ตามลำดับ ความรู้สึกลำบากในการเดินทางมาพบแพทย์ และผลข้างเคียงของยาพบว่าส่งผลเสียต่อพฤติกรรมการรับประทานยา (odds ratio 2.54 [95% [CI]: (1.12-5.76)] และ 2.56 [95% [CI]: (1.18-5.57)]) ตามลำดับ

สรุปผลการวิจัย ผู้ป่วยที่มีพฤติกรรมการรับประทานยาที่ดี มีสัดส่วนที่น้อยกว่าปัจจัยที่ส่งผลเสียต่อพฤติกรรมการรับประทานยาคือความรู้สึกลำบากในการเดินทางมาพบแพทย์ และ ผลข้างเคียงที่เกิดจากยา การดูแลสนับสนุนทางด้านจิตใจของผู้ป่วย จึงเป็นสิ่งจำเป็นในการปรับปรุงพฤติกรรมการรับประทานยาของผู้ป่วย

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ORIGINAL ARTICLE

Factors Affecting Adherence to Antihypertensive Medication in Older Adults

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Abstract

Background: Various studies showed that nearly half of hypertensive patients had poor drug adherence. Many factors affect medication adherence, such as disease awareness, health knowledge, and healthy behavior. Factors affecting adherence to medications were studied. The expectation was that disease awareness could lead to good medication adherence.

Objective: This study was conducted to determine factors affecting medication adherence in older patients who cannot reach targeted blood pressure.

Study Design: A cross-sectional study to assess medication adherence in older patients undergoing hypertensive treatment. Adherence was measured using a validated survey form for medication adherence consisting of seven questions.

Results: One hundred and twenty participants with an average age of 70.51, mean blood pressure 150/94 mmHg, were enrolled. Sixty percent of patients were poor adherers. Patients with caregivers were found to be more likely to be good adherers, compared to self-care patients (odds ratio 2.71 [95% [CI]: (1.21-6.09)]. Patients with medication awareness were likely to adhere (odds ratio 2.75 [95% [CI]: (1.07-7.05)]. The feeling of difficulty travel to hospital and medication side effects were found to decrease adherence, odds ratio 2.54 [95% [CI]: (1.12-5.76)], 2.56 [95% [CI]: (1.18-5.57)] respectively.

Conclusion: Feeling of difficulty traveling to a hospital and medication side effects caused by the drug should be of concern for the best care. Close monitoring and follow-up care are considered to be important for all groups of patients regardless of their socioeconomic characteristics. Patient education and psychological support are essential ways to improve the patient's medication adherence.

Keywords: medication, adherence, medication, compliance, outpatient, department, Phramongkutklao Hospital

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Introduction

Hypertension is a common chronic disease in the outpatient department. It is an incurable disease and has serious complications such as cerebrovascular disease, ischemic heart disease, kidney disease, etc. Nowadays, the number of hypertensive patients is nearly one billion and is likely to increase. In Thailand, a prevalence of hypertensive patients from the Ministry of Public Health reports was found equal to 21.4 percent, but only 20.4 percent of these patients can control their blood pressure levels. [1] The mortality rate of hypertensive patients is still increasing. Hypertension was the third leading cause of death after cancer and accident.[2] It can be seen that the rate of sickness with hypertension in Thailand tends to be consistently higher. Drug adherence problems studies show that approximately half of the patients have drug-related problems, and only about one-third of patients can control their blood pressure level to the goal treatment. [3] Therefore, taking medications for high blood pressure treatment is one of the health behaviors that are important in the prevention and treatment of disease with possible negative impact on the patient, family, and society such as discomfort from frequent hospitalization and caregiver burden.

Studies have shown that people diagnosed with hypertension have four times the risk of financial problems compared to people who have not. [4, 5] Several factors influencing medication adherence in people with high blood pressure, include psychological obstacles, health literacy, and positive attitudes. [6, 7] Additional influencing external or environmental factors were doctor-patient relationships, communication skills of health care providers, and sources of drug information. [8] Trust and a strong relationship between patients and healthcare workers good communication between patient and doctor with proper urging of the patient to take the drug will provide good medication adherence. [9] Limited evidence exists regarding factors affecting medication adherence in older patients in the primary health care unit (PCU) in Thailand. The data obtained from this study can be used as a basis for planning the health care treatment of this group of patients and raise their medication information education which improves the effectiveness of any treatment.

Materials and Methods

This was a cross-sectional study to assess factors associated with medication adherence [10] by studying 120 cases of older patients aged over 60 years with primary hypertension unable to reach a targeted blood pressure. [11] The average of the last two

measurements was used for analysis. Patients with blood pressure higher than 140/90 mmHg were included in this study. The patients underwent hypertensive treatment in the primary health care unit (PCU), Phramongkutklao Outpatient Department from 1 July 2020 - 31 January 2021. Patients who were diagnosed with secondary hypertension were excluded. This study utilized a total survey method. The sample size for this study was estimated using Wayne W., D. (1995) [12] infinite population proportion formula for calculating sample size. The sample size was calculated using prevalence from the previous study of Azuana Ramli et al. [13]. Research related variables were demographic data, health literacy, disease awareness, medication compliance, and adherence. Data was collected from the survey using interviews and pill count method regarding the health status assessment of patient adherence and risk factors for adherence. The researcher personally interviewed the study participants and performed physical examinations of the study participants.

The Medication Adherence Scale used in this study was developed by Azuana Ramli et al (2012)[13] consisting of seven questions. Each question in this Medication Adherence Scale had a four-point response format. Each response carried a score: none of the time = 4, some of the time = 3, most of the time = 2, and all the time = 1. The total scores were added for each patient. The total score for each patient could range from 7 and 28. Lower scores would reflect poorer adherence to medication therapy. A full score of 28 or a score of 27 (due to 1 point deducted from any one of the "unintentional non-adherence" questions, which were question 1 or question 6), were defined as adherence. A score of 26 and below was categorized as non-adherence. To complete the questionnaires, patients were required to choose their responses from a set of possible answers for easy administration and to minimize inconsistencies among different interviewers. Descriptive statistics were used for data analysis. The calculated sample size was 111 (95% confidence interval and a p-value <0.05). The cross-sectional study between the relationship of demographic data and the incidence of drug use was not consistent. Chi-square statistics were used to find the relationship between variables, prevalence rate ratio, and multivariate analysis using multiple logistic regression.

Ethics approval for conducting this study was obtained from the Institutional Review Board, Royal Thai Army Medical Department (Approval number IRBRTA 383/2563).

Results

A total of 120 participants that fulfilled the inclusion criteria were enrolled as subjects for this study. 52.5% of the participants were male; the average age was 70.51 years. The mean blood pressure was 150/94 mmHg with the average of the last two measurements used for analysis. The majority of the participants, 70.8 %, were self-care patients, while 29.2% of them had caregivers. Treatment support for the participants was the

Civil Servant Medical Benefit Scheme (CSMBS), Universal Coverage (UC), and/or the Social Security Scheme, 68.3%, 25%, and 2.5%, respectively. Only 4.2% of the participants were self-pay patients.

Socioeconomic characteristics of the participants are shown in **Table 1**

Adherence scores obtained in the present study ranged from 16 to 28 (the maximum score possible). The average adherence score was 24.82 points with a standard deviation of 11.12. The prevalence of hypertensive older patients with poor adherence is 60.0%. Sixty-five point eight percent of participants had good persistence in medication adherence as shown in **Table 2**. The frequency distribution is shown in **Tables 3 and 4**.

Only 40.0% of participants were adherers. Relevant factors were having a relative as a caregiver; did not receive side effects from antihypertensive drugs; convenience of travel to the hospital; and awareness of the importance of drug use with P-values of 0.015, 0.017, 0.025, and 0.035, respectively. All of these factors correlated with good medication adherence with statistical significance as shown in **Table 5**.

Discussion

Several factors affect medication adherence which is an

Table 1 Demographics

	Non-Adherers n = 72	Adherers n =48	Total n = 120	p-value
Ages (Years)	69.47±7.98	72.06±9.2	70.51±8.55	0.105
Gender				0.156
Male	34(54)	29(46)	63(52.5)	
Female	38(66.7)	19(33.3)	57(47.5)	
MeanSBP	150.22±8.59	150.15±9.66	150.19±9	0.966
MeanDBP	93.68±4.43	94.26±4.98	93.91±4.65	0.496
BMI (Kg/m²)	25.4±3.52	24.94±3.17	25.22±3.38	0.459
Level of education				0.278
Primary or below	30(65.2)	16(34.8)	46(38.4)	
Secondary	23(62.1)	14(37.9)	37(30.8)	
Bachelor's Degree or above	29(78.4)	18(21.6)	37(30.8)	
Travel Difficulty				0.023*
No	41(52.6)	37(47.4)	78(65)	
Yes	31(73.8)	11(26.2)	42(35)	
Treatment support				0.820
CSMBS	50(61)	32(39)	82(68.3)	
Universal Coverage	18(60)	12(40)	30(25)	
Self-Payment	2(40)	3(60)	5(4.2)	
Social Security Scheme	2(66.7)	1(33.3)	3(2.5)	
Occupation				0.405
Employed	30(60)	20(40)	50(41.7)	
Not employed	42(60)	28(40)	70(58.3)	
Income				0.197
Insufficient	21(70)	9(30)	30(25)	
Sufficient	51(56.7)	39(43.3)	90(75)	
Care Giver				0.015*
Self-Care	57(67.1)	28(32.9)	85(70.8)	
Having Caregiver	15(42.9)	20(57.1)	35(29.2)	

Table 2 Drug compliance and persistence

	Non-Adherers n = 72	Adherers n = 48	Total n = 120	p-value
Compliance				0.002*
Poor	37(77.1)	11(22.9)	48(40)	
Good	35(48.6)	37(51.4)	72(60)	
Persistence				
Poor	31(75.6)	10(24.4)	41(34.2)	0.001*
Good	37(46.8)	42(53.2)	79(65.8)	

Table 3 Adherence score

Questions	Adherence score (frequency [%])				Mean score
	1	2	3	4	
1. How often do you forget to take you medicine?	9(7.5)	15(12.5)	36(30)	60(50)	3.23
2. How often do you decide not to take your medicine?	3(2.5)	9(7.5)	9(7.5)	99(82.5)	3.7
3. How often do you miss taking you medicine because you feel better?	3(2.5)	11(9.2)	15(12.5)	91(75.8)	3.62
4. How often do you decide to take less of your medicine?	5(4.2)	6(5)	11(9.2)	98(81.7)	3.68
5. How often do you stop taking your medicine because you feel sick due to effects of the medicine?	4(3.3)	13(10.8)	6(5)	97(80.8)	3.63
6. How often do you forget to bring along your medicine when you travel away from home?	3(2.5)	23(19.2)	18(15)	76(63.3)	3.39
7. How often do you NOT take you medicine because you run out of them at home?	2(1.7)	11(9.2)	24(20)	83(69.2)	3.57
mean adherence score = 24.82±3.85					

Table 4 Frequency distribution of adherers and non-adherers

Adherence score	Adherence status	Frequency (N)	Percentage (%)
Full score (28)	Adherers	21	17.5
27 (one point deducted from either question 1 to 6)	Adherers	27	22.5
27 (one point deducted due to other questions)	Non-Adherers	14	11.7
7-26	Non-Adherers	58	48.3
Total		120	100.0

important factor in achieving blood pressure control. Hypertension is an asymptomatic disease and needs long-term treatment. Therefore, several patients still had poor drug adherence. The results of medication adherence in hypertension treatment could differ due to various studies.

A similar study by Azuana Ramli et al.[13] found the prevalence of poor medication behavior to be 46.6%. In this study the prevalence of poor medication adherence among the older patients with hypertension was 60.0%, which was found to have a greater prevalence than a previous study. The results may be due to a sample of older patients who did not control their blood pressure according to the treatment criteria. Another study conducted by Azuana Ramli et al[13] included all hypertensive patients aged 30 years and over.

The factors that positively affect medication adherence were having a relative as a caregiver; not receiving side effects from antihypertensive drugs; convenience of

Table 5 Factors

	Non-Adherers n = 72	Adherers n = 48	Total n = 120	Crude Odds Ratio	Adjusted Odds Ratio	p-value	95%CI
Gender							
Male	34(54)	29(46)	63(52.5)	1.706		0.158	0.813-3.578
Female	38(66.7)	19(33.3)	57(47.5)	1			
Suffice by family income	51(56.7)	39(43.3)	90(75)	1.784		0.2	0.736-4.324
Number of HT drugs used							
1	30(68.2)	14(31.8)	44(36.7)	1			
2	32(60.4)	21(39.6)	53(44.2)	1.406		0.426	0.607-3.257
3	10(45.5)	12(54.5)	22(18.3)	2.571		0.078	0.898-7.363
More than 3	0(0)	1(100)	1(0.8)				
HT drugs dosage							
Once daily	58(63)	34(37)	92(76.7)	1			
Twice a day	14(50)	14(50)	28(23.3)	1.706		0.22	0.727-4.004
3 Times a day	0(0)	0(0)	0(0)				
4 Times a day	0(0)	0(0)	0(0)				
More than 4 times a day	0(0)	0(0)	0(0)				
Convenience of taking medication	44(57.1)	33(42.9)	77(64.2)	1.4		0.393	0.646-3.032
Having caregiver	15(42.9)	20(57.1)	35(29.2)	2.714	2.766	0.015*	1.21-6.089
Having complication of hypertension	20(50)	20(50)	40(33.3)	1.857	1.994	0.116	0.859-4.017
No antihypertensive side effects	35(50.7)	34(49.3)	69(57.5)	2.567	1.586	0.017*	1.183-5.574
Convenience of travel to the hospital	41(52.6)	37(47.4)	78(65)	2.543	2.998	0.025*	1.121-5.768
Disease awareness	49(54.4)	41(45.6)	90(75)	2.749	3.285	0.035*	1.071-7.054
Visual problems	39(59.1)	27(40.9)	66(55)	1.088		0.822	0.522-2.269

travel to the hospital; and awareness of the importance of drug use. These factors influence good medication adherence with statistical significance. Increased patient health knowledge was a contributing factor to good medication adherence. Health behaviors such as regularity of physical exercise, alcohol, and the smoking habit were not related to medication adherence, which was different from the study of Wipaporn Wangworatrakul[14] and Hyo Yoon Choi et al. [15] They found that regularity of physical exercise, no alcohol and smoke habit makes the participants more likely to have good medication adherence with statistical significance. It could be assumed that health behaviors in older patients did not affect their medication adherence.

On the other hand, factors that adversely affect medication adherence were being a self-care patient; receiving side effects from antihypertensive drugs; the difficulty of travel to the hospital; poor medication compliance; and lack of disease awareness. The number of antihypertensive drugs used and socio-economy did not affect medication adherence which was different from the study of Wipaporn Wangworatrakul[14] and Hyo Yoon Choi et al. [15] which found that the number of antihypertensive drugs used and low family income adversely affects medication adherence with statistical significance. According to their study, almost half of the participants were older patients with caregivers. It could be assumed that caregivers had a positive effect on medication

adherence, regardless of the number of antihypertensive drugs that the older patients used.

Demographic and socioeconomic characterization of the participants such as age, gender, education level, and occupation did not affect medication adherence in this study. It could be assumed that data in this study were collected from a specific group of participants. Moreover, the demographic and socioeconomic status was not directly related to awareness of the importance of drug use.

This study assesses factors affecting medication adherence in older adults by using the Medication Adherence Scale, determining the prevalence of good and poor medication adherence in the older adults. factors affecting behavior, consistency and continuity of taking medications for hypertension and the relationship of some factors that were associated with irregular drug intake. Additionally, participants will benefit from a cognitive health assessment; knowing and realizing the treatment effect; awareness of the severity of hypertension and approach to the appropriate treatments; increased awareness of the importance of drug use.[16]

The questionnaire and drug behavior assessment tools were used by the Medication Adherence Scale and pill counts, as well as study results that can be practical in caring for the elderly at all levels especially at the primary care unit (PCU) because the tools are not complicated. A short time is required to collect data. Since the study uses few amounts of resources but can be used to perform a holistic approach to elderly patients, it is cost-effective to process.

There were some limitations in this study. First of all, this study focused on older patients in just one hospital, the population may not reflect the general population of Thailand. In addition, using self-reporting questionnaires to measure adherence is simple and probably cost-effective but known to overestimate adherence, the patients tend to overestimate themselves. Finally, adherence was measured indirectly using the pill count method. The direct method includes the measurement of the concentration of the drug in body fluids or biological markers. However, direct methods are invasive and can also induce bias if the patient only takes medication before the upcoming test. Also, the pill count method is more accurate compared to other subjective methods. Ffurther research should be conducted in a broader population of older patients with hypertension and multicenter studies, for example, done in different parts of the country to make the population of older patients more diverse. It is recommended to study in a larger population to identify factors that affect medication adherence more clearly.

From this study, it can be seen that the older patients whose blood pressure did not meet the treatment criteria had poor medication adherence. This was due to the lack of awareness of the importance of taking

prescription drugs and lack of confidence in treatment according to side effects from the drugs. Demographic and socioeconomic characteristics such as age, gender, education level, and occupation did not affect medication adherence in this study. Thus, close monitoring and follow-up care are considered to be important for all groups of patients regardless of their socioeconomic characterization. The researcher explained to the patients the basic information about the disease itself for them to recognize the risk and severity of the disease. Patients' self-awareness should inspire them to avoid the threat of disease by choosing what is considered the best practice. This patient education also introduces the importance of taking prescribed medication, providing psychological support to the patient, and communicating to create mutual understanding between doctors and patients which provides a good doctor-patient relationship and contributes to the improvement of medication adherence.

Conclusions

The medication adherence rate was found to be low among older patients unable to reach the targeted blood pressure. The feeling of difficulty traveling to a hospital and experiences of side effects caused by the drug should be of concern for the best care. Poor medication behavior has adversely affected the control of blood pressure. Close monitoring and follow-up care are considered to be important for all patients regardless of their socioeconomic characteristics. Patient education and psychological support is an essential way to improve the patient's medication adherence.

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