

Original Article

IMPACTS OF COUNSELING ON ADHERENCE TO PRESCRIBED MEDICATIONS AND BLOOD PRESSURE OF HYPERTENSIVE PATIENTS IN FOUR INDONESIAN PRIMARY HEALTH CENTERS

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ABSTRACT

Objective: To analyze the impacts of pharmacist counseling on adherence to medications and reduction in systolic and diastolic blood pressures (SBP/DBP) of hypertensive outpatients.

Methods: A retro-prospective cohort study was undertaken to evaluate the impacts of two-month period counseling on medication adherence and SBP/DBP of hypertensive patients (n=47) insured by Social Security Organizing Body in primary health centers (Medan Deli, Helvetia, Darussalam, and Teladan) in Medan. Inclusion criteria were patients diagnosed with hypertension, age ≥ 18 years, and under treatment of antihypertensive drugs. A questionnaire was used to assess characteristics of the patients, antihypertensive drugs provided, and BP. The eight-item Morisky Medication Adherence Scale (MMAS-8) of each patient was assessed. Characteristics of the patients and antihypertensive drugs provided were descriptively analyzed. Impacts of counseling on medication adherence and SBP/DBP of the patients were analyzed using Wilcoxon test. All analyses were performed using Statistical Package for the Social Sciences (SPSS, version 19, Chicago, IL, USA) (p value <0.05 was considered significant).

Results: Characteristics of the patients: male, 23.4%, female, 76.6%, mean age, 61.22 ± 9.90 (years). MMAS-8 score improved significantly from 4.58 before counseling to 6.28 after counseling, $p = 0.000$. There was a reduction in SBP from 160.49 ± 23.15 mmHg before counseling to 149.04 ± 21.02 mmHg after counseling, $p = 0.001$. DBP also reduced from 91.23 ± 12.82 mmHg before counseling to 87.14 ± 9.94 mmHg after counseling, $p = 0.014$.

Conclusion: Counseling improves adherence to prescribed medications and BP in hypertensive patients.

Keywords: Hypertension, Medication adherence, Morisky scale.

INTRODUCTION

Hypertension remains a global public health challenge because of its increasing prevalence. About 1 billion of people in the world have hypertension. It was predicted that the number of adults with hypertension would increase to 1.56 billion by 2025 [1]. Most of the increase in the prevalence was predicted to result from developing countries because of their larger population. Nearly 75% of the 1.56 billion of hypertensive populations would live in developing countries [2]. In South-East Asia, a study indicated that hypertension affects approximately 35% of the adult populations and causes death nearly 1.5 million people each year. Almost all countries indicated the high prevalence of hypertension. The highest prevalence of hypertension in South-East Asia was found in Indonesia, which reached up to 41.1% [3]. Hence, this fig. should be highlighted by health care providers as well as policy makers in the development of strategies to prevent and cure hypertension in these regions.

The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7) defines hypertension as persistent elevated SBP of 140 mmHg or above and DBP of 90 mmHg or above. It has been well documented that poor adherence to prescribed medications in the management of patients with hypertension contributes to the reduced control of BP leading to increased hospitalization, poor health outcomes, development of many diseases like stroke, heart attack, chronic kidney disease, disability, increase morbidity and mortality [4]. Medication adherence refers to the extent to which patients take their medications as prescribed and recommended by a health care provider [5].

The degrees of patients adhere to their medications may vary from one country to another. In developed countries, a study found that about 30 to 50% of patients with chronic diseases were not adhered to their medications. In developing countries, cases of non-adherence to prescribed medications were reported to be even higher [6]. For example, a study undertaken at the clinic of Penang General Hospital indicated that 51.3% of hypertensive patients had

poor adherence to their prescribed medications [7]. Another study conducted in India proved that majority (60%) of hypertensive patients demonstrated a low adherence to their prescribed drugs [8]. In Indonesia itself, a non-experimental cross-sectional study indicated that only 30.4 and 69.6% of patients with hypertension were categorized into moderate and good adherence to their antihypertensive medications, respectively [9].

There are numerous problems associated with non-adherence to antihypertensive medications including lack of environment for healthy lifestyles due to the absence of healthy public policies, limited health resources, failure to understand the importance of adherence to prescribed medications, and limited access to health services for early detection and treatment including counseling [10]. Efforts to prevent and treat hypertension through varieties of programs addressed to the associated problems should be continuously implemented including improvement of adherence to prescribed medications provided to an individual hypertensive patient and lifestyle modifications which in turn reduce its complications, morbidities, and mortalities.

To response these issues, the present study aimed to analyze the impact of counseling on adherence of hypertensive patients to their medications and reduction of their BP in four primary health centers in North Sumatera, Indonesia.

MATERIALS AND METHODS

This quantitative non-experimental retro-prospective cohort study was undertaken to evaluate the impacts of counseling on medication adherence and improvement of SBP/DBP of hypertensive patients (n=47) insured by Social Security Organizing Body for two-month period in four primary health centers with highest admission of hypertensive patients (Medan Deli, Helvetia, Darussalam, and Teladan) in Medan. Ethical clearance to conduct this study was obtained from the Health Research Ethical Committee of North Sumatera, School of Medicine, University of Sumatera Utara, Medan, Indonesia. Patients diagnosed with hypertension, age ≥ 18 years, and under treatment of antihypertensive drugs were included into

this study. As many as 47 hypertensive patients were recruited from 152 attending the primary health centers during scheduled appointments. Health care providers in each of the primary health centers explained the study to each of the patients and set up the schedule for the counseling. Face to face counseling at the interval of two weeks was provided by the researchers to the patients.

A questionnaire and Morisky Medication Adherence Scale (MMAS-8) [11] were distributed to the patients before and after counseling. Data collected include gender, age, education, the administered antihypertensive drugs, and adherence to medications. Characteristics of the patients and the provided antihypertensive drugs were analyzed using descriptive statistics in the program of Statistical Package for the Social Sciences (SPSS, version 19, Chicago, IL, USA). Adherence to medications was analyzed using the MMAS-8 (yes=0 and no=1) as shown in table 1. The MMAS-8 of each of the hypertensive patients were summed and analyzed using the Wilcoxon test. Scores of less than 6 are considered as low adherence.

Impacts of counseling on SBP/DBP of the patients were analyzed using the Wilcoxon test. All analyses were performed using Statistical Package for the Social Sciences (SPSS, version 19, Chicago, IL, USA) (p value <0.05 was considered significant).

RESULTS

Out of 152 patients, in the study population, there were only 47 hypertensive patients who continued to attend the counseling. Therefore, these patients were included into this study. Characteristics of the hypertensive patients by gender, age, and education are demonstrated in table 2. In the present study, there were more female (76.6%) compared to male (23.4%). Most of the patients (66.0%) were in the age group 51-70 years. Only seven patients (14.9%) were in the age group 31-50 years. The rest (19.1%) were in the age group 71-90 years. Overall, the mean age of the patients was 61.22 with a standard deviation of 9.90 years. Education of patients in decreasing order was senior high school (36.2%), primary school (29.8%), junior high school (27.7%), and university (6.4%).

Table 1: The eight-item morisky medication adherence scale

Questions	Patient's answer (yes = 0; no = 1)
Do you sometimes forget to take your pills?	
Were there any days you did not take your medicine over the past 2 weeks?	
Have you ever cut back or stop taking your medicine without telling your doctor because you felt worse when you took it?	
When you travel or leave home, do you sometimes forget to bring along your medicine?	
Did you take all your medicines yesterday?	
When you feel like your symptoms are under control, do you sometimes stop taking your medications?	
Do you ever feel hassled about sticking to your treatment plan?	
How often do you have difficulty remembering to take all your medicine?	
a. Never	
b. Once a week (twice a week)	
c. 2-3 times a week	
d. 4-6 times a week	
e. All the time	

Table 2: Characteristics of the hypertensive patients by gender, age, and education

Variable	Total	Percentage (%)
Gender:		
Male	11	23.4
Female	36	76.6
Age (years):		
31-50	7	14.9
51-70	31	66.0
71-90	9	19.1
Mean: 61.22 ±9.897 years		
Education:		
Primary school	14	29.8
Junior High School	13	27.6
Senior High School	17	36.2
University	3	6.4

Listed in table 3 is the pattern of antihypertensive drugs as mono and combination therapies provided to the hypertensive patients. Thirty four out of 47 (72.3%) of the patients received antihypertensive monotherapy, whereas only 13 patients (27.7%) received combination therapy. Rank of the monotherapy of antihypertensive drugs in decreasing order provided to the

hypertensive patients is amlodipin (36.2%), captopril (34.0%), and vasartan (2.1%). Amlodipin and captopril was the most frequently combination therapy provided to the hypertensive patients (21.3%). Each combination of amlodipin and hydrochlorothiazide, amlodipin and nifedipine, and captopril and nifedipine was only provided to one patient (2.1%).

Table 3: Pattern of antihypertensive drugs utilized by the hypertensive patients (n=47)

Drug	Number	Percentage (%)
Amlodipin	17	36.2
Captopril	16	34.0
Valsartan	1	2.1
Amlodipin + Captopril	10	21.3
Amlodipin + Hydrochlorothiazide (HCT)	1	2.1
Amlodipin + Nifedipine	1	2.1
Captopril + Nifedipine	1	2.1

With regard to antihypertensive medication adherence, it was found that score of MMAS-8 improved significantly from 3.43 with a standard deviation of 4.58 before counseling to 6.28 with a standard deviation of 1.68 after counseling, $p = 0.000$. This finding indicated that counseling was associated with the patients' adherence to the prescribed medications. The other significant finding of this study is that a reduction in SBP from 160.49 with a standard deviation of 23.15 mmHg before counseling to 149.04 with a standard deviation of 21.02 mmHg after counseling, $p = 0.001$. This study also indicated that DBP reduced from 91.23 with a standard deviation of 12.82 mmHg in non-counseled group to 87.14 mmHg with a standard deviation of 9.94 in counseled group, $p = 0.014$.

DISCUSSION

Almost three quarters (76.7%) of the study sample were female. This finding is consistent with similar studies undertaken in Malaysia, USA, and Ghana [12,13,14]. It was indicated that age of the hypertensive patients were between 31 to 90 years old in which more than half (66%) were at the age of 51-70 years. This finding is consistent with other previous studies. Hussain et al found that 40.2% of hypertensive patients were in the age group 50-60 years. Only about one fourth (24.8%) of the hypertensive patients were in the age group 40-50 years. The rests were in the age groups 30-40, 60-70, and above 70 years [15]. Majority of the hypertensive patients (93.6%) graduated only from senior high school and lower. This limited education may have an impact on failure to understand the importance of adherence to prescribed medications [10].

Medication adherence is a crucial determinant to achieve targeted BP in hypertensive patients. The two most frequently occurred problems in the treatment of hypertension obtained in this study were the patients' forgetfulness and not taking their medications continuously. The latter problem is associated with irregularity of patients' visit to these primary health centers. The patients did not immediately visit the health centers when they ran out of their antihypertensive medications. As its consequence, therefore, they missed doses for the few days. This condition will, in turn, have negative impacts on the treatment outcomes.

In the present study, one of the main finding is that improvement of medication adherence from 3.43 with standard deviation of 4.58 before counseling to 6.28 with a standard deviation of 1.68 after counseling, $p = 0.000$. This means that the patients' understandings on how to cope with their disease have improved. Nevertheless, all possible efforts to improve the patients' adherence to their medications should be sought. This present study was supported by other findings. Pratiwi et al in their study proved that counseling had a positive impact on medication adherence of hypertensive patients ($n=50$) admitted to a special polyclinic in a hospital in Padang, Indonesia. They found that there were significant differences in terms of the patients' knowledge and attitude regarding their medications before and after counseling [16]. Taitel et al in their retrospective study implemented in 76 national community pharmacies located in the Midwest USA proved that face-to-face counseling in hypertensive patients ($n=586$) improved the patients' medication adherence significantly compared to those without counseling ($n=516$) [17].

This study demonstrated that counseling improved BP of the hypertensive patients. This result is consistent with the improvement of medication adherence revealed in this study as previously explained. The present finding was supported by few previous studies. A randomized controlled study conducted on hypertensive patients ($n=120$) in Turkey proved that the hypertensive patients who received six-month education and counseling ($n=80$) indicated a significant decrease in BP compared with those of the controlled group ($n=40$) [18]. In addition, a six-week educational behavioral study followed by home telemonitoring of BP conducted on 359 Korean immigrants by Kim et al revealed a sharp increase in the BP controlled rates sustained for more than 12 months [19]. Subsequently, Rose et al in their study found that BP following 7 days of excellent adherence was between 12/7 mmHg and 15/8 mmHg lower than after 7 days of poor adherence [20]. All these studies proved the importance of counseling to improve the

patients' understanding and adherence to their prescribed medications.

Patient counseling should be continuously done to improve medication adherence of hypertensive patients, which in turn improve outcomes, reduce its complications and morbidity as well as mortality. In the future, researches on identifying and solving the problems associated with medication non-adherence of hypertensive patients through varieties of programs supported by policy makers to optimize the patients' outcomes.

CONCLUSION

Counseling in hypertensive patients improved adherence to prescribed medications and reduced blood pressure.

Study limitation

This study is limited by a short duration of counseling provided and the small number of hypertensive patients involved in this study.

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CONFLICT OF INTERESTS

Declared None

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