# Effect of pharmacist counseling on adherence and blood pressure of hypertensive Prolanis patients in sixteenprimary healthcare centers

**Yusransyah[1,2], Eli Halimah[1,3]\*, Auliya A. Suwantika[1,3]**

[1] Department of Clinical Pharmacy, Faculty of Pharmacy, UniversitasPadjadjaran, Indonesia. [2] STIKesSalsabilaSerang, Banten, Indonesia. [3] Center of Excellence in Higher Education for Pharmaceutical Care Innovation, UniversitasPadjadjaran, Indonesia.

**Correspondence:** Eli Halimah, Department of Clinical Pharmacy, Faculty of Pharmacy, UniversitasPadjadjaran, Indonesia. Email: eli.halimah @ unpad.ac.id.

**ABSTRACT**

Hypertension is the most common cause of death in the category of non-communicable diseases that occur in Pandeglang District, some of which are caused by patient non-compliance factors and uncontrolled blood pressure. This research was conducted to determine the effect of counseling by pharmacists for hypertension adherence and Systole Blood Pressure (SBP) in hypertensive patients a member of the chronic disease management program (PROLANIS) in 16 (Sixteen) Primary Healthcare Centers in Pandeglang District, Banten Province. This research was conducted at 96 patients who were divided into 2 groups: 48 patients in the control group in 8 Primary Healthcare Centers and 48 patients in the group treatment that received Pharmacist counseling in 8 other Primary Healthcare Centers. In the treatment group, counseling was given 4 times for 4-8 weeks. Systolic blood pressure and adherence assessment were taken, using the MARS (Medication Adherence Report Scale) questionnaire in the two groups namely at the 1st, 2nd, 3rd, and 4th meetings. Then the systolic blood pressure data and MARS values from each group were analyzed with KruskalWalis because the data were not normally distributed and continued with the Mann-Whitney test, Wilcoxon, and Binomial test to find out the relationship of each group specifically. The results showed that counseling by pharmacists cause patient adherence to taking antihypertensive drugs increased at each meeting (mean= 21.40, 23.81, 24.38, and 24.42; p= 0.008) and systolic blood pressure in hypertensive patients decreased at each meeting (mean= 164 mmHg, 154 mmHg, 150 mmHg, and 145 mmHg; p= 0,001) in the treatment group compared to the control group.

**Keywords:** Counseling, Pharmacists, Adherence, Systolic Blood Pressure, Primary Healthcare Centers

## Introduction

Hypertension is the cause of the death of 7.5 million people worldwide. The prevalence of hypertension is reported to increase in the range of 35-46% in developing and developed countries and is predicted to increase by 60% by 2025.

Increased prevalence will result in the risk of stroke (60%) and heart attack (50%). The hypertension morbidity rate in the United States is 27.8, while in Indonesia the mortality rate due to hypertension and heart disease is quite high, which is around 28% [1].

Hypertension is defined as an increase in systolic blood pressure, diastolic blood pressure or both [2]. The clinical diagnosis of hypertension is based on an average of two or more sitting blood pressure readings at every two or more regular visits [3, 4]. The goal of antihypertensive therapy is to reduce the risk of cardiovascular and renal morbidity and mortality [5]. The target reduction in systolic and diastolic blood pressure is <140/90 mmHg (in non-diabetic patients) associated with a reduction in cardiovascular complications [6]. For hypertensive patients with diabetes or chronic kidney disease, the target of lowering blood pressure is lower, namely 130/80 mmHg. Antihypertensive treatment is generally for a lifetime. A

treatment that is stopped sooner or later will be followed by a rise in blood pressure until it reaches the previous rate when antihypertensive treatment has just begun. However, it is possible to gradually reduce the dosage and amount of antihypertensive drugs for patients whose diagnosis of hypertension is certain and remains compliant with non-pharmacological treatment.

This action must be accompanied by strict blood pressure monitoring [7]. According to data from the World Health Organization (WHO), of as many as 50% of hypertensive patients in developing countries, only 25% received treatment and only 12.5% were treated properly. Also, there are 50–70% of patients who are not compliant with prescribed antihypertensive drugs. The average compliance of patients on long-term treatment of chronic diseases in developed countries is only 50%, while in developing countries the possibility is much lower. Low patient adherence to hypertension treatment has the potential to be a barrier in achieving controlled blood pressure and can also be associated with an increase in the cost of treatment or hospitalization and complications of heart disease [8]. Healthy people for hypertension recommend the need for a more comprehensive and intensive approach to achieve optimal blood pressure control. Efforts are needed in increasing patient compliance with drug therapy to achieve the desired blood pressure target. At least 50% of patients prescribed antihypertensive drugs do not take the drugs as recommended. The most effective strategy is a combination of strategies such as education, attitude modification, and supporting systems [9].

Counseling to patients conducted by Pharmacists is a component of pharmaceutical services aimed at increasing therapeutic outcomes by maximizing the use of drugs appropriately [10]. Thus, patients can feel the benefits by improving the quality of life and quality of health services. The essence of counseling is to help people deal effectively with important issues or issues.

Patient compliance in taking medication or medication adherence is defined as the level of obedience of patients to follow the recommended treatment given. Compliance with taking medication is very important especially for patients with chronic diseases. Adherence to taking medication can be influenced by demographic factors, patient factors, therapeutic factors and the relationship of patients with health care workers. One indicator of patient compliance with antihypertensive medication is blood pressure control [11].

According to the Pharmaceutical Services Standard at the Primary healthcare centers, the Pharmacist's work at the Primary Healthcare Centers includes counseling and providing drug information (PIO, PelayananInformasiObat) to patients in need [12]. Proven through counseling, Pharmacists can identify and overcome drug-related problems, empower patients to implement positive self-behavior management, increase patient satisfaction and can optimize the quality of patient care. Effective counseling will make patients understand the disease

and treatment that is being undertaken and improve medication adherence [13]. A study shows that chronic disease patients with long-term therapy that adhere to treatment instructions are estimated at only 30-50% [14]. A mistake that often occurs is if the complaint disappears, the patient feels healed, then is not compliant in taking medication [15].

Pandeglang Regency was previously designated as a disadvantaged area through Presidential Regulation (Perpres, Peraturan Presiden) Number 131 of 2015 concerning the Determination of Underdeveloped Regions in 2015-2019 [16]. Based on observations and data obtained from the Pandeglang District Health Office, the total number of Primary Healthcare Centers in the Pandeglang Regency are 36 Primary Primary Healthcare Centers. When this research was conducted, not all Primary Healthcare Centers were Pharmacists, so 16 Primary Healthcare Centers were used as research objects, with 16 Pharmacists, located in 16 sub-districts in the Pandeglang Regency. Also, research on the influence of antihypertensive drug counseling on hypertension patients' compliance and blood pressure at the Pandeglang District Health Center has never been done. Based on this background, this research was conducted.

## Subjects and Method

The study uses an experimental research method with a static group comparison design. The purpose of this study was to determine the effect of antihypertensive drug counseling on adherence and clinical outcome of prolanic hypertension patients in 8 Primary Healthcare Centers by pharmacists who had received counseling training. This study uses a control group that is the delivery of drugs without giving drug counseling by the Pharmacist (Pharmacists only submit drug information). Drug counseling conducted by the Pharmacist includes in-depth explanation related to the name of the drug, time of use, duration of use, how to use it, effects that will arise, and other things that will arise, as well as identifying problems and finding solutions to problems in the use of antihypertensive drugs. Also given an explanation of non-pharmacological therapy (about diet, lifestyle, and physical activity).

The research instrument used was the patient's medical record/prescription drug data from the doctor to find out the results of the doctor's diagnosis that the patient had hypertension, know the patient's identity, and the drug is given to the patient, and the MARS (Medication Adherence Report Scale) questionnaire to determine the compliance of hypertensive patients in taking antihypertensive drugs. In this study, the independent variables were drug counseling and the dependent variable was Systolic Blood Pressure (SBP) and hypertension patient compliance levels in 16 Primary Healthcare Centers in Pandeglang District in June-August 2019 period. Also, there were confounding variables, namely frequency of drug use, history of hypertension, just experienced

or has long experienced patient education, and patient character. The population in this study were patients who seek treatment and redeem prescriptions at 16 Primary Healthcare Centers in Pandeglang district in the period June-August 2019. Sampling was done purposively. The samples used in this study were patients diagnosed with hypertension by doctors by looking at medical record data, getting antihypertensive drugs by doctors, redeeming prescription drugs at Primary Healthcare Centers and those who met the inclusion and exclusion criteria.

1. **Inclusion Criteria**
   a. Complicated hypertension patients receiving antihypertensive drugs in 16 Primary Healthcare Center Pandeglang Regency
   b. Patients aged ≥18 years.
   c. Hypertensive patients funded by BPJS Health.
   d. Patients have medical record data
   e. Patients who have made at least four visits to the Primary Healthcare Centers with a minimum of on times experiencing blood pressure above normal and receive counseling services from Pharmacist.

2. **Exclusion Criteria**
   a. The patient is undergoing hemodialysis
   b. The patient is an obstetric-gynecology patient
   c. Patients in one consecutive period of four months did not visit the Primary Healthcare Centers.

Data collection for hypertensive patients is carried out in June-August 2019. Data taken includes the patient's name, age, address, no. phone/cell, sex, occupation, and antihypertensive drugs used. Hypertension patient compliance data obtained through the MARS questionnaire at each meeting for 4 times, after receiving the drug and giving drug counseling by interview. The recapitulated data was then tested with KruskalWalis, Mann-Whitney, Wilcoxon, and Binomial Tests. The effect of the p-value is then compared with an error rate ($\alpha$) of 5% or 0.05. If p-value $\leq 0.05$, then Ho is rejected and H1 is accepted, meaning that there is a significant relationship between the dependent variable and the independent variable. If p value $> 0.005$, then Ho is accepted and H1 is rejected, meaning that there is no significant relationship between the dependent variable and the independent variable. This study hypothesizes that drug counseling can significantly influence the compliance of hypertensive patients and the blood pressure reduction of hypertension patients at 16 Primary Healthcare Centers in Pandeglang District in the period June-August 2019.

## Result

This research was carried out throughout 3 (three) months from June to August 2019 and was conducted prospectively of hypertensive patients who participated in the BPJS PROLANIS group. Subjects who followed the study from beginning to end were 96 patients, consisting of 48 hypertensive patients who did

not receive counseling from Pharmacists in 8 Primary Healthcare Centers (control groups) and 48 hypertensive patients who received treatment in the form of counseling from Pharmacists who had received counseling training (groups treatment) at 8 Primary Healthcare Centers. Sampling was carried out by the inclusion criteria and the Pharmacist's ability to provide counseling and monitor patient progress until the 4th meeting. Monitoring the level of therapeutic outcomes (blood pressure) and the level of adherence in patients carried out for 2 (two) months. Sociodemographic data consists of age, gender, and occupation. This data was obtained from the patient's medical record/prescription drug data from the doctor. The sociodemographic frequency distribution of respondents can be seen in table 1.

**Table 1: Sociodemographic Frequency Distribution of Hypertensive Patients at 16 Primary Healthcare Centers in Pandeglang Regency**

| Age | Percentage | Frequency |
|---|---|---|
| 20-35 years | 0 | 0% |
| 36-50 years | 37 | 39% |
| > 50 years | 59 | 61% |
| **Gender** | **96** | **100%** |
| Female | 77 | 80% |
| Male | 19 | 20% |
| **Job** | **96** | **100%** |
| Housewife | 51 | 53% |
| PNS/Entrepreneur/Farmers/ Labo/Private employees/ Fisherman | 43 | 45% |
| Etc | 2 | 2% |
| | 96 | 100% |

Source: Data processing researchers from the results of medical records and interviews

### 1. Age

Based on the results of research, the lowest age of hypertension is 36 years old and the highest age is 70 years old. The age is then classified based on age classification according to the Indonesian Ministry of Health (2009) [17] with an age range of 40-82 years. Based on the frequency distribution, those aged> 65 years who are included in the elderly group have the highest frequency of experiencing hypertension, which is 37%. After the age of 45 years, the artery walls will experience thickening due to the accumulation of collagen in the muscle layer, so that the blood vessels will gradually narrow and become stiff. Systolic blood pressure increases because the flexibility of large blood vessels decreases with age until the seventh decade while diastolic blood pressure rises until the fifth and sixth decades and then settles or tends to decrease. Increased age will cause some physiological changes, in the elderly, there is an increase in peripheral resistance and sympathetic activity. The regulation of blood pressure, namely reflex baroreceptors in old age, has decreased sensitivity, while the role of the kidneys has also been reduced where renal blood flow and glomerular filtration rates have decreased [17].

## 2. Gender

Based on gender, it was shown that women had more hypertension, 77 people (80%) than men, 19 people (20%). Based on the theory that up to the age of 55 years, men are at higher risk than women, but women above that age have a greater chance [18]. Women who have not experienced menopause are protected by the hormone estrogen which plays a role in increasing levels of High-Density Lipoprotein (HDL). High levels of HDL are protective factors in preventing the process of atherosclerosis. The protective effect of estrogen is thought to be an explanation of a woman's immunity at premenopausal age. Premenopausal women begin to lose little by little the hormone estrogen which has been protecting blood vessels from damage. This process continues where the hormone estrogen changes in quantity according to a woman's natural age, which generally begins to occur in women aged 45-55 years [17].

## 3. Job

Based on the job shows that the level of hypertension is higher in housewives, namely 51 people (53%). This is in line with research which states that respondents who do not work have a 1.42 times risk of developing hypertension because work is related to psychological effects on the work environment [19]. The psychological influence experienced can be in the form of stressful events. This is following the theory which states that stress can increase peripheral blood vessels and cardiac output so that it will stimulate sympathetic nerve activity [17]. In the use of antihypertension, the drugs used do not only consist of a single antihypertension but some are also composed of two drugs antihypertension. Single antihypertension (85%) is more widely prescribed than antihypertensive drugs (15%). This is following the research from Norman (2012) [20] and Saepudin, et al (2013) [21], which obtained the results that most respondents received a single antihypertensive drug.

## Antihypertensive Drugs

Antihypertensives which are often prescribed singly consist of amlodipine, captopril, and bisoprolol. The most commonly used drugs for single antihypertensive use are amlodipine 5 mg (P1 = 50.98%, P2 = 55.92%, P3 = 63.54% and P4 = 57.73%). Based on the use of antihypertensive drugs, the drugs used are amlodipine and captopril. This is not the same as the research from Norman (2012) and Saepudin, et al (2013) which obtained the results that the most widely used antihypertensive drugs both single and antihypertensive drugs are hydrochlorothiazides. The differences that occur in the use of drugs for hypertensive patients can be caused by the pathophysiological conditions of illness in each different patient. So that treatment aims to overcome other health problems besides hypertension and to support the treatment of hypertension. The use of antihypertensive drugs more than two drugs is done to increase the antihypertensive effect and reduce side effects. The use of amlodipine, captopril, and bisoprolol drugs are the guidelines for the Formulary Primary Healthcare Centers published by the Pandeglang District Health Office and the treatment of hypertension therapy for the Ministry of Health of the Republic of Indonesia.

## Effects of Pharmacist Counseling on Adherence

Distribution of Patient Compliance in this study an assessment of patient compliance was obtained based on the results of the MARS questionnaire. Patients were divided into two groups, namely without giving counseling and Pharmacist counseling. The purpose of the grouping is to determine the effect of counseling from pharmacists on patient compliance in taking anti-hypertensive drugs and on their clinical impact, namely systolic blood pressure. The MARS questionnaire contains 5 questions containing answers always, often, sometimes, rarely and never with a total MARS score of 25. Compliance is said to be high if the MARS score obtained is 25. If the MARS score obtained is 6-24 then it includes moderate compliance. If the MARS score obtained is less than 6 then it is considered low compliance. The MARS questionnaire that has been validated by Dyah Perwitasari, et al (2015) [22] can be seen in table 2. Based on the results of the MARS questionnaire from the 1st to 4th meetings, it was found that the average level of adherence for the intervention group was 21.40 (P1), 23.80 (P2), 24.38 (P3) and 24.42 (P4).

Whereas for the group of patients without pharmacist counseling, the average level of adherence was lower, namely 21.31 (P1), 22.35 (P2), 23.56 (P3) and 23.58 (P4). After being tested statistically non-parametric (Kruskal-Wallis), there were significant differences between groups at each meeting (p-value = 0.00 <0.05). The data then continued with the Mann-Whitney test analysis, where the results obtained were significant differences between the levels of patient compliance at meeting 1 and meeting 2 (p-value = 0.00 <0.05) and meeting 2 and meeting 3 (p-value = 0.01 <0.05), which indicates that counseling intervention from the Pharmacist can improve patient compliance at the previous meeting. The same results were also obtained after further testing, the Binomial Test, whereas many as 38 patients in the intervention group had better adherence at the second meeting from the first meeting, 15 patients had better adherence at the third meeting from the second meeting and 10 patients had a better level of adherence at fourth meeting from the third meeting. This amount is more than the control group patients, which further strengthens the hypothesis, namely the presence of pharmacist counseling intervention can increase adherence to hypertension patients PROLANIS.

According to Putriani (2014) [23], compliance can occur due to the patient's desire to recover, but the role of the Pharmacist in explaining the drug is also important to increase the success of hypertension therapy. This study shows that the provision of drug counseling by pharmacists is very important to improve patient compliance in taking the drug so that the subsequent

effects can increase the success of therapy in the treatment of hypertension.

| Question | Choice of Statement | | | | |
|---|---|---|---|---|---|
| | Always (1) | Often (2) | Sometimes (3) | Rarely (4) | Never (5) |
| I forgot to take my medicine | 1 | 2 | 3 | 4 | 5 |
| I changed the dose to take my medicine | 1 | 2 | 3 | 4 | 5 |
| I stopped taking my medicine for some time | 1 | 2 | 3 | 4 | 5 |
| I decided not to obey the dose | 1 | 2 | 3 | 4 | 5 |
| I took medicine less than the number of rules listed | 1 | 2 | 3 | 4 | 5 |

MARS score less than 6 = low compliance; MARS score 6-24 = moderate compliance; MARS score 25 = high compliance.
Source: [22]

## Effects of Pharmacist Counseling on Systolic Blood Pressure (SBP)

Systolic blood pressure was also analyzed using the Kruskal-Wallis test, where the results obtained were asymp. Sig 0.00 <0.05, meaning that there were differences from each meeting. Mann Whitney test results obtained that the Asymp.Sig value. (2-tailed) is 0.012, the value is less than $\alpha = 0.050$, so it can be concluded that after being given counseling intervention at the first meeting, there is a significant decrease in the patient's Systolic Blood Pressure (SBP). The analysis continued with the Wilcoxon and Binomial Test, where the number of patients whose SNP dropped at the second meeting was greater in the intervention group than in the control group. The same thing happened at the third and fourth meetings, where the total number of patients with SBP fell more than the group of patients who were given Pharmacist counseling compared to the group of patients who did not get Pharmacist counseling. Average systolic blood pressure also differed between the treatment group and the control group, namely P1 = 164 mmHg, P2 = 154 mmHg, P3 = 150 mmHg and P4 = 145 mmHg (treatment group) and P1 = 169 mmHg, P2 = 163 mmHg, P3 = 158 mmHg and P4 = 157 mmHg (control group). So it can be concluded that the provision of antihypertensive drug counseling by pharmacists can reduce the systolic blood pressure of prolanis patients in Primary healthcare centers. Complete results related to the use of antihypertensive drugs, levels of adherence and SBP can be seen in table 3.

| Table 3: Frequency of use of antihypertensive drugs, compliance and SBP | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Parameter | Meeting 1[a,b,c] | | Meeting 2[a,b,c] | | Meeting 3[a,b,c] | | Meeting 4[a,b,c] | |
| *Hypertension Drug* | *(Intervention)* | *(Control)* | *(Intervention)* | *(Control)* | *(Intervention)* | *(Control)* | *(Intervention)* | *(Control)* |
| Amlodipine 5 mg | 30(29,41%) | 22(21,57%) | 30(32,26%) | 22(23,66%) | 32(33,33%) | 29(30,21%) | 31(31,96%) | 25(25,77%) |
| Amlodipine 10 mg | 14(13,73%) | 12(11,76%) | 12(12,90%) | 10(10,75%) | 12(12,50%) | 6(6,25%) | 12(12,37%) | 9(9,28%) |
| Captopril 12,5 mg | 6(5,88%) | 8(7,84%) | 6(6,45%) | 5(5,38%) | 4(4,17%) | 8(8,33%) | 5(5,15%) | 7(7,22%) |
| Captopril 25 mg | 2(1,96%) | 5(4,90%) | 1(1,08%) | 5(5,38%) | 0(0%) | 3(3,13%) | 1(1,03%) | 5(5,15%) |
| Bisoprolol 2,5 mg | 2(1,96%) | 1(0,98%) | 1(1,08%) | 1(1,08%) | 1(1,04%) | 1(1,04%) | 1(1,03%) | 1(1,03%) |
| Total | 100% | | 100% | | 100% | | 100% | |
| *Average Compliance* | | | | | | | | |
| High | 12,50% | 14,58% | 52,08% | 31,25% | 79,17% | 58,33% | 79,17% | 58,33% |
| Moderate | 87,50% | 85,42% | 47,92% | 68,75% | 20,83% | 41,67% | 20,83% | 41,67% |
| Mean | 21,40 | 21,30 | 23,80 | 22,35 | 24,38 | 23,56 | 24,42 | 23,58 |
| Asymp.Sig.(0,000)[a] | | | - | | - | | - | |
| Asymp.Sig. (2-tailed)[b] | | | 0,000 | | 0,010 | | 0,951 | |
| Positive Ranks (Intervention)[c] | | | 38 | | 15 | | 10 | |
| Positive Ranks (Control)[c] | | | 27 | | 19 | | 11 | |
| Total | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| *SBP* | | | | | | | | |
| ≤ 140 mmHg | 8 | 5 | 16 | 6 | 19 | 13 | 23 | 14 |
| >140 mmHg | 40 | 43 | 32 | 42 | 29 | 35 | 25 | 34 |
| Total | 48 | 48 | 4848 | | 48 | 48 | 48 | 48 |
| MeanSBP | 164 | 169 | 154 | 163 | 150 | 158 | 145 | 157 |
| Asymp.Sig.(0,000)[a] | | | - | | - | | - | |
| Asymp.Sig. (2-tailed)[b] | | | 0,012 | | 0,428 | | 0,187 | |
| Negative Ranks (Intervention)[c] | | | 36 | | 30 | | 18 | |
| Negative Ranks (Control)[c] | | | 28 | | 21 | | 6 | |

a = KruskalWalis Test
b = Mann Whitney Test
c = Wilcoxon dan Binomial Test

## Discussion

Counseling aims to improve patient compliance with drug use so that mortality and loss (both costs and lost productivity) can be reduced [24]. The results of this study indicate the influence of counseling by trained Pharmacists on adherence to taking medication for hypertensive patients. These results are following previous studies, namely a significant increase in compliance with hypertension patients in drug use after getting Pharmacist counseling at Undata Hospital, Palu [25].

Patient non-compliance with treatment is one of the factors that play a role in the failure of counseling. Pharmacist counseling is an important factor in efforts to improve patient compliance in using drugs [26]. Various studies have shown that patient adherence to the treatment of chronic diseases is generally low. The low patient adherence that may be caused by accident (for example due to activity or forgetfulness and deliberately not taking medication when feeling worse or feeling better) shows that most patients are not compliant with the treatment of hypertension that is caused by patients often forgetting to take medication and wrong patient understanding regarding their illness and so, patients deliberately do not take medicine. Patients who are not compliant in taking medicine assume that after taking antihypertensive medication and a decrease in blood pressure, the patient feels his illness has healed and does not need to take the medicine again. Furthermore, the patient will take the medicine again if symptoms arise rising blood pressure, for example, the pain in the neck or feel dizzy. Noncompliance with medication can also be caused by a lack of patient understanding of the risks that will occur if the patient's blood pressure does not reach the target set. Patient compliance also affects the success rate of treatment. The results of therapy will not reach the optimal level without the awareness of patients to adhere to their treatment and can even cause therapy failure, and cause complications that are very detrimental to patients [27]. It is important to measure the level of adherence to achieve effectiveness and efficiency of treatment and to monitor the success of treatment. Besides, health workers including Pharmacists can conduct evaluations, recommend alternative treatments, and change in therapeutic and non-therapeutic patterns to further improve patient compliance.

This study increased medication adherence in patients while reducing diastolic blood pressure significantly. This is consistent with previous hypotheses and studies which state that increasing medication adherence will significantly reduce hypertension in hypertensive patients [25].

According to Chobanian et al., (2003) therapy in blood pressure should be comprehensive, which includes quitting smoking, decreasing lipid levels, reducing salt consumption, exercising regularly, and losing weight [28]. Safe and effective drug therapy will be achieved if the patient is given the right information about drugs and their use. Previous research has shown that the success of treatment in patients with hypertension with other diseases is not only influenced by patient compliance but also by the quality of health services, attitudes, staff skills and lifestyle of patients and families [29]. Therefore, to create knowledge and understanding of patients in the use of drugs that will have an impact on compliance with treatment and the success of the healing process, it is necessary to conduct drug information services for patients and families through drug counseling [24, 26]. This study has limitations in the form of a small number of subjects, the number of trained Pharmacists is still limited and the research time is not long. However, the results of this study have been able to illustrate to policyholders that drug counseling can increase patient knowledge in the use of appropriate drugs and motivate patients to use drugs by the recommended use that has been given to improve patient compliance and subsequently can increase the success of hypertension therapy is being carried out namely realizing stable blood pressure and preventing complications due to hypertension.

## Conclusion

The use of antihypertensive drugs in Primary Healthcare Centers in Pandeglang district consists of a single antihypertensive drug and two antihypertensive drugs. The single most prescribed antihypertensive drug is amlodipine 5 mg (P1 = 50.98%, P2 = 55.92%, P3 = 63.54% and P4 = 57.73%) and the two most commonly used antihypertensive drugs are amlodipine and captopril. The patients with the most hypertension were patients> 50 years (61%), with the most sex being women (80%) and with work as housewives (53%). Patient compliance scores increased significantly between meetings and between the intervention group and the control group with a p-value <0.050, and the average intervention group adherence also differed significantly between the intervention group and the control group. The same results were also obtained from Systole Blood Pressure data, where the average SBP of the Intervention group patients decreased significantly when compared to the control group, so it can be concluded that the administration of drug counseling by Pharmacists can significantly influence the compliance and blood pressure of hypertensive patients in Primary HealthcareCenters in Pandeglang Regency.

## References

1. World Health Organization. Raised blood pressure. World Health Organization. 2011.
2. Massumeh Niazi, Fatemeh Yari, Amir Shakarami; A Review of Medicinal Herbs in the Lamiaceae Family Used to Treat Ar-terial Hypertension, Entomol Appl Sci Lett, 2019, 6 (1): 22-27.
3. Saseen, J.J. and Carter B. Pharmacotherapy A Pathophysiologic Approach. In: Pharmacotherapy A

Pathophysiologic Approach. Mc. Graw-Hill Medical, United State; 2008.

4. Tan LM, Bakry MM, Redzuan A. Physiological Response to Dietary Salt: A Review on Salt Sensitivity Hypertension. International Journal of Pharmaceutical And Phytopharmacological Research. 2018 Apr 1;8(2):8-20.

5. Rashid SA, Hamdi MM, Mustafa AS. Monitoring the Cardiovascular Parameters (HR, RR, PBP) Under Pressure Situation. International Journal of Pharmaceutical Research And Allied Sciences. 2018 Jan 1;7(2):191-9.

6. Amer WM, Zaton HK, Taha NM, El-Khashab MN. Nurses Intervention Regarding Caring for Patients with Esophageal Varies During Endoscopy at Zagazig University Hospital. International Journal of Pharmaceutical Research & Allied Sciences. 2018 Oct 1;7(4).

7. Yogiantoro M. Hipertensi esensial. Jakarta: Departemen Ilmu Penyakit Dalam FKUI. 2006:599-601.

8. World Health Organization. Adherence to long-term therapies: evidence for action. World Health Organization; 2003.

9. World Health Organization, International Society of Hypertension Writing Group. 2003 World Health Organization (WHO)/International Society of Hypertension (ISH) statement on management of hypertension. Journal of hypertension. 2003 Nov 1;21(11):1983-92.

10. American Society of Health-System Pharmacists. ASHP guidelines on pharmacist-conducted patient education and counseling. Am J Health-Syst Pharm. 1997;54(4):431-4.

11. Jerant A, Franks P, Kravitz RL. Associations between pain control self-efficacy, self-efficacy for communicating with physicians, and subsequent pain severity among cancer patients. Patient education and counseling. 2011 Nov 1;85(2):275-80.

12. INDONESIA PR. Peraturan Pemerintah Republik Indonesia Nomor 51 Tahun 2009 tentang Pekerjaan Kefarmasian.

13. Puspitasari HP, Aslani P, Krass I. A review of counseling practices on prescription medicines in community pharmacies. Research in Social and Administrative Pharmacy. 2009 Sep 1;5(3):197-210.

14. Ariani N, DA M. Hubungan Pemberian Informasi Obat Dengan Kepatuhan Minum Obat Antibiotik Pada Pasien Rawat Jalan Di Puskesmas Remaja Samarinda. Pros Rakernas PIT IAI. 2016:2541-474.

15. Nieuwlaat R, Wilczynski N, Navarro T, Hobson N, Jeffery R, Keepanasseril A, Agoritsas T, Mistry N, Iorio A, Jack S, Sivaramalingam B. Interventions for enhancing medication adherence. Cochrane database of systematic reviews. 2014(11).

16. P Nomor PP. 131 Tahun 2015 tentang Penetapan Daerah Tertinggal Tahun 2015-2019. Jakarta, Deputi Bidang Pembangunan Manusia dan Kebudayaan. 2015.

17. Martono H. Hipertensi pada Usia Lanjut. In: Buku Ajar Boedhi-Darmojo Geriatri (Ilmu Kesehatan Usia Lanjut). 2014.

18. Sustrani, L., Alam, S., dan Hadibroto I. Hipertensi. Jakarta: PT Gramedia Pustaka; 2006.

19. Rahajeng E, Tuminah S. Prevalensi hipertensi dan determinannya di Indonesia. Majalah Kedokteran Indonesia. 2009 Dec;59(12):580-7.

20. Norman KF. Pengaruh ceramah kesehatan terhadap kepatuhan dan tekanan darah pasien hipertensi di puskesmas Kecamatan Beji Kota Depok [Skripsi]. Depok: Fakultas Farmasi, Universitas Indonesia. 2012.

21. Saepudin PS, Hidayanti P, Ningsih ES. Kepatuhan penggunaan obat pada pasien hipertensi di Puskesmas. Jurnal Farmasi Indonesia. 2013;6(4):249.

22. Perwitasari DA, Susilo R, Supadmi W, Kaptein AA. Adherence and quality of life of hypertension patients in gunung jati hospital, cirebon, indonesia. Indonesian Journal of Clinical Pharmacy. 2015;4(4):289-98.

23. Kurniapuri A, Supadmi W. Pengaruh Pemberian Informasi Obat Antihipertensi Terhadap Kepatuhan Pasien Hipertensi di Puskesmas Umbulharjo I Yogyakarta Periode November 2014. Majalah Farmaseutik. 2015;11(1):268-74.

24. Schnipper JL, Kirwin JL, Cotugno MC, Wahlstrom SA, Brown BA, Tarvin E, Kachalia A, Horng M, Roy CL, McKean SC, Bates DW. Role of pharmacist counseling in preventing adverse drug events after hospitalization. Archives of internal medicine. 2006 Mar 13;166(5):565-71.

25. Sari IP. Evaluasi Pengaruh Konseling Farmasis Terhadap Hasil Terapi Pasien Hipertensi Usia Lanjut Di Poliklinik Jantung Rsud Undata Palu Periode November-Desember 2011 (Doctoral dissertation, Universitas Gadjah Mada).

26. Vlasnik JJ, Aliotta SL, DeLor B. Evidence-based assessment and intervention strategies to increase adherence to prescribed medication plans. The Case Manager. 2005 Mar 1;16(2):55-9.

27. Ghembaza MA, Senoussaoui Y, Kendouci Tani M, Meguenni K. Impact of patient knowledge of hypertension complications on adherence to antihypertensive therapy. Current hypertension reviews. 2014 Mar 1;10(1):41-8.

28. Joint National Committee on Prevention, Treatment of High Blood Pressure. JNC 7 express: the seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure. US Department of Health and Human Services; 2003.

29. Hashmi SK, Afridi MB, Abbas K, Sajwani RA, Saleheen D, Frossard PM, Ishaq M, Ambreen A, Ahmad U. Factors associated with adherence to anti-hypertensive treatment in Pakistan. PloS one. 2007;2(3).