



Adherence and clinical outcomes of hypertensive patients in rural areas after receiving home pharmacy care interventions

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<p>Kata kunci: hypertension, adherence, home pharmacy care, rural areas</p>	<p>ABSTRAK: Kepatuhan masih menjadi masalah yang menjadi perhatian dalam pengobatan hipertensi, sehingga diperlukan intervensi yang tepat untuk mengatasi kondisi tersebut. Penelitian ini bertujuan untuk mengetahui pengaruh <i>home pharmacy care</i> terhadap kepatuhan minum obat dan <i>outcome klinis</i>. Penelitian ini merupakan pilot study menggunakan metode <i>quasi eksperimental pre and post design with control</i> di fasilitas pelayanan kesehatan primer daerah pedesaan dengan melibatkan 40 pasien hipertensi yang dibagi menjadi dua kelompok masing-masing 20 pasien pada kelompok kontrol dan perlakuan. Kuesioner MGLS digunakan untuk menilai kepatuhan minum obat dan <i>outcome klinis</i> dengan menilai tekanan darah. Data dianalisis menggunakan statistik deskriptif, uji bivariat menggunakan <i>chi-square</i>, <i>Mann Whitney</i>, uji t berpasangan, dan uji Wilcoxon signed ranks-test. Pada awal dan akhir penelitian tidak terdapat perbedaan tingkat kepatuhan pengobatan pada kelompok kontrol ($p=0,701$) sedangkan pada kelompok intervensi terdapat perbedaan yang signifikan ($p=0,009$). Tekanan darah sistolik pada kelompok kontrol ($p=0,000$) dan kelompok intervensi ($p=0,004$) menunjukkan adanya perbedaan, sedangkan tekanan darah diastolik pada kedua kelompok tidak terdapat perbedaan. Selain itu, tidak terdapat perbedaan pencapaian target tekanan darah antar kelompok ($p=0,522$). Temuan dalam penelitian ini adalah <i>home pharmacy care</i> berpotensi meningkatkan kepatuhan pengobatan di daerah pedesaan namun belum berdampak pada penurunan tekanan dan pencapaian target terapi.</p>
<p>Keywords: hypertension, adherence, home pharmacy care, rural areas</p>	<p>ABSTRACT: Adherence is still a significant problem in the treatment of hypertension, so appropriate interventions are needed to overcome this condition. This study aims to determine the effect of home pharmacy care on medication adherence and clinical outcomes. This research is a pilot study using a quasi-experimental pre- and post-design with control in primary health care facilities in rural areas involving 40 hypertensive patients divided into two each 20 patients in the control and treatment groups. The MGLS questionnaire measured treatment adherence and clinical outcome by assessing blood pressure. Data were analyzed using descriptive statistics, bivariate tests using chi-square, Mann Whitney, paired t-test, and Wilcoxon signed ranks-test. At the beginning and end of the study there was no difference in the level of treatment adherence in the control group ($p=0.701$) while in the intervention group there was a significant difference ($p=0.009$). Systolic blood pressure in the control group ($p=0.000$) and the intervention group ($p=0.004$) showed a difference, while there was no difference in diastolic blood pressure in the two groups. In addition, there was no difference in achieving blood pressure targets between groups ($p=0.522$). The findings in this study are that home pharmacy services have the potential to increase medication adherence in rural areas but have not had an impact on reducing pressure and achieving targets.</p>

1 INTRODUCTION

The prevalence of hypertension in low-middle-income countries continues to increase [1]. In Indonesia, the prevalence of hypertension increased from 25.8% in 2013 to 34.1% in 2018 [2]. Globally, hypertension is the main cause of disability-adjusted

life-years and the leading cause of death, with 10.4 million deaths per year [3]. Cardiovascular disease morbidity and mortality risk are directly correlated with blood pressure; therefore, antihypertensive drug therapy is recommended to reduce the risk of cardiovascular events and death in patients with high blood pressure [4]. In patients prescribed med-

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ication by a doctor, the adequacy of the number and dose of antihypertensive drugs and medication adherence are the main factors for controlling blood pressure [5]. *Treatment adherence* is when patients take medication according to a doctor's prescription [6].

The level of patient adherence to medication is a problem in the treatment of hypertension. The percentage of adherence of hypertensive patients to treatment in a systematic review and meta-analysis was reported to be 45.2% [7]. Five dimensions interact with each other in influencing adherence: social/economic, health system, condition-related, therapeutic, and patient factors [8]. Differences in adherence to the treatment of hypertension patients in urban and rural areas are due to variations in demographic, economic, and social-environment characteristics. Studies in several countries show findings of different adherence levels in urban and rural communities, including in China, the compliance rate in urban areas is better than in rural; in Brazil, compliance in rural areas is better; and in Columbia, there is no difference between the two regions [9 - 11]. In Indonesia, adherence to the treatment of hypertensive patients in urban areas is slightly better than in rural areas in national reports of primary health research. However, many studies show that the level of adherence to the treatment of hypertensive patients varies in each service facility's primary health. The proportion of taking antihypertensive medication regularly in residents ≥ 18 years in rural areas is 51.27% taking the medication regularly, 35.8% not taking the medication regularly, and not taking the medication 12.93%. Reasons for non-compliance that can be identified are feeling healthy, not taking regular medication, taking traditional medicine, often forgetting, not being able to buy regular medicines, and medicines not being available [2].

Interventions to improve patient adherence to treatment in primary health care facilities can be carried out through home pharmacy care, which is carried out through pharmacists conducting patient visits and accompanying patients for pharmacy services at home with the patient's or family's consent [12]. Previous studies have reported that home pharmacy care can improve medication adherence [13], improve the level of knowledge, adherence, clinical outcomes, and quality of life of hypertensive patients [14], dan lower blood pressure and improve quality of life [15]. However, even though home pharmacy care has shown promising results, modifications to home pharmacy care activities targeted at specific groups need to be made according to the

characteristics of each region. Based on the description above, we conducted a pilot study on the influence of home pharmacy care by modifying the education of hypertensive patients in rural areas in communities with primary education to improve adherence and clinical outcomes.

2 METHODS

Research design

This research is a pilot study using a quasi-experimental pre and post design with control in primary healthcare facilities in rural Musi Rawas Regency, South Sumatra Province. All patients had signed informed consent to participate in this study.

Implementation of Home Pharmacy Care

Home pharmacy care in this study was defined as an intervention by making direct visits to the patient's home for 10-20 minutes, carried out on the 15th day after receiving the drug. The intervention was carried out by final semester students of the Bachelor of Pharmacy study program, who had received training and assistance from pharmacists. The control group received standard services, while the intervention group received standard services and home pharmacy care, as shown in Table 1. Standard services in the form of providing information on drugs used by patients include drug names, properties, and directions for use. The medication reminder card contains columns for the name of the drug, indication, rules for use, and hours of drug administration as well as checklist columns that the patient must fill in after taking the medication and providing education using leaflets adopting leaflets issued by the Ministry of Health of the Republic of Indonesia. Patient compliance was measured using the MGLS questionnaire and clinical outcomes of systolic and diastolic blood pressure and blood pressure target achievement at the beginning and end of the study.

Research subject

A total of 40 hypertensive patients were included, divided into 2 groups, namely 20 patients in the control group and 20 patients in the intervention group. The inclusion criteria were defined as adult patients ≥ 18 years old, with a diagnosis of essential hypertension without comorbidities or complications and receiving antihypertensive drugs ≤ 2 kinds of drugs, not health workers, patients with uncontrolled blood pressure at the start of the study, and willing to participate in the study by filling out informed consent. The number of sample members, each 10 to 20, can

be used in experimental research using control and treatment groups [16].

Research Instruments

Socioeconomic data were obtained from questionnaires covering age, gender, education, working status, monthly income, marital status, weight, and height, plus lifestyle data, namely diet, and exercise. Therapeutic data and clinical conditions were obtained from the patient's medical records, including the amount of antihypertensive, duration of illness, and blood pressure.

Treatment adherence was measured using the MGLS questionnaire. The questionnaire is valid and reliable for respondents in Indonesia, with Cronbach alpha = 0.651, test-retest = 0.45, and $r = 0.58$. A score of 1 is given for a "yes" answer and a "0" for a "no" answer. High compliance for a score of 0, moderate compliance for a score of 1-3, and low compliance for a score of 4 [17].

Data analysis

Descriptive statistics summarize the socioeconomic, therapeutic, and clinical characteristics based on urban and rural area criteria. Continuous variables are reported using the mean with a standard deviation. The control and treatment groups were identified for the uniformity of sociodemographic and therapeutic characteristics using the bivariate test using chi-square and Mann-Whitney. Differences in adherence and blood pressure were analyzed using the paired t-test, and Wilcoxon signed ranks-test. Differences in blood pressure control in the two groups were analyzed using the chi-square test. Significance is set at p -value < 0.05 . All statistical tests use SPSS version 26.

3 RESULTS AND DISCUSSION

Patient Characteristics

Table 2 shows that the sociodemographic characteristics, lifestyle, therapy, and blood pressure of the control and intervention groups are homogeneous in all variables (p -value > 0.050). The homogeneity of the two groups showed that the research subjects were on the same basis when they started the intervention.

Sociodemographic characteristics show that most of the patients are aged ≥ 60 years (65%), female (62.5%), primary school education (60%), retired/not working (62.5%), monthly income $< 1,000,000$ IDR, married 70.0% and normal BMI (67.5%). These data

are similar to previous studies which reported the characteristics of hypertension patients in rural areas, dominated by the elderly, female sex with primary school education, and patients who were not obese. The difference is that there are jobs where working patients are more prone to hypertension [18]. The prevalence of hypertension increases with age, female gender, low level of education, and not working [2]. Hypertension occurs with age, with a prevalence of $> 60\%$ in > 60 years. Increasing the population at an advanced age and adopting an irregular lifestyle, body weight increases are associated with this incident [5].

Most patients did not receive a diet (72.5%) and did not exercise (55.0%). A healthy food diet is recommended for hypertensive patients by consuming vegetables and fruits, foods containing whole grains, polyunsaturated fats, and dairy products. Consumption of foods high in sugar, saturated fat, and trans fat must be reduced. Moderate-intensity aerobic exercise such as walking, jogging, biking, yoga, or swimming for 30 minutes 5-7 days per week is recommended. Weight control is aimed at avoiding obesity [19].

Therapeutic data shows that most patients receive monotherapy, 85% using amlodipine, and the remaining 15% use a combination of amlodipine and captopril. Most patients received 1-5 years of therapy (52.5%), and the condition of blood pressure SBP ≥ 160 mmHg and DBP ≥ 100 mmHg 75%. A study reported that monotherapy drugs in primary health care facilities were dominated by monotherapy at 89.93%, with the most widely used drug, amlodipine. In contrast, in antihypertensive drugs, 10.07% combined with drugs often used a combination of amlodipine and hydrochlorothiazide. This study also reported that most of the patients had uncontrolled blood pressure (75.51%) [20].

Overcoming uncontrolled blood pressure requires intervention with an appropriate population-based strategy that focuses on ensuring patients have a place of health care for routine checks, optimizing adherence, and minimizing therapeutic inertia associated with high blood pressure control [21]. Interventions to improve medication adherence in hypertensive patients can be performed at the doctor, patient, drug therapy, and healthcare system levels [22].

Effect of Home Pharmacy Care Intervention on Compliance and Clinical Outcome

Table 3 shows that the treatment adherence level in the control group experienced a slight change Δ of

\pm SD 0.10 ± 1.21 , but the change was insignificant ($p=0.701$). Unlike the intervention group, there was a significant increase in adherence $\Delta \pm$ SD 0.70 ± 1.08 ($p=0.009$). This value indicates that home pharmacy care interventions performed on patients affect medication adherence in people living in rural areas.

Various factors can cause nonadherence to treatment, and interventions should be focused on the existing causes. Nonadherence is caused by poor economic status, low education, unemployed, and high medical costs; interventions can be focused on family support, health insurance, and an uninterrupted drug supply. Non-compliance caused by the unavailability of consultation time and poor relationship between patients and health workers, interventions can be carried out with the participation of health workers, including pharmacists, in educational programs. Inadequate patient knowledge and skills in managing symptoms and treatment, perception of health risks related to disease, and active participation in disease management therapy monitoring, can be overcome with behavioral interventions and motivation to improve relationships, education on disease management and self-management improvement as well as memory aids and reminders take medicine [8].

Interventions made to improve compliance must consider these factors. Home pharmacy care in this study combined various educational materials with medication reminder cards. In addition to overcoming the lack of consultation time at service facilities, it increases good relations between patients and patient motivation. Educational material delivered to patients in leaflet media adopts leaflet material published by the Ministry of Health of the Republic of Indonesia, including education about hypertension, risk factors, and complications, how to control blood pressure, and how to regulate diet [23]. Pharmacist intervention in primary health care through home pharmacy care is a manifestation of clinical pharmacy services that have been regulated in pharmacy service standards in order to provide benefits for patients in ensuring the safety, effectiveness, and affordability of medical expenses, increasing understanding in managing and using drugs, avoiding drug reactions undesirable outcomes and resolve drug use problems in certain circumstances [12].

Before the intervention, all patients in the control and intervention groups had blood pressure that had not reached the expected therapeutic target. There was a significant decrease in systolic blood pressure in the control group ($p=0.000$) and the intervention group ($p=0.004$). In contrast, diastolic blood pressure did not decrease significantly in the control

group ($p=0.265$) or the intervention group ($p=0.167$). However, it was found that the decrease in diastolic blood pressure in the intervention group $\Delta \pm$ SD 3.60 ± 11.20 was slightly better than the control group $\Delta \pm$ SD 3.05 ± 11.87 . The improvement in systolic blood pressure in the intervention group cannot be ascertained due to the provision of home pharmacy care. The control group also experienced the same thing. Likewise, there was no significant difference in diastolic blood pressure before and after the intervention. However, if seen from the percentage of patients in the intervention group, there were more in controlled conditions (50%) than in the control group (35%).

Table 4 shows that there was no difference in blood pressure control in the control group and the intervention group ($p=0.522$). However, in the intervention group, it was found that patients with controlled blood pressure were 50% more than the control group, 35%. JNC VIII recommends that patients receiving hypertension treatment achieve their target blood pressure. Target blood pressure for patients under <60 years, namely $<140/90$ mmHg, and those under ≥ 60 years, or $<150/90$ mmHg. Target blood pressure for patients with diabetes mellitus and patients with CKD, namely $<140/90$ mm Hg [24]. The findings in this study showed that home pharmacy care did not affect clinical outcomes.

Previous studies have reported positive results through home pharmacy care interventions for medication adherence, level of knowledge, clinical outcomes, and quality of life [13] [14] [15]. In this study, home pharmacy care affected adherence but did not affect clinical outcomes, but the direction of improvement was visible. The factors influencing blood pressure control consist of complex internal and external factors. One study reported that blood pressure control was related to age, partner status, salt consumption, coffee consumption, stress, and anti-hypertensive drugs [25].

The causal factors for failure to normalize blood pressure are very complex, including not having health insurance, lack of access to health services, absence of health care facilities for routine control, failure to diagnose hypertension (failure to assess high blood pressure without showing symptoms, blood pressure measurement) inaccurate, failed to recognize hypertension), therapeutic inertia of the clinician (failure to treat asymptomatic hypertension, failure to start treatment when hypertension is present, failure to intensify therapy in patients whose blood pressure is above the therapeutic target), inadequate patient education, absence of shared decision making, lifestyle recommendations and inade-

quate counseling, low adherence to lifestyle modifications and adherence to prescribed antihypertensive drugs, no monitoring and reporting of blood pressure from home, low awareness of patients and health care providers about pressure targets blood and no systematic follow-up [21]. Pharmacists can improve clinical outcomes in chronic diseases including hypertension disease [26]. Pharmacist-led interventions improved BP control and medication adherence through education, counseling, or a combination of both [27]. Verbal educational interventions can improve health literacy and consequent adherence to medication among individuals with hypertension. Frequent verbal educational interventions can enhance patient engagement, participation as well as promote medication literacy and adherence [28].

The study's limitations were that a pilot study was conducted on a small number of samples; compliance measurement was carried out using a self-reported questionnaire which could lead to memory bias—a small of the possible influencing factors and blood pressure using data from medical records. Subsequent studies were carried out longer with scheduled home pharmacy care, modified educational materials, and in a larger population.

4 CONCLUSION

Home pharmacy care affects patient adherence. Systolic blood pressure in both groups decreased, so it cannot be ascertained that the decrease in blood pressure was due to the effect of the intervention. The decrease in diastolic blood pressure was better in the intervention group, and the desire for blood pressure was more pronounced in the intervention group but not significant. The findings in this study demonstrated that home pharmacy treatment improves adherence and does not affect reducing blood pressure and achieving blood pressure targets in rural areas.

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REFERENCES

- [1] WHO, World health statistics 2022 (Monitoring health of the SDGs). 2022.
- [2] Kemenkes, "Laporan Nasional Riset Kesehatan Dasar," Jakarta, 2019.
- [3] E. Gakidou *et al.*, "Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990-2016: A systematic analysis for the Global Burden of Disease Study 2016," *Lancet*, vol. 390, no. 10100, pp. 1345–1422, 2017, doi: 10.1016/S0140-6736(17)32366-8.
- [4] D. Joseph T, G. C. Yee, L. M. Posey, S. T. Haines, T. D. Nolin, and V. Ellingrod, *Pharmacotherapy a pathophysiologic approach*, Eleventh. New York: Mc Graw Hill, 2020.
- [5] B. Williams *et al.*, 2018 practice guidelines for the management of arterial hypertension of the European society of cardiology and the European society of hypertension ESC/ESH task force for the management of arterial hypertension, vol. 36, no. 12. 2018.
- [6] B. Vrijens *et al.*, "A new taxonomy for describing and defining adherence to medications," *Br. J. Clin. Pharmacol.*, vol. 73, no. 5, pp. 691–705, 2012, doi: 10.1111/j.1365-2125.2012.04167.x.
- [7] T. M. Abegaz, Abdulla Shehab, E. A. Gebreyohannes, A. S. Bhagavathula, and A. A. Elnour, "Nonadherence to antihypertensive drugs A Systematic review and meta analysis," *Medicine (Baltimore)*, vol. 96, no. 4, p. e5641, 2017.
- [8] WHO, Adherence To Long-Term Therapies : Evidence for Action. 2003.
- [9] J. Pan, H. Yu, B. Hu, and Q. Li, "Urban-Rural Difference in Treatment Adherence of Chinese Hypertensive Patients," *Patient Prefer. Adherence*, vol. 16, no. August, pp. 2125–2133, 2022, doi: 10.2147/PPA.S377203.
- [10] P. Magnabosco, E. C. Teraoka, E. M. De Oliveira, E. A. Felipe, D. Freitas, and L. M. Marchi-Alves, "Comparative analysis of non-adherence to medication treatment for systemic arterial hypertension in urban and rural populations," *Rev. Lat. Am. Enfermagem*, vol. 23, no. 1, pp. 20–27, 2015, doi: 10.1590/0104-1169.0144.2520.
- [11] C. Arbuckle *et al.*, "Evaluating Factors Impacting Medication Adherence Among Rural, Urban, and Suburban Populations," *J. Rural Heal.*, vol. 34, no. 4, pp. 339–346, 2018, doi: 10.1111/jrh.12291.
- [12] Kemenkes RI, Petunjuk Teknis Standar Pelayanan Kefarmasian di Puskesmas. 2019.
- [13] W. Utaminingrum, R. Pranitasari, and A. M. Kusuma, "Pengaruh Home Care Apoteker terhadap Kepatuhan Pasien Hipertensi," *J. Farm. Klin. Indones.*, vol. 6, no. December 2017, pp. 240–246, 2018, doi: 10.15416/ijcp.2017.6.4.240.
- [14] S. Widyastuti *et al.*, "Pengaruh home pharmacy care terhadap pengetahuan , kepatuhan, outcome klinik dan kualitas hidup," *Maj. Farm.*, vol. 15, no. 2, pp. 105–112, 2019.
- [15] P. Utami, B. Rahajeng, and C. Soraya, "Pengaruh edukasi home pharmacy care terhadap kualitas hidup pasien hipertensi di puskesmas," *J. Farm. Sains dan Prakt.*, vol. 5, no. 1, pp. 41–51, 2019.
- [16] Sugiyono, *Metode Penelitian Kuantitatif*. Bandung: Alfabeta, 2019.

- [17] S. A. Kristina, L. R. Putri, D. A. Riani, Z. Ikawati, and D. Endarti, "Validity of self-reported measure of medication adherence among diabetic patients in indonesia.," *Int. Res. J. Pharm.*, vol. 10, no. December 2017, pp. 144–148, 2019, doi: 10.7897/2230-8407.1007234.
- [18] M. F. Sakinah, D. S. S. Rejeki, and S. Nurlaela, "Faktor Yang Berhubungan Dengan Kejadian Hipertensi di Pedesaan dan Perkotaan Kabupaten Banyumas (Analisis Data Riskeudas 2018)," *J. Kesmas Indones.*, vol. 13, no. 1, pp. 46–63, 2021.
- [19] T. Unger *et al.*, "2020 International Society of Hypertension Global Hypertension Practice Guidelines," *Hypertension*, vol. 75, no. 6, pp. 1334–1357, 2020, doi: 10.1161/HYPERTENSIONAHA.120.15026.
- [20] I. Ernawati, S. S. Fandinata, and S. N. Permatasari, "Profil Penggunaan Obat Antihipertensi di Puskesmas Surabaya," *Lambung Farm.*, vol. 3, no. 2, pp. 134–138, 2022.
- [21] R. M. Carey, P. Muntner, H. B. Bosworth, and P. K. Whelton, "Prevention and Control of Hypertension: JACC Health Promotion Series," *J. Am. Coll. Cardiol.*, vol. 72, no. 11, pp. 1278–1293, 2018, doi: 10.1016/j.jacc.2018.07.008.
- [22] M. Burnier and B. M. Egan, "Adherence in Hypertension: A Review of Prevalence, Risk Factors, Impact, and Management," *Circ. Res.*, vol. 124, no. 7, pp. 1124–1140, 2019, doi: 10.1161/CIRCRESAHA.118.313220.
- [23] Kemenkes RI "Hipertensi," <https://p2ptm.kemkes.go.id/dokumen-ptm/leaflet-hipertensi--14-x-14-cm,2022>. Diakses pada tanggal 15 Februari 2022
- [24] P. A. James *et al.*, "2014 Evidence-based guideline for the management of high blood pressure in adults: Report from the panel members appointed to the Eighth Joint National Committee (JNC 8)," *JAMA - J. Am. Med. Assoc.*, vol. 311, no. 5, pp. 507–520, 2014, doi: 10.1001/jama.2013.284427.
- [25] B. Artiyaningrum, "Faktor-faktor yang Berhubungan dengan Kejadian Hipertensi tidak Terkendali pada Penderita yang Melakukan Pemeriksaan Rutin," *J. Perspekt. Kesehat. Masy.*, vol. 1, no. 1, pp. 12–20, 2016.
- [26] T. V. Newman *et al.*, "Impact of community pharmacist-led interventions in chronic disease management on clinical, utilization, and economic outcomes: An umbrella review," *Res. Soc. Adm. Pharm.*, vol. 16, no. 9, pp. 1155–1165, 2020, doi: 10.1016/j.sapharm.2019.12.016.
- [27] L. Reeves, K. Robinson, T. McClelland, C. A. Adedoyin, A. Broeseker, and G. Adunlin, "Pharmacist Interventions in the Management of Blood Pressure Control and Adherence to Antihypertensive Medications: A Systematic Review of Randomized Controlled Trials," *J. Pharm. Pract.*, vol. 20, no. 10, pp. 1–13, 2020, doi: 10.1177/0897190020903573.
- [28] A. G. Ampofo, E. Khan, and M. B. Ibitoye, "Understanding the role of educational interventions on medication adherence in hypertension: A systematic review and meta-analysis," *Hear. Lung*, vol. 49, no. 5, pp. 537–547, 2020, doi: 10.1016/j.hrtlng.2020.02.039. _____

APPENDIX

Table 1. Treatment of respondents

No	Control group	No	Intervention group
1	Provision of drug information used includes drug name, efficacy and rules of use	1	Provision of drug information used includes drug name, efficacy and rules of use
		2	Medication reminder card
		3	Education about hypertension, risk factors and complications
		4	Education on how to control hypertension
		5	Education on how to regulate eating patterns
		6	Opportunity to ask questions related to disease, non-pharmacological therapy and pharmacological therapy

Table 2. Sociodemographic characteristics, lifestyle, therapy and blood pressure (n=40)

Variables	n	%	Respondents for each group				p-value	
			(n=20)					
			Control	%	Intervention	%		
Age, years	≥ 18 – 45	5	12.5	2	10.0	3	15.0	0.911 ^a
	46 – 59	9	22.5	5	25.0	4	20.0	
	≥ 60	26	65.0	13	65.0	13	65.0	
	Mean (SD)	58.50±8.80		59.00±8.87		58±8.932		
Gender	Male	15	37.5	7	35.0	8	40.0	1.000 ^b
	Female	25	62.5	13	65.0	12	60.0	
Education	Primary	24	60.0	15	75.0	9	45.0	0.107 ^b
	Middle school	16	40.0	5	25.0	11	55.0	
Working status	Working	15	37.5	7	35.0	8	40.0	1.000 ^b
	Retired/not Working	25	62.5	13	65.0	12	60.0	
Monthly income (IDR)	< 1.000.000	28	70.0	16	80.0	12	60.0	0.301 ^b
	1.000.000 - < 3.000.000	12	30.0	4	20.0	8	40.0	
Marital status	Married	28	70.0	13	65.0	15	75.0	0.730 ^b
	Divorce/single	12	30.0	7	35.0	5	25.0	
BMI	Normal	27	67.5	12	60.0	15	75.0	0.500 ^b
	Overweight	13	32.5	8	40.0	5	25.0	
Diet	Diet	11	27.5	6	30.0	5	25.0	1.000 ^b
	Not dieting	29	72.5	14	70.0	15	75.0	
Physical exercise	No physical exercise	22	55.0	10	50.0	12	60.0	0.608 ^a
	Occasionally exercising regularly	12	30.0	7	35.0	5	25.0	
		6	15.0	3	15.0	3	15.0	
Number of antihypertensive drugs	1	34	85.0	16	80.0	18	90.0	0.382 ^a
	2	6	15.0	4	20.0	2	10.0	
Duration of illness, years	< 1	11	27.5	5	25.0	6	30.0	0.812 ^a
	1 - 5	21	52.5	11	55.0	10	50.0	
	>5	8	20.5	4	20.0	4	20.0	
Blood Pressure (mmHg)	SBP140-159 or DBP 90-99	10	25.0	4	20.0	6	30.0	0.715 ^b
	SBP ≥ 160 or DBP ≥ 100	30	75.0	16	80.0	14	70.0	

Abbreviations: IDR, Indonesia Rupiah; SBP, Systolic blood pressure; DBP, Diastolic blood pressure; BMI, Body Mass Index

^amann-whitney, ^bChi square

Table 3. Effect of home pharmacy care on adherence, SBP and DBP

Variables	Control group (rerata±SD)		Δ±SD	p-value	Intervention group (rerata±SD)		Δ±SD	p-value
	Pretest	Post test			Pretest	Post test		
	Adherence	1.60±1.05			1.35±0.99	0.10±1.21		
Clinical outcomes								
a. SBP	172.15±16.53	148.80±22.16	23.35±14.84	0.000 ^a	162.50±22.90	140.20±24.16	22.30±25.43	0.004 ^b
b. DBP	88.70±7.51	85.65±7.29	3.05±11.87	0.265 ^a	88.45±9.82	84.85±7.30	3.60±11.20	0.167 ^a

Abbreviations: SBP, Systolic Blood Pressure; DBP, Diastolic Blood Pressure

^aPaired t-test, ^bwilcoxon signed ranks-test

Table 4. Effect of home pharmacy care on blood pressure control

Variable	Controlled		Uncontrolled		p-value	
	n	%	n	%		
	Groups	Control	7	35.0		13
	Intervention	10	50.0	10	50.0	