

Compliance in medication control of hypertension patients during the transition period of the COVID-19 pandemic

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Abstract

Purpose: This study aims to determine the relationship between adherence to medication control and blood pressure in hypertensive patients at the Talawi Public Health Center, Sawahlunto, during the transition period of the COVID-19 pandemic. **Methods:** This observational analytic study with a cross-sectional design was conducted from May to June 2023 at the Talawi Public Health Center, Sawahlunto, with 83 research subjects. The research instrument used primary data from the MMAS-8 questionnaire with short interviews and secondary data in medical records of hypertension patients at the Talawi Public Health Center, Sawahlunto, in 2021–2023. The research results were analyzed by chi-square test. **Results:** The results of this study were that the majority of hypertensive patients were not compliant in controlling their medication (65.1%), and the majority of hypertensive patients had uncontrolled blood pressure (61.4%). **Conclusion:** This study concludes a significant relationship between adherence to medication control and blood pressure in hypertensive patients at the Talawi Public Health Center, Sawahlunto ($p=0.041$).

Keywords: blood pressure; hypertension; medication control

INTRODUCTION

Hypertension, commonly known as high blood pressure, is a condition when blood pressure increases continuously. Hypertension can be diagnosed if systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg [1].

Hypertension is a common chronic disease with complex pathophysiology that is often encountered in primary health care settings in Indonesia. If this

condition is not treated adequately, the medium-term or long-term prognosis will be poor [2].

Based on the 2018 Basic Health Research results, the prevalence of hypertension in Indonesia based on measurements in residents aged ≥ 18 years is 34.11%. Meanwhile, the prevalence of hypertension in Indonesia based on a doctor's diagnosis is 8.36%. The province with the highest hypertension prevalence value in 2018 is South Kalimantan, 44.13%. Based on the results of measurements on the population aged

≥18 years, the prevalence percentage of the population experiencing hypertension in West Sumatra Province is 25.16%. The prevalence of hypertension based on a doctor's diagnosis in West Sumatra is 7.27% [3].

Hypertension is a chronic disease that cannot be cured but can be controlled. Therefore, adherence to therapy in hypertensive patients is an important thing to note [4]. Compliance with hypertension therapy is measured by the frequency of visits to healthcare facilities to obtain antihypertensive drugs or to check blood pressure. Patients with hypertension must visit a health facility regularly. However, some sufferers do not comply with regular visits to health facilities. The hypertensive patient will only visit the public health center when complaining of symptoms [5].

Obedient and disobedient behavior of hypertension sufferers in the process of managing hypertension can appear alternately in hypertension sufferers. At certain times, a patient with hypertension can behave obediently to the current management process. In contrast, at certain times, the patient with hypertension can behave the other way around, namely disobedience. Non-persistent adherence like this is common in hypertensive patients who must be fully aware of the importance of complying with the medication regimen as the doctor recommends. Obedient behavior that does not persist in patients with hypertension in adhering to the management of therapy because the patient only follows the pattern of symptoms of illness [5].

Based on the high incidence of hypertension in Sawahlunto and the low adherence to treatment control of hypertension patients, researchers are interested in analyzing the relationship between adherence to treatment control of hypertensive patients with blood pressure of hypertensive patients during the transition period of the COVID-19 pandemic at the Talawi Public Health Center in Sawahlunto. This research was conducted to find out how many hypertensive patients at the Talawi Public Health Center were compliant with medication control during the transition period of the COVID-19 pandemic. This research will provide an overview of how hypertensive patients comply with medication control and what the patient's blood pressure condition is. Public health centers everywhere will gain several benefits from this research, such as health workers at these public health centers becoming more active in carrying out health promotions related to the prevention and control of

hypertension so that they can reduce the incidence of hypertension and complications caused by hypertension. Therefore, the aim of this research is to find out whether during the transition period of the COVID-19 pandemic, hypertensive patients were compliant in carrying out medication control and to find out the relationship between compliance with medication control and blood pressure conditions in these hypertensive patients.

METHODS

This research is an observational analytic study with a cross-sectional study design using primary data in the form of the Morisky Adherence Scale Eight Item (MMAS-8) questionnaire, which has been translated into Indonesian and secondary data in the form of medical records of hypertension patients at the Talawi Public Health Center, Sawahlunto, in 2021–2023. Researchers also conducted short interviews with hypertension patients to find out the reasons for non-compliance with medication control. This study analyzes the relationship between the independent and dependent variables by making instantaneous measurements. Researchers analyzed the relationship between adherence to medication control at the public health center with blood pressure conditions in hypertensive patients. This study used univariate analysis to determine the frequency distribution of each variable and bivariate analysis to determine the relationship between variables. This research was carried out by the ethical clearance issued by the Research Ethics Committee of the Faculty of Medicine, Andalas University, No: 192/UN.16.2/KEP-FK/2023.

RESULTS

Based on Table 1 this study's results showed that the frequency of hypertension patients was female (63.9%) more than male (36.1%). Patients in the elderly category had the highest frequency (55.5%), followed by the middle age category (31.3%). Frequency distribution based on the number of types of drugs: hypertensive patients received more therapy with one kind of drug (monotherapy) than therapy with more than one kind of drug (polytherapy) (86.7%:13.3%). The level of adherence to taking medication in hypertensive patients was measured using the MMAS-8 questionnaire. Hypertensive patients generally have a low adherence rate (66.3%), then a moderate adherence level (24.1%), and the rest are hypertensive patients -

Table 1. Univariate analysis (n = 83)

Variable	n (%)
Gender	
Male	36.1
Female	63.9
Age (years)	
Young age (25–44)	7.2
Middle age (45–59)	31.3
Elderly age (60–74)	55.5
Senile age (75–90)	6.0
Number of types of antihypertensive drugs	
Monotherapy	86.7
Polytherapy	13.3
Adherence to taking antihypertensive drugs	
Low	66.3
Moderate	24.1
High	9.6
Medication control compliance	
Obedient	34.9
Disobedient	65.1
Blood pressure condition	
Controlled	386
Uncontrolled	61.4

with a high adherence rate (9.6%). Most hypertensive patients (65.1%) did not comply with the control of treatment at the public health center for six consecutive months. In general, hypertensive patients have uncontrolled blood pressure (61.4%). Hypertensive patients who adhere to medication control generally have controlled blood pressure (55.2%). Meanwhile, hypertensive patients who did not adhere to medication control generally had uncontrolled blood pressure (70.4%).

Table 2. Bivariate analysis (N = 83)

Medication control compliance	Blood pressure		Odds Ratio (95% CI)	p-value
	Controlled (%)	Uncontrolled (%)		
Obedient	55.2	44.8	2,923	0,041
Disobedient	29,6	70,4		

Based on Table 2, the relationship between adherence to medication control and blood pressure in hypertensive patients was analyzed using the chi-square test to obtain a value of $p = 0.041$ ($p < 0.05$). So, it can be concluded that there is a significant relationship between adherence to medication control and blood pressure in hypertensive patients during the transition period of the COVID-19

pandemic at the Talawi Public Health Center, Sawahlunto. In addition, the results of this study also obtained an odds ratio = 2.923, which means that patients who are not compliant in taking control of medication have a 2.923 times chance of experiencing uncontrolled hypertension compared to hypertensive patients who are obedient in taking control of treatment.

DISCUSSION

The results of this study show that the frequency of hypertensive patients seeking treatment during the transition period of the COVID-19 pandemic at Talawi Public Health Center, Sawahlunto, was 30 people (36.1%) male and 53 people (63.9%) female. This research is in line with research conducted at Harapan Raya Health Center, which stated that the majority of hypertensive patients studied were female, namely 59 people (70.2%) and male patients, namely 25 people (29.8%) [6]. However, this research differs from research conducted at Rensing Health Center, which stated that the dominant respondents experienced hypertension, namely 40 male respondents (72.8%) and only female respondents, as many as 15 people (27.2%) [7].

Based on theory, up to the age of 55 years, hypertension often occurs in men compared to women because men tend to have a lifestyle that can increase blood pressure compared to women, such as: often experiencing stress due to work and venting boredom by smoking and consuming alcohol [8]. However, when women enter menopause, the prevalence of hypertension in women will increase. This happens because women experience menopause. Reduced estrogen during menopause can cause blood flow control to become unstable, resulting in a decrease in high-density lipoprotein (HDL) and an increase in low-density lipoprotein (LDL). If the estrogen hormone has decreased, women are susceptible to hypertension [6,9].

The results of this study show that the frequency of hypertensive patients seeking treatment during the transition period of the COVID-19 pandemic at the Talawi Public Health Center, Sawahlunto, was six people (7.2%) including the young age category (25–44 years), 26 people (31.3 %) are in the middle age category (45–59 years), 46 people (55.5%) are in the elderly category (60–74 years), and five people (6%) are in the elderly category (75–90 year). Hypertensive patients in the elderly category dominate the results of this study.

This research aligns with the study conducted on hypertensive patients in Wangurer Village, North Minahasa Regency, which stated that most hypertension sufferers were elderly, namely 68.8% [10]. This research also aligns with the study conducted at Rejosari Health Center, which said that most research respondents were elderly with an age range of 60–74 years (83.6%) [11]. In older adults, systolic blood pressure increases with age. Many changes occur in older adults' cardiovascular system, such as: thickening of the heart valves, decreased ability to pump blood, and decreased elasticity of blood vessels, increasing peripheral resistance so that blood pressure will increase [4].

Based on theory, hypertension often occurs in adults (>40 years), this is because as age increases, the risk of hypertension increases, this happens due to a decrease in organ and blood vessel function as well as hormonal changes in the body due to increasing age [8]. In this case, according to the research results obtained, hypertensive patients often occur in patients in the middle age category (45–59 years) and the elderly category (60–74 years). Meanwhile, only 6 (6%) hypertensive patients were in the young age category (25–44 years).

The results of this study show that the frequency of hypertensive patients seeking treatment during the transition period of the COVID-19 pandemic at Talawi Public Health Center, Sawahlunto, was 72 people (86.7%) undergoing monotherapy treatment and 11 people (13.3%) undergoing polytherapy treatment. This research aligns with a study at the Palembang Public Health Center, which stated that as many as 56 people (84.8%) received monotherapy treatment [12]. This research is also in line with the study conducted at five health centers at Surabaya, which stated that the type of therapy most frequently received by hypertensive patients was single therapy (monotherapy) is 89.93% [13]. Pharmacological treatment for hypertension begins with administering a single drug because the monotherapy regimen can reduce systolic blood pressure by around 7-13 mmHg and diastolic blood pressure by approximately 4-8 mmHg [14]. According to JNC 8, administering more than one antihypertensive drug is considered if a person does not reach the target blood pressure. In contrast, according to JNC 7, more than one drug is started if the patient's blood pressure is classified as grade 2 hypertension. Patients with grade 1 hypertension are recommended to undergo monotherapy antihypertensive drug therapy [15,16].

Regarding the number of types of antihypertensive drugs and non-compliance with treatment control in this study, the fewer the medications given, the more patients who were non-compliant with control treatment at the health center. This can be caused by the perception in society that getting a small amount of medication indicates that the disease you are suffering from is not severe, so there is no need for routine medical check-ups to see a doctor [17].

The results of this study show that the frequency of hypertensive patients seeking treatment during the transition period of the COVID-19 pandemic at Talawi Public Health Center, Sawahlunto, based on compliance with taking antihypertensive medication, was 55 people (66.3%) with a low level of compliance, followed by a moderate level of compliance with 20 people (24.1%), and a high level of compliance of 8 people (9.6%). This study showed that most hypertensive patients had a low level of compliance in taking antihypertensive drugs. This research aligns with the study conducted Air Besar Health Center, which stated that as many as 68 patients (62.96%) had low compliance with antihypertensive medication [18].

Non-compliance with antihypertensive drugs usually occurs due to boredom in hypertensive patients who must take these drugs daily for the rest of their lives. Apart from that, medication non-compliance often occurs due to forgetting. Patients often do not take antihypertensive drugs because the patient does not feel any symptoms of illness [19].

This research is not in line with the study conducted at Prambanan Sleman Health Center, which stated that the majority of respondents had a moderate level of medication compliance (44%), followed by high compliance (32%), and low compliance (24%). Therapeutic results will not reach optimal levels without the awareness of each hypertensive patient to adhere to their treatment therapy. If the patient does not comply with taking medication, it will not only cause therapy failure in the form of high blood pressure, but it can also cause more fatal complications and be detrimental to the patient, such as a stroke [20].

Two factors influence a person's compliance in taking medication, namely internal factors such as: motivation, beliefs, attitudes, the patient's perception of the severity of the disease, and the patient's physical condition; and external factors such as:

social support, support from health workers, and the health programs being undertaken [21].

The results of this study show that the frequency of hypertensive patients seeking treatment during the transition period of the COVID-19 pandemic at the Talawi Public Health Center, Sawahlunto, as many as 29 people (34.9%) adhered to medication control every month for six consecutive months and as many as 54 people (65.1%) did not comply with medical control every month for six straight months. This research with the study conducted at Dr. Zainoel Abidin Hospital, which found that more hypertensive patients did not comply with treatment control during the COVID-19 pandemic [22]. The results of this study are also in line with research conducted at Paranginan Health Center, which stated that as many as 46 people (67.6%) out of a total of 68 hypertension patients studied at the Paranginan Community Health Center were not compliant with medication control [23]. The results of this study are also in line with research conducted at Rukun Lima Ende Health Center, which stated that the majority of respondents behaved non-compliantly in treating hypertension as many as 41 people (57.7%) [24].

Hypertension is a chronic disease that cannot be treated but can only be controlled, so it requires awareness and consciousness from the patient to maintain treatment throughout life. Hypertension patient compliance is not only seen based on the patient's compliance in taking antihypertensive drugs but also the patient is required to play an active role and be willing to see a doctor according to a predetermined schedule, usually, hypertensive patients must undergo control at least once a month. Success in controlling hypertension is a joint effort between the patients and the doctor who treats them [25].

Based on research respondents, during the transition period of the COVID-19 pandemic, hypertension patients' concerns about coming for control treatment at the community health center because of fear of the spread of the COVID-19 virus was no longer a reason. Instead, the cause of hypertensive patients' non-compliance in controlling medication is the low awareness of hypertensive patients in maintaining blood pressure in a controlled condition. Also, most hypertensive patients will seek control at the health center if they only feel symptoms or when their body feels sick. Hypertension often does not cause symptoms in some people [6].

The key to successful treatment of hypertension is whether or not the patient regularly visits a doctor to

control blood pressure. With regular control and doctor visits, patients will be given education and motivation to achieve adequate blood pressure control targets. Increasing awareness of the dangers and early detection of hypertension needs to be improved in the community, accompanied by routine blood pressure monitoring efforts [17].

The results of this study show that the frequency of hypertensive patients seeking treatment during the transition period of the COVID-19 pandemic at Talawi Public Health Center, Sawahlunto, as many as 32 people (38.6%) had controlled blood pressure conditions and as many as 51 people (61.4%) had uncontrolled blood pressure conditions. This study's results align with research conducted by at Gamping 1 Sleman Health Center, which stated that most (74.9%) hypertensive patients in the health centers studied had uncontrolled blood pressure [19]. The results of this research align with research conducted by at the Surabaya Community Health Center, where 330 people (75.51%) had uncontrolled blood pressure [13].

Many factors can cause uncontrolled blood pressure conditions in hypertensive patients. Irregular medical control is one of the risk factors for uncontrolled hypertension. It could also be caused by the patient's non-compliance in taking antihypertensive drugs regularly. Other factors that can trigger uncontrolled blood pressure in hypertensive patients are: consuming high levels of salt, lack of exercise/physical activity, stress, smoking habits, alcohol consumption habits, obesity, dyslipidemia, etc. [6].

The factor influencing hypertensive patients' blood pressure condition is patient compliance with antihypertensive drugs. In this study, it was found that hypertensive patients generally forgot to take antihypertensive medication. In addition, research respondents will usually stop taking antihypertensive drugs when the patient feels that the symptoms they are experiencing are under control. One thing that influences the results of blood pressure measurements is that one day before the blood pressure measurement is carried out, hypertensive patients do not take antihypertensive medication, which makes the blood pressure measurements uncontrolled.

The results of this study show a value of $p = 0.041$ ($p < 0.05$), so it can be concluded that there is a significant relationship between adherence to medication control and blood pressure in hypertensive patients. From the results of this study,

an odds ratio = 2.923 was obtained, which means that patients who are not compliant in controlling their medication have a 2.923 times chance of experiencing uncontrolled hypertension.

This research aligns with the study conducted at the Pisangan Community Health Center, which stated a significant relationship between blood pressure status and compliance with routine treatment for hypertension patients ($p = 0.009$) [5]. This research is also in line with the study conducted at Gamping 1 Sleman Health Center, which stated that hypertensive patients who do not have routine control habits have a risk factor of 5,339 times experiencing uncontrolled hypertension compared to patients who regularly undergo medical control [19].

As explained in the previous sub-discussion, the low rate of compliance with routine control in hypertensive patients is often due to the patient's low motivation or desire to go to the health center for treatment because the patient does not feel pain/symptoms or when the patient has a headache, they rest and take enough painkillers [6]. Reasons such as concerns about contracting the COVID-19 virus if treatment comes to the health center for control, are no longer a problem for hypertensive patients during the transition period of the COVID-19 pandemic.

The aim of controlling hypertension treatment is to observe blood pressure and treatment results to achieve and maintain controlled blood pressure, namely systolic blood pressure <140 mmHg and diastolic blood pressure <90 mmHg with lifestyle modification or pharmacological therapy. Controlled blood pressure in hypertensive patients is influenced by the efforts of each individual to maintain their blood pressure within normal limits and to prevent complications due to hypertension. Patients who undergo regular hypertension therapy are more likely to achieve normal blood pressure targets in the long term [26].

Other factors that can cause uncontrolled blood pressure are non-compliance with taking antihypertensive drugs regularly and unhealthy lifestyles such as: consuming excess salt, smoking, not doing physical activity, etc [19].

From the discussion that has been explained, it is hoped that this research will have an impact on hypertension patients to increase their compliance in controlling treatment and also have an impact on health workers at any health center to be more active in carrying out health promotion to prevent and control the incidence of hypertension. It is hoped that

in the future the incidence of hypertension and complications that arise due to hypertension can be reduced.

CONCLUSION

Based on research conducted at the Talawi Public Health Center in Sawahlunto on "Compliance in Medication Control of Hypertension Patients during the Transition Period of the COVID-19 Pandemic," it was found that most hypertensive patients were non-compliant in managing their medication, leading to uncontrolled blood pressure. The study revealed a significant relationship between adherence to medication control and blood pressure regulation in these patients during the pandemic's transition period.

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