

Available online on 15.10.2023 at <http://jddtonline.info>

Journal of Drug Delivery and Therapeutics

Open Access to Pharmaceutical and Medical Research

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the CC BY-NC 4.0 which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited



Open  Access Full Text Article



 Check for updates

Research Article

Relationship Between of Adherence Rate to Taking Drugs Antihypertensives against Blood Pressure of Elderly Patients in Sekarjaya Health Center Ogan Komering Ulu Regency

Trirahmi Hardiyanti^{1*}, Fisat Dewa Adil¹, Farisa Luthfiana², Nur Aini Budiyan³¹ Faculty of Pharmacy, University of Kader Bangsa Palembang, Indonesia² Faculty of Pharmacy, University of 17 August 1945 Jakarta, Indonesia³ Faculty of Pharmacy, University of Muhammadiyah Purwokerto, Indonesia

Article Info:

Abstract



Article History:

Received 18 July 2023
Reviewed 07 Sep 2023
Accepted 28 Sep 2023
Published 15 Oct 2023

Cite this article as:

Hardiyanti T, Adil FD, Luthfiana F, Budiyan NA, Relationship Between of Adherence Rate to Taking Drugs Antihypertensives against Blood Pressure of Elderly Patients in Sekarjaya Health Center Ogan Komering Ulu Regency, Journal of Drug Delivery and Therapeutics. 2023; 13(10):62-66

DOI: <http://dx.doi.org/10.22270/jddt.v13i10.6255>

*Address for Correspondence:

Trirahmi Hardiyanti, Faculty of Pharmacy, University of Kader Bangsa Palembang, Indonesia

Hypertension is a disease that is often found in the community and continues to experience an increase in cases of hypertension due to unhealthy lifestyles. The purpose of this study was to determine the level of adherence to the consumption of antihypertensive drugs, describe the increase in patients' blood pressure and explain the relationship between the level of adherence in taking antihypertensive drugs to blood pressure in elderly patients. This study used a prospective quantitative descriptive method at the Sekarjaya Health Center, OKU Regency in May-June 2023. The results of the study found that out of 50 patients, 41 patients had low adherence and 9 patients had moderate adherence. In the classification of hypertension patients, 14 patients (28%) were at the pre-hypertensive level, 27 patients (54%) were at level 1 hypertension and 9 patients (18%) were at level 2 hypertension. Analysis of the relationship of adherence to blood pressure obtained a p value of 0.361. The conclusion of this study was that there was no relationship between compliance with blood pressure in hypertensive patients at the Sekarjaya Health Center, Ogan Komering Ulu Regency. However, the length of illness and forgetting to take medication was influence on compliance with p values of 0.045 and 0.002.

Keywords: Hypertension, geriatrics, adherence, health center

INTRODUCTION

Hypertension is a disease that until now is still widely found among the community, even today cases of hypertension continue to increase over time, namely with an increase that changes unhealthy lifestyles. In the past, hypertension was found in many elderly patients, but now hypertension can be found in young patients.¹

Shows that as many as 1.13 billion people in the world are diagnosed with hypertension, which means that 1 in 3 humans in the world are affected by hypertension. The prevalence of hypertension continues to rise every year, it is predicted that in 2025 there will be 1.5 billion people diagnosed with hypertension, and it is predicted that every year 10.44 million people die due to the impact of hypertension and its complications.²

The number of hypertension data based on the results measured in people aged 18 years was 34.1%, the most in South Kalimantan (44.1%). Then the low in Papua as much as (22.2%). Hypertension occurs among the age of 31 – 44 years (31.6%), age 45 – 54 years (45.3%), age 55 – 64 years (55.2%). The number of hypertension in Indonesia is 31.7%, which means that almost 1 in 3 people aged 18 years and over

are diagnosed with hypertension.³

In South Sumatra Province, especially in Palembang City, which is one of the many regions in Indonesia that has a high prevalence of hypertension compared to other regions. Based on data obtained at the South Sumatra Provincial Health Office, the prevalence of hypertensive patients in 2019 was 245,469 people aged over 15 years and 133,097 people who received health services.

Antihypertensive therapy is done by measuring blood pressure when the patient is under control, and about 50% of patients remember what was told in meetings with health workers. Many influencing factors include the individual factors themselves, which include the level of patient information and the methods used by health workers.⁴

Hypertensive disease in the Ogan Komering Ulu Regency area, one of which is at the Sekarjaya Health Center, Sekarjaya Village, East Baturaja District. Based on the data obtained, hypertension is included in the category of the 10 most diseases, namely with a prevalence of 128 people, and there are also issues that exist at the Sekarjaya Health Center, one of which is the lack of compliance with treatment for hypertensive patients at the UPTD Sekarjaya Health Center.

According to research conducted by Hasmi et al., 2007 obtained results that there are 10 factors according to patients causing non-compliance in taking drugs according to the provisions with health workers, namely lack of understanding of the purpose of treatment (9%), lack of understanding of the effectiveness of treatment (7%), absence of support from family (10%), lack of access to drugs (12%), fear of dependence on drugs (27%) costs (40%), side effects (17%), less satisfied about the mode of treatment (13%), and course (26%).

Based on the explanation above, it was determined that the examination report on elderly patients diagnosed with hypertension at the Sekarjaya Health Center in January-July 2022 was 128 patients. Based on information about this background, the author intends to conduct a study that aims to determine the relationship between the level of adherence to taking antihypertensive drugs with blood pressure of elderly patients at the Sekarjaya Health Center, Ogan Komering Ulu Regency, East Baturaja District.

METHOD

Design and Types of Research

This study used prospective quantitative descriptive method.

Place and Time of Research

This research was carried out at the Sekarjaya Health Center, Ogan Komering Ulu Regency, East Baturaja District, South Sumatra Province, from May to June 2023.

Population and Sample

The population of this study is elderly patients (geriatrics) who have a diagnosis of hypertension and seek treatment at the Sekarjaya Health Center, OKU Regency, East Baturaja District from May to June 2023.

Sampling is carried out using total sampling which involves taking the same number of samples as the population by setting inclusion criteria for having an age of more than 60 years, and having no complications of the disease. Meanwhile, the exclusion criteria are patients who do not agree to be respondents and patients who seek treatment outside the period from May to June 2023.

Data Analysis

The data that has been collected by researchers is then carried out univariate analysis to visualize each dependent variable and independent variable in the form of a percentage frequency table to get an overview of respondents according to the characteristics and form of univariate analysis.

After obtaining the results of univariate analysis, bivariate analysis was then carried out to determine the relationship between compliance of hypertensive patients with blood pressure using SPSS software. The normality test is carried out first in order to find out whether the data has been normally distributed and so that it can be continued with non-parametric testing, namely by using the Mann Whitney test to measure the suitability of the data with the relationship of two nominal variables then measure the strength of the relationship between the two variables studied.

Patient compliance was also measured through the MMAS (*Morisky Medication Adherence Scale*) questionnaire with a score of >2, which is low, 1 or 2 is medium, and 0 is high.

RESULTS AND DISCUSSION

Based on the results of research that has been carried out at the Sekarjaya Health Center, OKU Regency by checking blood pressure and providing questionnaire sheets, the number of

respondents was obtained as many as 50 hypertensive patients who had met the inclusion and exclusion criteria so that they could be grouped into general data and special data. General data include name, age, gender, comorbidities, duration of illness, hypertension drugs taken, medication history, smoking status, recent education, religion, occupation, and sources of information obtained. Meanwhile, the specific data includes compliance of hypertensive patients in taking antihypertensive drugs and blood pressure of hypertensive patients at the Sekarjaya Health Center.

Univariate Analysis

1. General Data

General data on the sociodemographic characteristics of patients include age, gender, occupation and education of respondents who are filled directly in questionnaires (questionnaires).

Table 1: Sociodemographic characteristics of patients

Characteristic	n	%
Age		
63-70 years old	43	86
73-80 years old	7	14
Gender		
Woman	40	80
Man	10	20
Work		
Not Working	40	80
Official	0	0
Non-Employee	0	0
Laborer	9	18
Farmer	1	2
Education		
Elementary School	21	42
Junior High School	17	34
High School	12	24
College	0	0

Based on table 1, it can be seen that the majority of patients have the age of 63-70 years 43 patients (86%) with the most gender, namely women 40 patients (80%), as many as 40 respondents (80%) do not work because the majority of patients have elementary education as many as 21 patients (42%). The results of this study are in accordance with research conducted by Pratiwi and Tala (2013) at RSUP H. Adam Malik Medan which states that hypertension is usually diagnosed at the age of 60 to 74 years.⁵

Another study conducted by Hardiyanti et al (2022) shows that people diagnosed with hypertension have an average age of ≥60 years. Hypertension in the elderly can be affected by remodeling and feeling of large blood vessels and aorta that has lost some of its elasticity.⁶ The compensation mechanism that occurs is an increase in peripheral resistance which ultimately increases blood pressure, in addition to baroreceptor function has decreased due to increasing age and the presence of atherosclerosis which can cause hypertension in the elderly (geriatrics).⁷

Physiologically, as we age, the structure and function of the respiratory system will change. In the elderly there can be an increase in respiratory work. These changes can be caused by acute diseases, such as heart failure, infection, or airway obstruction.⁸

Patients with female sex have an increased risk of developing high blood pressure after having the age of over 45 years or after menopause. After menopause, the female body experiences a decrease in estrogen. Accompanied by a healthy lifestyle, this can cause a decrease in high blood pressure. Increased high-density lipoprotein (HDL) and low-density lipoprotein (LDL) will lead to atherosclerosis, thus leading to increased peripheral resistance and hypertension.

This type of work is associated with the consequences of high blood pressure because it can involve being physically active in doing physical activity, someone who is actively moving tends to minimize the development of hypertension. Research that has been done shows that hypertension is more common in housewives because they tend to be less physically active and most stay at home and do not have time to exercise.⁹ The level of education can affect the incidence of hypertension because the higher a person's education, the lower the risk of hypertension due to the knowledge he has or the ability to find information in order to avoid high blood disease.¹⁰

General data characterizing patient profiles include data on comorbid diseases, duration of illness, drugs consumed, treatment history and smoking status shown in table 2 below:

Table 2: Characteristics of the Patient Profile

Category	n	%
Comorbid Diseases		
None	38	76
Diabetes Mellitus	12	24
Duration of disease		
2 years	23	46
3 years	7	14
4 years	3	6
5 years	10	20
6 years	3	6
7 years	0	0
8 years	0	0
9 years	0	0
10 years	3	6
30 years	1	2
Drugs Consumed		
Amlodipine	48	96
Captopril	2	4
Treatment History		
Never had treatment before	50	100
Have had treatment before	0	0
Smoking Status		
No Smoking	41	82
Never Smoked and Now Not	4	8
Smoking Until Now	5	10

In table 2. It can be known that the majority of elderly patients who have hypertension do not have comorbid diseases as many as 38 patients (76%) and have experienced hypertension for the most 2 years by taking amlodipine drugs as many as 48 patients (96%). A total of 50 respondents (100%) had never had treatment before and as many as 41 patients (82%) did not smoke.

In the history of blood pressure drug consumption, this is in accordance with the research of Artiyaningrum and Azam in 2016 which stated that respondents who were taking blood pressure drugs mostly used calcium channel blocker drugs (CCB), namely amlodipine.¹¹

According to health workers at the Sekarjaya Health Center, patients who take captopril drugs complain of dry throat and coughing, thus giving amlodipine that does not give complaints to patients compared to the use of captopril drugs.

Combined drugs with a cooperative mechanism should be avoided, for example the combination of ACE inhibitors with ARBs, because the effectiveness of each drug can be reduced and the risk of side effects increases.¹²

The majority of respondents in this study were respondents who did not smoke by 41 respondents (82%) because the majority of respondents were aware of the effects caused to the body when smoking. According to Mardena and Kusuma in 2017, smoking is one of the factors that can cause hypertension, and the results of the study stated that there is a difference in blood pressure between smokers and nonsmokers who take hypertension drugs.

In smokers who consume hypertension drugs, it is found that the blood pressure of smokers tends to be higher than nonsmokers, this can be caused by substances contained in tobacco such as nicotine. Nicotine damages the cardiovascular system through receptor binding mechanisms. As a result, binding to nicotine receptors causes stimulation of the sympathetic nervous system, namely increased release of catecholamines which will increase systolic blood pressure and 53 increase heart rate.¹³ In addition to smoking, hypertension can be caused by stress, lack of exercise or exercise, salt consumption habits, and family history.¹⁴

2. Custom Data

Special data is data that includes the frequency of forgetting to take medication, classification of hypertension, reasons respondents are compliant in drug consumption, categories of respondent compliance levels and the relationship of adherence levels in taking antihypertensive drugs to respondents' blood pressure.

Table 3: The frequency of forgetting to take medication

The frequency of forgetting to take medication	n	%
Never	5	10
Occasional	33	66
Sometimes	12	24
Usually	0	0
Always	0	0

In table 3, it can be seen that the majority of respondents occasionally forget to take high blood pressure medication as many as 33 respondents (66%). This proves that there are still respondents who do not consume drugs regularly which can cause the treatment process can not be optimal.

Table 4: Classification of Respondent Hypertension

Hypertension Classification	n	%
Usual	0	0
Pre-Hypertensive	14	28
Grade 1 hypertension	27	54
Grade 2 hypertension	9	18

It is known that as many as 27 respondents (54%) experienced level 1 hypertension and level 2 hypertension as many as 9 respondents (18%). The results of this study are supported by research conducted by Maryanti in 2017 which obtained results from 27 respondents, as many as 23 (85.2%) suffered from mild hypertension.¹⁵ Treatment of high blood disease is one important aspect to prevent the occurrence of high blood disease, if people do not prevent high blood disease it will have an impact on their health.¹⁶

Table 5: Reasons Respondents Obey in Taking Drugs

Category	n	%
Family Support	26	52
Healing	21	42
Conditions are getting better	1	2
Doctor's Motivation	2	4

A total of 26 patients (52%) hypertensive patients were obedient to taking drugs because of family support and the desire to recover by 21 patients (42%). This proves that it is necessary for families to be able to encourage patients to be obedient in taking drugs and so that the treatment process can run optimally.

Table 6: Patient Adherence Rate Categories

Category	n	%
Low	41	82
Keep	9	18
Tall	0	0

Patient compliance was measured with the MMAS (*Morisky Medication Adherence Scale*) questionnaire. The low category with a score of >2 is patients who are not compliant in taking antihypertensive drugs, then for the medium category with a score of 1 or 2 are patients who are slightly compliant, and the high category with a score of 0 are patients who are obedient in taking antihypertensive drugs. Based on table 6, data were obtained as many as 41 patients (82%) still have a low level of adherence in taking high blood pressure drugs so that socialization is needed to patients to be obedient in taking hypertension drugs so that drugs can provide maximum effectiveness.

Bivariate Analysis

The results of studies conducted on the level of adherence in taking hypertension drugs have a prevalence among patients who experience high blood pressure in various classifications of hypertension. The majority of patients with grade 1 hypertension have a low adherence rate, while a small percentage of them have a moderate level of adherence. Meanwhile, a small percentage of patients with grade 2 hypertension and prehypertensive hypertension also have low

adherence rates.

This study indicates that the level of adherence to taking medication greatly affects a person's ability to prevent or manage hypertension. The more adherence a person has to the medications prescribed to treat hypertension, the greater their awareness of the importance of hypertension prevention for their health. This awareness can encourage them to care more about their overall health and implement hypertension prevention measures more effectively.

The study also noted several reasons that may affect a person's level of adherence to hypertension medications, such as the patient's drive to recover, necessary lifestyle changes, perceptions of the severity of health problems, difficulty in understanding and implementing specific behaviors related to treatment, and belief that planned therapy may or may not help. These factors can be important considerations in improving the level of patient adherence to hypertension treatment.

Based on the relationship of medication adherence with the patient's blood pressure, it can be seen that none of the patients were at high prehypertensive blood pressure and medication adherence. Four patients at moderate blood pressure and ten patients at low blood pressure. Grade 1 hypertension is 0, medium category is 3, and low category is 24, so there are 0 patients with high medication adherence and high blood pressure in grade 2 hypertension, medium category is 2, and low category is 7. The findings can be concluded that adherence to taking medication does not affect the patient's blood pressure, this is evidenced by obtaining a p-value of 0.361 > 0.05.

The more patients are obedient to taking antihypertensive drugs, the more patients realize that preventing high blood disease is very beneficial for their own health. According to Niven in 2012 who explained that treatment for patients suffering from hypertension depends largely on the extent to which patients comply with the rules of taking antihypertensive drugs.

The normality test conducted before the Mann Whitney test obtained the result that all data were not normally distributed because they obtained a sig value of <0.05. In the Mann Whitney test, it was found that the length of time the patient had hypertension and the frequency of patients forgetting to take medication were factors that influenced the level of patient compliance in taking antihypertensive drugs, this was evident.

Table 7: Man Whitney Test Results on Questionnaire

Category	Value α
Age	0.785
Gender	0.167
Work	0.102
Education	0.466
Comorbid Diseases	0.322
Duration of disease	0.045
Drugs Consumed	0.503
Treatment History	1.000
Smoking Status	0.126
The frequency of forgetting to take medication	0.002
Hypertension Classification	0.307

Table 7 illustrates the influence of age, sex, occupation, education, comorbid diseases, duration of illness, medications consumed, medication history, smoking status, frequency of forgetting to take medication, and hypertension classification on patient compliance. The test used is the *Man Whitney test*. The duration of the disease has a p value of 0.0045 and the frequency of forgetting to take medication has a value of 0.002. This can be considered to affect patient compliance if the significance value is less than 0.05.

From this study, it can be concluded that the duration of the disease and the frequency of forgetting to take medication have an influence on the level of patient adherence. Patients who have long suffered from hypertension are likely to have low adherence. This is in accordance with the theory put forward by Padila (2012) that many factors contribute to patient non-compliance, namely patients do not understand the importance of following prescribed treatment recommendations and tend to follow them.¹⁷ Duration of disease also has a relationship with adherence, this is in accordance with what Indriana (2020) explained that not all hypertensive patients who have long experienced this condition have a low level of adherence to the use of the drug. Conversely, the longer a person has hypertension, the more likely they will become more adherent in taking medication, because the majority of patients have understood the disease they are experiencing through their own experiences.¹⁸ The frequency of forgetting to take medication also has a relationship with adherence according to an explanation from Hussein, et al (2020) mentioned that patients who use many medicines every day tend not to forget them compared to those who only use one drug.¹⁹ Since the majority of respondents did not have comorbid diseases and used only one drug, it can be concluded that the frequency of forgetting to take medication is a factor that affects adherence to taking hypertension drugs.

CONCLUSION

Based on the results of the research conducted, it can be concluded that elderly patients still have low adherence in taking antihypertensive drugs by 41 patients (82%). It is known that the most patients experience grade 1 hypertension by 27 patients (54%) and it was found that the length of the duration of the disease and the frequency of forgetting to take medication are factors that affect the level of adherence in taking antihypertensive drugs to blood pressure in elderly patients.

ACKNOWLEDGEMENTS

To the Sekar Jaya Health Center of Ogan Komering Ulu Regency, East Baturaja District and other parties involved in this implementation, especially respondents who have taken the time, the researcher would like to thank them for granting permission for the research location, support and involvement as respondents in completing the research.

FUNDING

This research received no external funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- Devicaesaria. Hypertension Crisis. 2014; 27 (3)
- Ministry of Health of the Republic of Indonesia. Hypertension in the World. 2019
- Rikesdas. Basic Health Research, Jakarta: Health Development Research Agency of the Indonesian Ministry of Health. 2018
- Brown and Bussell. Medication Adherence: WHO Cares Mayo Clinic Proceedings. 2011;86(4):304–14. <https://doi.org/10.1016/j.eurger.2017.05.002>
- Pratiwi and Tala. Overview of Nutritional Status of Elderly Hypertensive Patients at RSUP H. Adam Malik Medan. FK USU. 2013;1(3).
- Hardiyanti Trirahmi, Sabda Wahab, Hilda Muliana, Evi Sepriana. Evaluation of the rationality of using antihypertensive drugs in outpatient hypertensive patients at Pusri Palembang Hospital for the period October 2019 - March 2020. Journal of Health Science. 2022;2(2) <https://doi.org/10.54816/jhs.v2i2.542>
- Gasowski. Hypertension in the Elderly: Change of, or New Implications within the Existing. n.d;8:289–92. <https://doi.org/10.1016/j.eurger.2017.05.002>
- Ren, Li, Zhao, and Zhu. Age-Associated Changes in Pulmonary Function: A Comparison of Pulmonary Function Parameters in Healthy Young Adults and the Elderly Living in Shanghai. Chin Med J. 2012 <https://doi.org/10.3760/cma.j.issn.0366-6999.2012.17.018>.
- Kharisna, Dewi, and Lestari Effectiveness of cucumber juice consumption on lowering blood pressure in hypertensive patients. J Ners Indonesia. 2012;2:128.
- Wahyuni, and Eksanoto. The relationship between education level and sex with the incidence of hypertension in Jagalan Village in the working area of Pucang Sawit Surakarta Health Center. J. Indonesian Nursing Science. 2013;1:79–85.
- Artyaningrum, and Azam. Factors associated with uncontrolled hypertensive incidence in 2016
- Williams, and Mancía. Hypertens and Eur Heart. J Hypertens. 2018;39:3021–3104
- Leone, A.. Smoking and Hypertension. J. Cardiol Curr Res. 2015;2 <https://doi.org/10.15406/jccr.2015.02.00057>
- Raihan, Erwin, and Dewi. Factors associated with the incidence of primary hypertension in communities in the Puskesmas work area. Jom PSI. 2014;1:7–8.
- Maryanti. The relationship of medication adherence to increased blood pressure in hypertensive patients in Plandi Jombang Village. STIKES Medical Scholar. 2017
- Adib, M. Easy ways to understand and avoid hypertension, heart and stroke. Yogyakarta: Dianloka. 2016
- Padila. Textbook: Medical Surgical Nursing. Yogyakarta: Nuha Medika. 2012
- Indriana Nia, Mika Tri Kumala Swandari, Yuniariana Pertiwi. The relationship between knowledge level and medication adherence in hypertensive patients at Hospital X Cilacap. Jophus Scientific Journal : Journal of Pharmacy UMUS. 2020;Vol.2,No.01, <https://doi.org/10.46772/jophus.v2i01.266>
- Hussein et al. The Egyptian Heart Journal. 2020;72:29. <https://doi.org/10.1186/s43044-020-00066-0> PMID:32451726 PMCID:PMC7248145