

Original Research Article

Profile of The Use of Antihypertension Drug and Blood Pressure Evaluation at Gresik Hospital**Prada Marwah Al Kamilah¹, Lusiani Tjandra^{2*}, Meivy Isnoviana³, Ibrahim Njoto⁴**Medical Education, Faculty of Medicine, University of Wijaya Kusuma Surabaya¹Department of Pharmacology, Faculty of Medicine, University of Wijaya Kusuma Surabaya²Department of Bioethics & Humanities, Faculty of Medicine, University of Wijaya Kusuma Surabaya³Department of Anatomy, Faculty of Medicine, University of Wijaya Kusuma Surabaya⁴

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e-mail: lusianiws@uwks.ac.id**Abstract**

Hypertension is a very dangerous non-communicable disease (PTM). Hypertension is a risk factor for damage to important organs such as the brain, heart, kidneys, retina, large blood vessels (aorta), and peripheral blood vessels. Hypertension causes heart attacks and even death because it is important to make efforts to reduce the risk of hypertension by preventing and controlling risk factors, namely smoking consumption, unhealthy lifestyles, lack of intake of vegetables, and fruit, and excess body weight. The purpose of this study was to determine the profile of antihypertensive drug use and evaluate blood pressure. Methods: This study was retrospective where data was obtained based on medical record information and patient pharmacy data. Results: 33.7% hypertension sufferers aged 65-74 years, 62.2% women and 37.8% men, 38.9% The beta-blocker drug group with the drug that is often used Bisoprolol dose of 2.5 mg as much as 26.9 %, 88% in tablet dosage form, which is used in combination form with the rule of using once a day and 64.3% controlled hypertension. Conclusion: Hypertension patients are usually aged between 65-74 years, mostly female. Antihypertensive drugs that are often used are in the beta blocker class which is a Bisoprolol dose of 2.5 mg in tablet, used in a single dose or/and combination. Sixty-four point three percent (64.3%) of patients have controlled hypertension.

Keywords: Antihypertensive Drugs, Blood Pressure

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INTRODUCTION

Hypertension is a global health problem experienced throughout the world. Data from the World Health Organization (WHO) shows that around 1.13 billion people worldwide suffer from hypertension, and the prevalence of hypertension differs in each region and group.

Based on the 2018 Riskesdas prevalence of hypertension in Indonesia, it is known that 34.1% of 18-year-olds with hypertension diagnosed by a doctor is 34.1%. This is an increase compared to the prevalence in 2013 which was 27.8%. (RI Ministry of Health, 2020) In Southeast Asia,

hypertension causes 1.5 million deaths per year (Woodham et al., 2018)

Hypertension is a very dangerous non-communicable disease (PTM). The symptoms of hypertension in each individual will be different, so it cannot be used as a definite benchmark. (Ministry of Health RI, 2020; Marhabatsar & Sijid, 2021; Sa'idah, 2018; Yonata & Pratama, 2016) Hypertension is a risk factor for damage to important organs such as the brain, heart, kidneys, retina, large blood vessels (aorta), and peripheral blood vessels. Hypertension can cause heart attacks and even death because it is important to make efforts to reduce the risk of hypertension by preventing and controlling risk factors, namely smoking, unhealthy lifestyle, lack of intake of vegetables and fruit, and excess body weight. (Kemenkes RI, 2020; Puspita Sari et al., 2017)

Management of non-pharmacological hypertension is carried out with regular physical activity and exercise so that the heart gets stronger, has a large capacity and the construction of the beats will be regular, The elasticity of the blood vessels increases, due to vasodilation where the fat that initially clogs the blood vessels will decrease (Dungga, 2020). Pharmacological therapy for hypertension, namely: Angiotensin-converting enzyme inhibitors (ACEi), Angiotensin receptor blockers (ARB), Beta-blockers, Calcium channel blockers (CCB), and diuretics (PERHI, 2022).

High blood pressure or hypertension cannot be cured, but it can be controlled, namely by giving the right antihypertensive drugs to prevent complications. Where antihypertensive drugs control high blood pressure so that blood pressure is controlled to prevent complications. To maintain a blood pressure of 120/80mmHg, further efforts are made by providing clear information to patients about the disease and how to treat it, complications that will arise if hypertension is not handled properly. The use of antihypertensive drugs is very important to improve the safety of optimal blood pressure drugs. (A & A, Darmayanti, 2020)

According to the 2018 Riskesdas data, the prevalence of people in East Java who have hypertension is 36.3%. increased compared to 2013 data, namely 26.4%, hypertension is included in the list of the 10 most common diseases in outpatient and inpatient care. (East Java Health Office, 2021) That's why researchers want to know the profile of the use of antihypertensive drugs and evaluate blood pressure.

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Pharmacological management of hypertension involves the use of antihypertensive drugs, which requires patient cooperativity in taking antihypertensive drugs according to recommendations or instructions for use (rule of use), which is one of the determining factors in controlling blood pressure. The non cooperativity for the use of antihypertensives is multi-factorial, such as age, gender, ethnicity, education, employment, economic status, length of treatment, health care system, patients not understanding instructions from health workers regarding treatment, symptoms that do not improve even though the medication has been consumed makes patients not believe that antihypertensive drugs can control their symptoms (Susanto et al., 2019; Unger et al., 2020; ghoulis, TS, 2020; practice, p 2020; Wirakhmi, et al 2021)

Research at the Kintamani I Bali Community Health Center, 70% of hypertension sufferers did not cooperate with hypertension treatment, while at the Pacar Keling Community Health Center, Surabaya, 90% of respondents did not cooperate with hypertension treatment. (Proboningsih et al., 2019; Mathavan et al, 2017) Low cooperation when using antihypertensive drugs leads to uncontrolled blood pressure, and it will worsen the patient's condition, increase the burden of care in the long term, and the emergence of complications including heart disease, stroke, kidney failure, blindness, and even death (Mulyana et al., 2020; Permata Sari Lubis et al., 2022; Sevilla-Cazes et al., 2018)

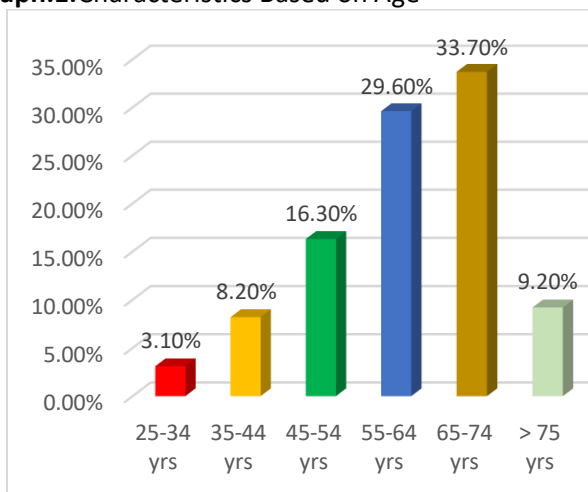
MATERIAL AND METHODS

This research is a descriptive study whose data collection is retrospective, namely based on medical record data and pharmacy data of 96 hypertensive patients who were treated with medication at Ibnu Sina Gresik Hospital in January - June 2022. This research was conducted from February to June 2023, with 7 variables, namely gender, age, antihypertensive medication, dose, rule of use, amount of medication given, and blood pressure measurement. Data processing techniques verify completeness or errors in data taking, and data coding to facilitate entry into computer programs. The data was analyzed univariately, where one variable was not related to other variables, to see the overview of the frequency distribution and percentage of each variable. 8 variables were collected and then arranged in a table so that they were easy to read. This research has received ethical feasibility from the Health Research Ethics Commission No. 11/SLE/FK /UWKS/ 2023

RESULTS

1. Characteristics by age

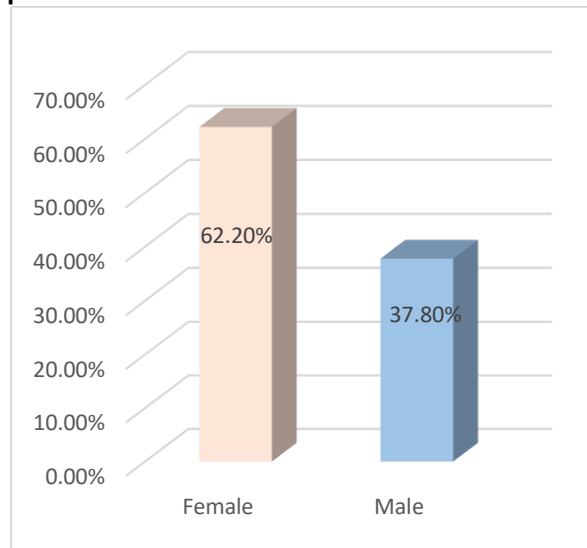
Graph.1:Characteristics Based on Age



Based on Graph 1, most patients with hypertension are aged 65-74 years.

2. Characteristics by sex

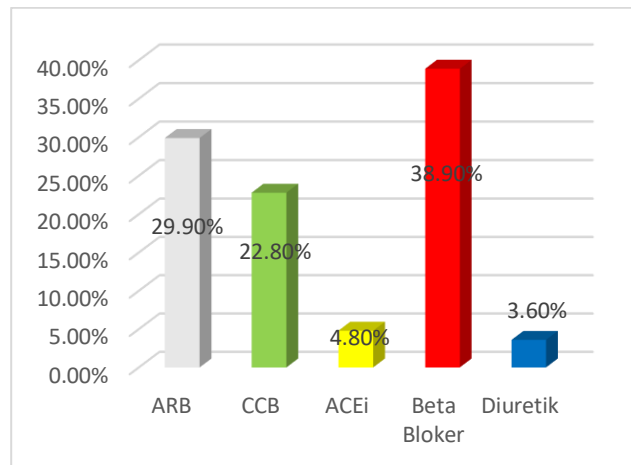
Graph.2:Characteristics Based on Gender



Based on the gender graph, women suffer from hypertension more than men

3. Characteristics based on Antihypertensive Drug Class

Graph3:Class of Antihypertensive Drugs



Based on the drug chart, the most prescribed drugs were Beta Blocker drugs as much as 38.9%

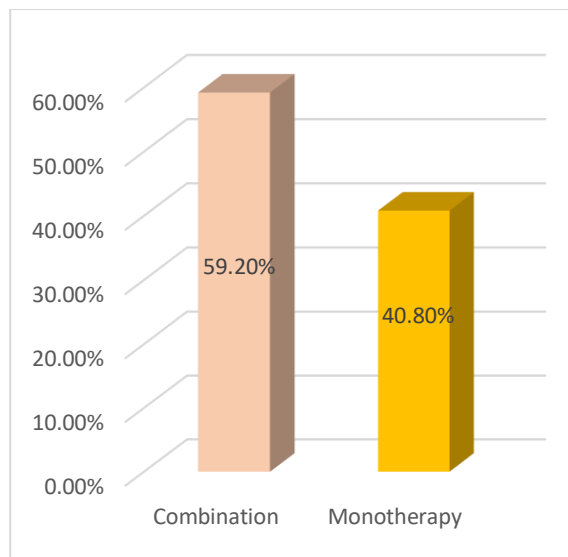
4. Characteristics based on Dosage of Antihypertensive Drugs

Table 1: Dosage of Antihypertensive Drugs

	Drug	Dosage	Percentage
1.	Candesartan	16 mg	26,3%
		8 mg	3,6%

2.	Amlodipin	10 mg	21%	
		5mg	1,8%	
3.	Lisinopril	10 mg	3%	
		Captopril	25 mg	0,6%
		Ramipril	2,5 mg	1,2%
4.	Bisoprolol	5 mg	12%	
		2,5 mg	26,9%	
5.	Furosemid	40 mg	3,6%	
		TOTAL	100%	

Based on the drug table, the most widely used drug was Bisoprolol with a dose of 2.5 mg with a percentage of 26.9%.



Based on the graph, the combination type is the most with a percentage of 59.2%.

5. Characteristics based on the rules for using Antihypertensive Drugs

Table 2: Rules for Using Antihypertensive Drugs

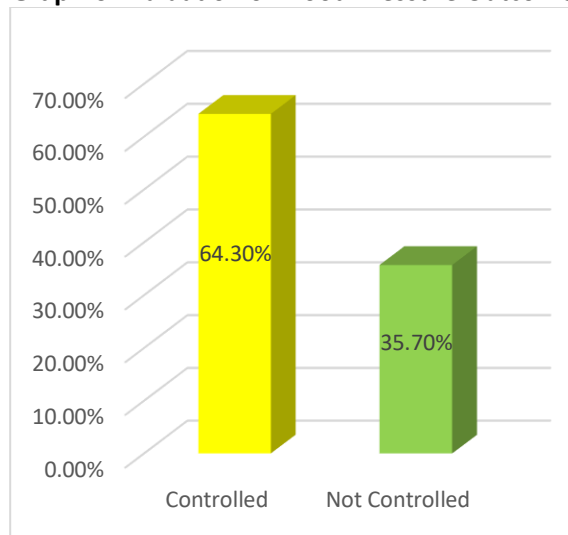
NO	Drug	Dosage	Rule of Use	
1.	Candesartan	16 mg	1x1	
		8 mg	1x1	
2.	Amlodipin	10 mg	1x1	
		5mg	1x1	
3.	Lisinopril	10 mg	1x1	
		Captopril	25 mg	1x1
		Ramipril	2,5 mg	1x1
4.	Bisoprolol	5 mg	1x1	
		2,5 mg	1x1	
5.	Furosemid	40 mg	1x1	

6. Characteristics by Type of Drug Therapy

Graph.5: Types of Antihypertensive Drug Therapy

7. Characteristics based on Blood Pressure Evaluation

Graph.6: Evaluation of Blood Pressure Outcomes



Based on the graph of the results of controlled blood pressure evaluation as much as 64.3%

DISCUSSION

1. Characteristics by age

The age group of hypertensive patients is mostly in the age group of 65-74 years, This is in line with research conducted by Anita Fiany that the demographic characteristics of hypertensive patients based on age show that there are around 280 patients aged 60-70 years who suffer from hypertension compared to other ages. (Finny, 2019)

Age can be a risk factor for hypertension because getting older can cause a decrease in the function of the body's organs and hormonal imbalances The risk of hypertension can increase with age. Blood (Ernawati et al., 2022)

The results of this study are also in line with a study conducted by Dagmar et al, namely that it can be seen that the older age group > 60 years is the age group that suffers the most from hypertension with a total of 48 patients or 44%. Hypertension is a degenerative disease that arises due to the interaction of various risk factors that a person has. One of the factors that cannot be changed is the age factor. As you get older, blood pressure will increase, so cases of hypertension will increase along with aging. This aging process occurs in the large arteries which experience progressive stiffness, causing an increase in systolic blood pressure and a decrease in diastolic blood pressure. narrows and becomes stiff. Systolic blood pressure will also increase due to the reduced flexibility of the large blood vessels with increasing age until the age of 70, while diastolic blood pressure will increase until the ages of 50 and 60 and then settle or tend to decrease.(Dagmar et al., 2021)

2. Gender characteristics

The sex of women who suffer from hypertension the most, namely 63%. Research conducted by Tutoli et al. stated that the largest sample was female, namely 59 patients. This is due to several factors that can affect one of them

the hormone estrogen. Before entering menopause, women begin to lose the hormone estrogen little by little, and until menopause the hormone estrogen changes according to the age of the woman, which starts around the age of 45-55 years.(Tutoli et al., 2021). The results of this study are also in line with a study conducted by Tandililing et al which stated that based on gender, there were 87 female patients (60%) while male patients totaled 58 patients (40%).

The number of hypertensive patients is more dominantly female, this is due to a relationship between hormonal factors, namely estrogen which is greater in women than men. Premenopausal women have a lower risk and incidence of hypertension than men of the same age but this advantage for women gradually disappears after menopause hormonal changes after menopause can increase the risk of degenerative diseases such as hypertension. The results of research on the effect of menopause on blood pressure show that postmenopausal women have a higher systolic pressure of 4-5 mmHg than premenopausal women. The reasons for gender differences in blood pressure levels are multifactorial and not fully understood. There are several hypotheses including the potential role of sex hormones, the renin-angiotensin system, oxidative stress, endothelin, body weight, and sympathetic activation. The protective function of estrogen can delay the appearance of cardiovascular disease by 10-15 years in women compared to men. Endothelin levels and oxidative stress increase after menopause, and may affect blood pressure through increased sodium reabsorption and vasoconstriction.(Tandililing et al., 2017)

3. Characteristics of Antihypertensive Drug Classes

The drug class that is widely used is the beta-blocker group, in which the beta blocker drug class has a negative chronotropic and in-topic effect which causes blood pressure to decrease and can also reduce cardiac output and peripheral vascular resistance. (Nurmalita, 2019). The mechanism of action of beta-blockers is to bind to B1 receptors and increase cardiac

automaticity and conduction velocity. B1 receptors also induce the release of renin, and this causes an increase in blood pressure. Conversely, binding to B2 receptors causes smooth muscle relaxation along with increased metabolic effects. After the beta-blocker binds to B1 and B2 receptors, the heart experiences inhibition so that the heart rate slows down. Beta-blockers also lower blood pressure through several mechanisms, including decreased renin and decreased cardiac output(Indah, 2020)

4. Dosage Characteristics of Antihypertensive Drugs

Drugs and drug doses that are often used, namely Bisoprolol with a dose of 2.5 mg as many as 45 with a percentage of 26.9%, Bisoprolol is a second-generation beta blocker that selectively antagonizes β_1 receptors (cardioselective). Bisoprolol slows heart activity by stopping messages (neurotransmitters) from being sent by the sympathetic nerves to the heart. This is done by blocking beta-adrenergic receptors, as a result, the heart beats more slowly so that blood pressure in the blood vessels is reduced and it will be easier for the heart to pump blood throughout the body. Bisoprolol is given to patients with a stable condition characterized by the absence of fluid overload (edema). Bisoprolol is usually given as an adjunct to an ACE inhibitor or diuretic, starting at a low dose of 1.25 mg per day and then increasing every few weeks until the target dose is reached, which is 10 mg per day. (Saiful, 2014)

5. Characteristics Rules for the Use of Antihypertensive Drugs

The rule of use that is often used is once a day. Most of the doses of antihypertensive drugs and the frequency of administration are by the usual standard dosage references from the consensus management of hypertension, where almost all drugs are taken once a day, unlike the rules for using drugs in general, which must be taken 3 times a day. However, the choice of dose that is different from the literature that occurs is the frequency of captopril dosage regimens where there are patients who receive captopril

therapy 25 mg once a day. (Ministry of Health RI, 2007)Captopril is given 12.5 to 25 mg, 2 to 3 times daily. Captopril has a short duration of action, so it must be used 2 to 3 times a day to reduce blood pressure for 24 hours, but on prescriptions, captopril is not used as a single drug but in combination with other antihypertensive drugs so that it is not given 2 or 3 times a day but once a day.

6. Characteristics by Type of Drug Therapy

The most common type of therapy was the combination type as much as 60%, the results of this study were not in line with the study of Ardhanj et al, which stated that the most widely prescribed antihypertensive drug was given alone or monotherapy with a percentage of 72% with amlodipine drug items, while the combination was 28 %(Ardhanj et al., 2018)

The treatment strategy recommended in current hypertension management guidelines is to use combination drug therapy in most patients to achieve target blood pressure. If it is widely available and possible, it can be given in the form of a single pill combination, to increase patient adherence to treatment. (PERHI, 2021)

7. Characteristics of Blood Pressure Evaluation

Controlled blood pressure is higher than uncontrolled blood pressure, namely 64.3% with controlled blood pressure, meaning that the use of antihypertensive drugs is appropriate where hypertensive patients have blood pressure according to the target, which is less than 140/90 mmHg. This study is not in line with research conducted by Ernawati et al, which stated that blood pressure data collection (during visits to the puskesmas) revealed that there were still many hypertensive patients who had uncontrolled blood pressure. Uncontrolled blood pressure is influenced by several factors including the patient's condition (age, sex, heredity, or genetics), obesity, smoking, stress, lack of exercise, and excessive salt consumption(Ernawati et al., 2022)

Disobedience of hypertensive patients with poor treatment can cause blood pressure to become uncontrolled, which will impact the

emergence of various complications. (Nurmainah et al., 2014). Several factors cause non-compliance, including internal factors patient factors, disease conditions, therapeutic factors, and external factors which include health care system and economic factors. (Pujasari et al., 2015)

The problem of non-compliance is common in the treatment of chronic diseases that require long-term treatment such as hypertension. Currently, available antihypertensive drugs can control blood pressure in hypertensive patients and play an important role in reducing the risk of developing cardiovascular complications. However, the use of antihypertensives alone is proven to be insufficient to produce long-term blood pressure control effects if it is not supported by adherence to these antihypertensive drugs. To achieve optimal treatment in patients with hypertension, support is needed among patients, medical staff, and families. The role of the family is very large because the family can influence the patient's beliefs and determine the right treatment for people with hypertension. (Ajeng, 2015)

Limitation of study

The limitations of this research were the collected data was from one hospital instead of several, the data was incomplete, errors in putting medical records, the researcher's abilities, and limited research time.

CONCLUSION

Patients with hypertension suffer the most from patients aged 65-74 years. Gender is female. Antihypertensive drug group. Beta-blockers are often used, namely Bisoprolol, a dose of 2.5 mg in tablet preparation, which is used in combination with other antihypertensive drugs. In hypertensive patients, 64.3% of hypertension is controlled.

Implication of the study

The results of this research are hoped could be used as a source of information and as useful input at the Ibnu Sina Gresik Regional Hospital in particular, and can be used as a reference for

improving the quality and quality of treatment for hypertension sufferers. In addition, this research is very important for public health and individual well-being, developing effective treatments, and implementing preventive measures to reduce the impact of complications from hypertension.

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REFERENCES

- Ajeng, Setyawan, & A. U. (2015). Analisis Faktor Yang Mempengaruhi Ketidapatuhan Berobat Lansia Penderita Hipertensi Di Wilayah Kerja Puskesmas Pampang. *JIKP Jurnal Ilmiah Kesehatan ...*, 09(2), 115–125. <https://stikesmu-sidrap.ejournal.id/JIKP/article/view/173>
- Ardhany, S. D., Pandaran, W., Rizki, M., & Pratama, F. (2018). 258513-Profil-Penggunaan-Obat-Antihipertensi-Di-12Ef5362. *Borneo Of Journal Pharmacy*, 1(1), 47–50.
- Dagmar, Z. N., Lestari, D., Rahayu, A. P., Syaputri, F. N., & Asmara, T. D. (2021). Evaluasi Profil Penggunaan Obat Antihipertensi Pada Pasien Hipertensi di Salah Satu Klinik Kota Bandung. *Journal of Science, Technology, and Entrepreneurship*, 3(1), 16–24.
- DinkesJatim. (2021). DINKES JATIM PROV. <https://Medium.Com/>.
- Dungga, E. F. (2020). Hubungan Pola Makan Dan Aktivitas Fisik Dengan Kejadian Obesitas Pada Anak. *Jambura Nursing Journal*, 2(1), 103–111. <https://doi.org/10.37311/jnj.v2i1.4477>
- Ernawati, I., Fandinata, S. S., & Permatasari, S. N. (2022). Profil Penggunaan Obat Antihipertensi di Puskesmas Surabaya. *Lambung Farmasi*, 3(2), 134–138.

- Falah, A., & Harun, H. (2018). Hipertensi Renovaskular. *Jurnal Kesehatan Andalas*, 7(Supplement 3), 70. <https://doi.org/10.25077/jka.v7i0.852>
- Fiany, A. (2019). Profil Penggunaan Anti Hipertensi Pada Pasien Hipertensi Di Puskesmas Sentosa Baru Medan Tahun 2019. <http://repository.helvetia.ac.id/>
- Gunawan, A., Prah santi, K., Utama, M. R., & Airlangga, M. P. (2020). Pengaruh Komorbid Hipertensi Terhadapseverityitas Pasien Coronavirus Disease 2019. *Jurnal Implementa HUSADA*, 1(2), 136–151.
- Indah, I. (2020). Efek Beta Blocker Sebagai Antihipertensi Terhadap Human Beta Defensin-2 Dalam Saliva.
- Januar, D. (2015). Target Molekul dari peptide Antihipertensi: Memahami Mekanisme Tindakan Berdasarkan Patofisiologi Antihipertensi, *Jurnal Internasional Ilmu Molekuler ISSN 1422-0067* www.mdpi.com/journal/ijms Tinjau Target
- Kemendes RI. (2020). Profil Kes Indo 2019. In Kementrian Kesehatan Republik Indonesia. <https://pusdatin.kemkes.go.id/resource/s/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-indonesia-2019.pdf>
- Kementerian Kesehatan RI. (2007). Pedoman Pengobatan Dasar di Puskesmas 2007. 1–247.
- Khairunnisa, A. (2019). Asuhan Keperawatan Pada Pasien Hipertensi Di Ruang Angsoka RSUD Abdul Wahab Sjahranie Samarinda. *Journal of Chemical Information and Modeling*, 53(9), 1689–1699. <http://repository.poltekkes-kaltim.ac.id>
- Kholisoh, T. S. (2020). Identifikasi Ketidapatuhan Penggunaan Obat pada Pasien Hipertensi (Doctoral dissertation, Universitas Gadjah Mada).
- Larasati, D. (2021). Peningkatan Informasi Penyakit dengan Komorbid Hipertensi pada Masa Pandemi Covid-19 di Puskesmas Piyungan. *Jurnal Abdimas Madani*, 3(1), 21–25.
- Laura, A., Darmayanti, A., & Hasni, D. (2020). Evaluasi Penggunaan Obat Antihipertensi Di Puskesmas Ikur Koto Kota Padang Periode 2018. *Human Care Journal*, 5(2), 570–576.
- Mandasari, U. S., Pratiwi, L., & Rizkifani, S. (2022). Identifikasi Penggolongan Obat Berdasarkan Peresepan Obat Hipertensi di Instalasi Rawat Jalan Rumah Sakit. *Journal Syifa Sciences and Clinical Research*, 4(2), 287–296. <https://doi.org/10.37311/jsscr.v4i2.14028>
- Marhabatsar, N. S., & Sijid, S. A. (2021). Review: Penyakit Hipertensi Pada Sistem Kardiovaskular. *Journal UIN Alauddin*, November, 75. <http://journal.uin-alauddin.ac.id/index.php/psb>
- Mathavan, J., Pinatih, G.N. Indraguna, 2017. Gambaran Karakteristik Penderita hipertensi dan Tingkat Kepatuhan Minum Obat di Wilayah Kerja Puskesmas Kintamani I. *Intisari Sains Media*. No. 8(2):130-134, 130–134.
- Mulyana, H., Sriyani, Y., & Ipah, D. (2021). Dampak Hipertensi Terkontrol Dan Hipertensi Tidak Terkontrol Terhadap Kejadian Gagal Ginjal: A Literatur Review. *Jurnal Mitra Kencana Keperawatan Dan Kebidanan*, 4(2), 42–53.
- Novitasari, A., & Tati, B. (2014). Hiperuresemia Meningkatkan Risiko Hipertensi Hiperuresemia Increases Risk of Hypertension. *Universitas Muhammadiyah Semarang*, 2025, 1–7.
- Nuraini, B. (2015). Risk Factors of Hypertension. *J Majority*, 4(5), 10–19.
- Nurmainah, Fudholi, A., & Dwiprahasto, I. (2014). Kepatuhan Penggunaan Antihipertensi Sebagai Prediktor Laju Kejadian dan Biaya Rawat Inap. *Jurnal Manajemen Dan Pelayanan Farmasi*, 4, 1–8.
- Nurmalita, V., Annisaa, E., & Pramono. (2019). Hubungan Kepatuhan Minum

- Obat Antihipertensi Terhadap Kualitas Hidup Pada Pasien Hipertensi (Doctoral dissertation, Faculty of Medicine). 7–27.
- Lubis, S. P. S., Siregar, H. D., & Simanjuntak, E. (2022). Analisis Hipertensi Tidak Terkontrol Di Upt Puskesmas Teladan Kota Medan Tahun 2021. *Jurnal Ilmiah Keperawatan IMELDA*, 8(2), 165-172.
- Patonah, Mulyani, Yani, C. Z. (2021). Kekakuan Arteri Pada Hipertensi Yang Diinduksi L-Name: Pengembangan Model Hewan. *Jurnal Farmasi Galenika*, 8(3).
- PERHI. (2022). Konsensus Panduan Pengukuran Tekanan Darah Di Luar KLINIK (Ambulatory Blood Pressure Monitoring) Editor. 1–42.
- Pratiwi, D. (2021). Karakteristik Pasien Hipertensi di Puskesmas Pertiwi. *Indonesian Journal of Health*, 1(2), 102–111. <http://inajoh.org/index.php/INAJOH/article/view/24>
- Pratiwi, P. (2021). Hubungan Kepatuhan Minum Obat dengan Tekanan Darah Pada Klien Hipertensi di Wilayah Kerja Puskesmas Baureno Bojonegoro (Doctoral dissertation, Poltekkes Kemenkes Surabaya).
- Pratiwi, R. I., & Perwitasari, M. (2017). Analisis Faktor-Faktor Yang Mempengaruhi Kepatuhan Pasien Hipertensi Dalam Penggunaan Obat di RSUD Kardinah. 2nd Seminar Nasional IPTEK Terapan (SENIT), 204–208.
- Proboningsih, J., Almahmudah, M., 2019. Gambaran Kepatuhan Diet Dan Minum Obat Pada Pasien Hipertensi Di Wilayah kerja Puskesmas Pacar Keling Surabaya. *Pros. Semin. Nas. Kesehat. Poltekkes Kemenkes Surabaya* 6–10.
- Pujasari, A., Setyawan, H., & Udiyono. (2015). Faktor – Faktor Internal Ketidakepatuhan Pengobatan Hipertensi Di Puskesmas Kedungmundu Kota Semarang. *Jurnal Kesehatan Masyarakat*, 3(3), 99–108. <http://www.tjybjb.ac.cn/CN/article/downloadArticleFile.do?attachType=PDF&id=998>
- Rachman, S. (2014). Studi Penggunaan Bisoprolol Pada Pasien Gagal Jantung (Penelitian dilakukan di RSUD Dr. Saiful Anwar Malang) (Doctoral dissertation, University of Muhammadiyah Malang).
- Sari, E.P., Sitorus, R.J., & Utama, F. (2017). PREVALENCE STUDY OF HYPERTENSION AT THE INTEGRATED GUIDED POSTIN BTKLPP’S WORKING AREA CLASS I PALEMBANG. *Journal of Information & Knowledge Management*, 8, 117-124.
- Sari, O. M. (2020). Studi Penggunaan Obat Golongan Beta-Blocker Pada Pasien Rawat Inap Rumah Sakit Ansari Saleh Banjarmasin. *Jurnal Farmasi Udayana*, 9(2), 123. <https://doi.org/10.24843/jfu.2020.v09.i02.p07>
- Sevilla-Cazes, J., Ahmad, F. S., Bowles, K. H., Jaskowiak, A., Gallagher, T., Goldberg, L. R., Kangovi, S., Alexander, M., Riegel, B., Barg, F. K., & Kimmel, S. E. (2018). Heart Failure Home Management Challenges and Reasons for Readmission: A Qualitative Study to Understand the Patient’s Perspective. *Journal of General Internal Medicine*, 33(10), 1700–1707. <https://doi.org/10.1007/s11606-018-4542-3>
- Surya Mandala, A., & Esfandiari, F. (2020). Hubungan Tekanan Darah Terkontrol dan Tidak Terkontrol terhadap Kadar High Density Lipoprotein Pasien Hipertensi Correlation between Controlled and Uncontrolled Blood Pressure with High Density Lipoprotein Levels on Hypertension. *Juni*, 11(1), 379–386. <https://doi.org/10.35816/jiskh.v10i2.296>
- Susanto, D. H., Fransiska, S., Warubu, F. A., Veronika, E., & Dewi, W. W. P. (2018). Faktor risiko ketidakepatuhan minum obat anti hipertensi pada pasien hipertensi di puskesmas kecamatan

- palmerah juli 2016. Jurnal Kedokteran Meditek
- Tandililing, S., Mukaddas, A., & Faustine, I. (2017). Rawat Jalan Rumah Sakit Umum Daerah I Lagaligo Kabupaten Luwu Timur Periode Januari-Desember Tahun 2014. *GALENKA Journal of Pharmacy*, 3(1), 49–56.
- Tutoli, T. S., Rasdiana, N., & Tahala, F. (2021). Pola Penggunaan Obat Antihipertensi Pada Pasien Hipertensi. *Indonesian Journal of Pharmaceutical Education*, 1(3), 127–135. <https://doi.org/10.37311/ijpe.v1i3.1108>
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- Unger, T., Borghi, C., Charchar, F., Khan, N. A., Poulter, N. R., Prabhakaran, D., Ramirez, A., Schlaich, M., Stergiou, G. S., Tomaszewski, M., Wainford, R. D., Williams, B., & Schutte, A. E. (2020). 2020 International Society of Hypertension Global Hypertension Practice Guidelines. *Hypertension*, 75(6), 1334–1357. <https://doi.org/10.1161/HYPERTENSION.AHA.120.15026>
- Wirakhmi, I. N., & Purnawan, I. (2021). Hubungan kepatuhan minum obat dengan tekanan darah pada penderita hipertensi. *Jurnal Ilmu Keperawatan dan Kebidanan*, 12(2), 327-333.