

PROFILE OF HYPERTENSION IN THE ELDERLY AT THE MOJO PUBLIC HEALTH CENTER, SURABAYA, EAST JAVA, NOVEMBER 2022

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Abstract

Background: Hypertension is the leading cause of premature death worldwide. The condition of hypertension occurs when the systolic blood pressure is more than 135-140 mmHg, and the diastolic pressure is more than 90 mmHg. Hypertension is common in society, especially among the elderly. Hypertension in the elderly is caused by physiological changes in the body. This happens because blood pressure tends to increase with increasing time. The risk factors for hypertension in the elderly are age, gender, physical activity, diet, level of education, smoking habits, salt consumption, medication adherence, obesity, diabetes mellitus, and kidney disease.

Objective: To describe the profile of hypertension in the elderly at the Mojo Health Center, considering that an increase in age is also followed by an increase in blood pressure.

Methods: The cross-sectional study design used a sample of elderly people suffering from hypertension according to the inclusion criteria and exclusion criteria at the Mojo Health Center in November 2022. The sample used was 155 respondents. Data collection by interview using a questionnaire containing the variables to be studied, namely gender, education level, smoking habits, adherence to taking antihypertensive drugs, obesity, history of type 2 diabetes mellitus, and history of kidney disease. The results will be presented in the form of tables and pie charts.

Result: Of the total elderly who suffer from hypertension, there are 155 elderly, 115 elderly women and 40 elderly men, the results obtained were 110 elderly with low education level while 45 elderly with high education level, 4 elderly smoke while 151 elderly do not smoke, 84 elderly regularly take medication while 71 elderly do not routinely take medication, 40 elderly are obese while 115 elderly are not obese, 15 elderly have a history of type 2 diabetes mellitus while 140 elderly do not have a history of type 2 diabetes mellitus, 1 elderly has a history of kidney disease while 154 elderly do not have a history of kidney disease.

Conclusion: Characteristics that are often found in the elderly who suffer from hypertension at the Mojo Health Center, Surabaya are women, low education level, no smoking, regularly taking antihypertensive medication, no obesity, no history of type 2 diabetes mellitus, and no history of kidney disease.

Keywords: *Profile; hypertension; elderly*

1. Introduction

Hypertension, or what is often known as high blood pressure, is a common and serious disease that can cause various health problems. Blood pressure is a pressure generated because of blood flowing between

the walls of blood vessels and hypertension will occur if the pressure increases. Hypertension is the main cause of premature death worldwide (WHO, 2021). The normal blood pressure value is 120/80 mmHg. Hypertension occurs when the systolic blood pressure is more than 135–140 mmHg and the diastolic pressure is more than 90 mmHg. Hypertension is classified into two types, namely primary hypertension (essential) and secondary hypertension. Hypertension that affects 90–95% of the population is idiopathic hypertension or primary hypertension. It is called secondary hypertension when the cause of hypertension is known, for example, such as kidney disease and narrowing of the aorta (Siyad, 2011).

The definition of elderly according to the Ministry of Health is a population aged 60 years or more (Ministry of health of the republic of Indonesia, 2011). The age range grouping of the elderly is divided into three categories, namely pre-elderly (45-59 years), elderly (60-69 years), and high-risk elderly (≥ 70 years).

Until now, hypertension is still a problem that still needs attention in the health sector in Indonesia, even in the world. This disease is often found in the general public, especially the elderly, considering that one of the causes of blood pressure, namely blood pressure tends to increase with age (Siyad, 2011). With age, body functions will also decrease. This causes physiological changes that occur in elderly individuals, one of which is the elasticity of the arteries which will decrease and become stiff so that it can increase the risk of developing hypertension (Sigarlaki, 2006).

Based on the results of Basic Health Research data (2018) it shows that the highest prevalence of the elderly in Surabaya is in the Mojo Health Center, Gubeng sub-district, Surabaya city where 3,440 residents are elderly men and 3,771 residents are elderly women, so it is known that the total number of elderly people is 7,211 residents. The prevalence of people suffering from hypertension at the Mojo Health Center was 10.43% of 431,427 patients, with 361 female patients (7.30%) and 244 male patients (11.74%).

Based on this background, the purpose of this study is to describe the profile of hypertension in the elderly at the Mojo Health Center, considering that increasing age is also followed by increasing blood pressure. This research was conducted using a sample of elderly people who suffer from hypertension at the Mojo Health Center, Surabaya. With this research, it is hoped that it can increase knowledge about hypertension and adopt a healthy lifestyle, so that complications and damage to the target organs of hypertension can be prevented.

2. Methods

2.1 Study design and site

This study is an observational descriptive study with a cross-sectional approach. The research will be conducted at the Mojo Health Center, Surabaya, East Java on November 2022.

2.2 Sampling and study subject

This study used an accidental sampling technique with a total sample of 155 elderly people who are suffering from hypertension. The included sample is those who are willing to take part in the research by filling out a written consent and are willing to take part in the interview.

2.3 Data collection and analysis

The data in this study were obtained through interviews with a questionnaire containing the variables to be studied. The variables studied included gender, education level, smoking habits, adherence to taking

antihypertensive medication, obesity, history of type 2 diabetes mellitus, and history of kidney disease. In this study the data obtained will be processed and analyzed descriptively in tabular form.

3. Result

3.1 Subject characteristic

Based on **Table 1**, it is known that the proportion of elderly who suffer from hypertension is more experienced by women (74,2%) than men (25,8%). Most of the elderly also have a low level of education (71%) compared to higher education levels (29%). For the medication adherence category, the proportion of elderly people was almost the same, as many as 81 regularly took medication (54,2%) while the other 74 did not take medication regularly (45,8%). Elderly who are not obese (74,2%) have a high proportion compared to elderly who are obese (25,8%). Most of the elderly do not smoke (97,4%), have no history of type 2 diabetes mellitus (90,3%), and have no history of kidney disease (99,4%). Conversely, the proportion of elderly who smoke (2,6%), have a history of type 2 diabetes mellitus (9,7%), and have a history of kidney disease (0,6%) is very low.

Table 1. Subject characteristics

Characteristics	Total (n = 155)	Percentage (%)
Gender		
Male	40	25,8
Female	115	74,2
Level of education		
Low (<Senior High School)	110	71
High (≥Senior High School)	45	29
Smoking habit		
Yes	4	2,6
No	151	97,4
Adherence to taking antihypertensive medication		
Yes	84	54,2
No	71	45,8
Obesity		
Yes	40	25,8
No	115	74,2
History of type 2 diabetes mellitus		
Yes	15	9,7
No	140	90,3
History of kidney disease		
Yes	1	0,6
No	154	99,4

4. Discussion

4.1 Gender

Based on the data processing of elderly people who suffer from hypertension at the Mojo Health Center, Surabaya, the proportion of women (74,2%) is higher than that of men (25,8%). These results are in accordance with other studies which show that female elderly who suffer from hypertension have a greater proportion than male elderly who suffer from hypertension, there are 46 female elderly and 23 male elderly (Sarasaty, 2011). Elderly with hypertension at the Mojo Health Center tend to be more in the female category because based on Basic Health Research (2018) the prevalence of elderly women at the Mojo Health Center is higher than that of men, where 3771 residents are elderly women, and 3441 residents are elderly men.

Because in general, women after menopause will experience an increased risk of developing hypertension. This can happen because in women who have not reached menopause there is the hormone called estrogen which plays a role in increasing HDL levels in the blood. A decrease in estrogen levels in postmenopausal women will also be followed by a decrease in HDL levels in the blood so that LDL levels can increase which will then increase the risk of atherosclerosis. Chronic atherosclerosis can cause blood circulation to the heart to be disrupted, so that the left ventricle has to pump harder to generate enough pressure to push blood through the atherosclerotic blood vessels. This causes an increase in systolic and diastolic blood pressure, which then causes hypertension (Wahyuni & Eksanoto, 2013).

4.2 Level of education

The results of processing data on elderly people who suffer from hypertension at the Mojo Health Center, Surabaya based on the last level of education are dominated by the elderly with low education levels, as much as 71%. Meanwhile, the elderly with higher education level is only 29%. This is in line with research by Jabani et.al (2021) which shows that the highest proportion of the elderly group is in the group with a low education level which reaches 57.3% or as many as 67 elderlies.

The elderly at the Mojo Health Center tends to have a low level of education which then has an impact on the lifestyle of the elderly such as a lack of exercise. The low level of education also causes a lack of understanding about hypertension. So that hypertension prevention and therapy tends to be more difficult to apply to the elderly with low education.

Data from Basic Health Research (2013) also states that the incidence of hypertension tends to be high in population groups with low education and decreases with an increase in education. Population groups with low education have a high risk of suffering from hypertension possibly because of a lack of knowledge or difficulty receiving information about health so that it influences healthy life behavior (Anggara & Prayitno, 2013).

4.3 Smoking habit

The total number of elderly people who suffer from hypertension at the Mojo Health Center, Surabaya is 155 elderly, with 4 of them having smoking habits both in the past and until now (2.6%). While the remaining 151 elderly who suffer from hypertension do not have smoking habits (97.4%). These results are in line with research conducted by Hafiz et.al (2016) which showed that out of 69 elderly people who suffer from hypertension, as many as 18 elderly people have smoking habits.

Hypertension can occur because of two factors, namely factors that can be controlled and cannot be controlled. Apart from obesity, stress, lack of exercise, excessive salt consumption, and alcohol consumption, another controllable factor is smoking (Sutanto, 2010). Smoking can cause vasoconstriction in peripheral blood vessels and blood vessels in the kidneys which can then lead to increased blood pressure.

4.4 Adherence to taking antihypertensive medication

Based on the results of data processing on the level of adherence to taking antihypertensive medication in the elderly who suffer from hypertension at the Mojo Health Center, Surabaya, as many as 54.2% of the elderly with hypertension regularly take antihypertensive medication, while 45.8% of the elderly with hypertension do not routinely take antihypertensive medication. This is not much different from the results of a study conducted by Pamungkas (2020), the compliance rate for the elderly with hypertension in taking antihypertensive drugs reached 76%.

Educational level factors also affect adherence in taking medication. The higher the level of education, the easier it is for the respondent to receive the information obtained. Respondents with low levels of education are at risk of not complying with treatment procedures (Larasati, 2016). It's the same with the elderly at the Mojo Health Center who still don't take medication regularly, one of which is because the rate of low education level tends to be high. Non-compliance of the elderly in taking medication can lead to less optimal use of drugs. In this case, the benefits of the therapy given will be reduced so that the achievement targets of the therapy cannot be met.

Non-compliance in taking medication usually occurs in conditions such as the type and/or amount of medication that is too much, the frequency of taking medication too often every day, the types of medication are too varied, lack of information about long-term treatment, lack of information or explanation regarding drug use, and no education beforehand about the side effects of the drug (Ministry of health of the republic of Indonesia, 2011).

4.5 Obesity

The results of processing data on weight and height to determine the level of obesity in the elderly who suffer from hypertension at the Mojo Health Center, Surabaya, found that 25.8% of elderly people with hypertension suffer from obesity. While 74.2% of the elderly with hypertension do not suffer from obesity. This is not much different from a study conducted by Jabani et.al (2021) which proved that the highest proportion of elderly people with hypertension was in the underweight category, namely 81.2% or 95 elderly people.

Based on the results of this study, the elderly at the Mojo Health Center tend not to suffer from obesity. This happens because the elderly experience a decrease in muscle mass. Being underweight can also cause a decrease in the quality of life for the elderly, which can lead to health problems. Decreased muscle mass in the elderly can increase the risk of developing osteoporosis, diabetes, hypertension, coronary heart disease, and cancer (Aryana, 2021).

4.6 History of type 2 diabetes mellitus

Based on the data obtained in this study, the number of elderly people with hypertension who also suffer from type 2 diabetes mellitus is 9.7% of the elderly. While those who suffer from hypertension without type 2 diabetes mellitus there are as many as 90.3% of the elderly. The results of this study are in line with research conducted by Jabani et.al (2021) which states that out of a total of 117 elderly people with hypertension, there are 6% or as many as 7 elderly people with hypertension who suffer from type 2 diabetes mellitus.

Based on the results of this study, elderly people who suffer from hypertension with a history of type 2 diabetes mellitus at the Mojo Health Center have a low incidence rate. This can happen because elderly patients who suffer from hypertension with diabetes complications mostly only ask for a hospital referral letter without carrying out an examination at the Mojo Health Center. So that most of the elderly who are willing to take part in the interview are only the elderly who carry out health checks and carry out therapy at the Public Health Center.

Type 2 diabetes mellitus occurs due to impaired insulin secretion and insulin action, causing hyperglycemia (Genser et al., 2016). Several previous studies said that type diabetes mellitus has a close relationship with the occurrence of hypertension (Grundy, 2016). Vice versa, hypertension also has a close relationship with the occurrence of diabetes (Whelton et al., 2018). According to the American Heart Association (AHA), diabetes mellitus is a risk factor for hypertension which is supported by age, gender, and duration of diabetes mellitus (Benetos et al., 2017).

4.7 History of kidney disease

Based on the results of the data, the number of elderly people with hypertension at the Mojo Health Center, Surabaya, obtained in this study based on a history of kidney disease, reached a very low rate of only 0.6% or as many as 1 elderly person with hypertension and a history of kidney disease. The remaining 99.4% or 154 elderly people suffer from hypertension without a history of kidney disease. This is in accordance with research conducted by Arifa et.al (2017) which showed that the prevalence value of chronic kidney disease in the elderly who suffer from hypertension is 0.5%.

Based on the results of this study, it can be seen that the elderly with secondary hypertension tends to have less frequent check-ups at the Public Health Center. This happens because based on the 2012 Indonesian Physician Competency Standards, general practitioners can only diagnose and provide initial management of secondary hypertension and then provide referrals to hospitals. Most elderly people with secondary hypertension at the Mojo Health Center are permanent patients, so they only ask for a referral letter without carrying out an examination or therapy first. Therefore, it is more difficult for the elderly with secondary hypertension at the Mojo Health Center to be found and interviewed.

According to the American Journal of Kidney Disease (AJKD), hypertension can cause kidney problems and can exacerbate chronic kidney disease. Over time, if hypertension is not controlled, there will be narrowing and hardening of the arteries around the kidneys, causing damage to the arteries. If there is damage to the arteries, the blood that supplies the tissues to the kidneys will be obstructed (Bolignano et al., 2013).

5. Conclusion

In this study it is known that the profile of hypertension in the elderly at the Mojo Health Center, Surabaya, East Java period November 2022 is more in the female category (74.2%), level low education (71%), no smoking habits (97.4%), routine taking antihypertensive medication (54.2%), not obese (74.2%), not having history of type 2 diabetes mellitus (90.3%), and no history of disease kidney (99.4%).

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References

- [1] Anggara, F.H.D. and Prayitno, N., 2013, Faktor-Faktor yang Berhubungan dengan Tekanan Darah di Puskesmas Telaga Murni, Cikarang Barat Tahun 2012. *Jurnal Ilmiah Kesehatan*, vol 5, issue 1.
- [2] Arifa, S.I., Azam, M., and Handayani, O.W.K., 2017, 'Faktor yang Berhubungan dengan Kejadian Penyakit Ginjal Kronik pada Penderita Hipertensi di Indonesia', *JurnalMKMI*, vol 13, issue 4, pp 31-55.
- [3] Aryana, S., 2021, Sarkopenia Pada Lansia: Problem Diagnosis dan Tatalaksana, Bali: Panuduh Atma Waras.
- [4] Basic health research, 2013, Badan Penelitian dan Pengembangan Kesehatan Kementerian RI tahun 2013.
- [5] Basic health research, 2018, Hasil Utama Riskesdas 2018 Provinsi Jawa Timur, pp 1–82.
- [6] Benetos, A., Davis, A.M., Michos, E.D., Muntner, P., Rossing, P., Zoungas, S., 2017, Diabetes and Hypertension: A Position Statement by the American Diabetes Association, *Diabetes Care*, vol 40, issue 9, pp 2-3.
- [7] Bolignano, D., Rastelli, S., Agarwal, R., Fliser, D., Massy Z., and Ortiz, A., 2013, 'Pulmonary hypertension in CKD', *American Journal of Kidney Disease*, vol 61, issue 4, pp 612–622.
- [8] Genser, L., Rossario, J., Mariolo, C., Castagneto-gissey, L., and Panagiotopoulos, S., 2016, Obesity, Type2 Diabetes, and the Metabolic Syndrome Pathophysiologic Relationships and Guidelines for Surgical Intervention Laurent, *Surg Clin North Am*, vol 96, issue 4, pp 681-701.
- [9] Grundy, S.M., 2016, Metabolic syndrome update, *Trends Cardiovasc Med*, vol 26, issue 4, pp 364-373.
- [10] Hafiz, M., Weta, I.W., and Ratnawati, N., 2016, Faktor-Faktor yang Berhubungan dengan Kejadian Hipertensi pada Kelompok Lanjut Usia di Wilayah Kerja UPT Puskesmas Petang I Kabupaten Badung Tahun 2016, *E-JURNAL MEDIKA*, Vol. 5, No.7.
- [11] Jabani, AS., Kusnan, A., and Cristian, M., 2021, Prevalensi dan Faktor Risiko Hipertensi Derajat 2 di Wilayah Kerja Puskesmas Poasia Kota Kendari, *Kendari: Jurnal Nursing Update*, Vol. 12, No. 4.
- [12] Larasati, I., 2016, Pengaruh Motivasi Belajar dan Minat Belajar Terhadap Hasil Belajar Matematika Materi Persamaan Linear Satu Variabel Pada Siswa 53 Kelas VII-C, SMP BPPOKRI 1 Yogyakarta.
- [13] Ministry of health of the republic of Indonesia, 2011, Pedoman Penggunaan Obat Rasional, Jakarta: Ministry of health of the republic of Indonesia.
- [14] Ministry of health of the republic of Indonesia, 2015, Pelayanan dan Peningkatan Kesehatan Usia Lanjut, Jakarta: Ministry of health of the republic of Indonesia.
- [15] Pamungkas, S.C., 2020, Identifikasi Kepatuhan Penggunaan Obat dan Kejadian Penyakit Ginjal Kronis pada Pasien Hipertensi di Puskesmas Seyegan dan Ngaglik I, Skripsi, Program Studi Farmasi Fakultas Matematika Dan Ilmu Pengetahuan Alam Universitas Islam Indonesia Yogyakarta.
- [16] Sarasaty, R.F., 2011, Faktor-faktor yang Berhubungan dengan Hipertensi pada Kelompok Lanjut Usia di Kelurahan Sawah Baru Kecamatan Ciputat, Kota Tangerang Selatan, Skripsi, Universitas Islam Negeri Syarif Hidayatullah Jakarta, Jakarta.
- [17] Sigarlaki, H.J.O., 2006, Karakteristik dan Faktor Berhubungan dengan Hipertensi di Desa Bocor, Kecamatan Bulus Pesantren, Kabupaten Kebumen, Jawa Tengah, Tahun 2006, *Makara Seri Kesehatan*, vol 10, issue 2, pp 78–88.
- [18] Siyad, A.R., 2011, Hypertension, *Hygeia Journal for Drugs and Medicines*, vol 3, issue 1, pp 1-16.
- [19] Sutanto, 2010, Cekal (Cegah dan Tangkal) Penyakit Modern Hipertensi, Stroke, Jantung, Kolesterol, dan Diabetes, Yogyakarta: C. V Andi Offset.
- [20] Wahyuni and Eksanoto, D., 2013, Hubungan Tingkat Pendidikan dan Jenis Kelamin dengan Kejadian Hipertensi di Kelurahan Jagalan di Wilayah Kerja Puskesmas Pucang Sawit Surakarta, *Jurnal Ilmu Keperawatan Indonesia*, vol 1, issue 1, pp 79-85.
- [21] Whelton, P.K., Carey, R.M., Aronow, W.S., Casey, D.E., Collins, K.J., and Himmelfarb, D.E., 2018, Clinical Practice Guideline 2017 ACC / AHA / AAPA / ABC / ACPM / AGS / APhA / ASH / ASPC / NMA / PCNA Guideline for the Prevention , Detection , Evaluation , and Management of High Blood Pressure in Adults A Report of the American College of Cardiology, New York: JNC.
- [22] World Health Organization, 2021, Factsheet: Hypertension. Retrieved: May 16, 2021, from <https://www.who.int/news-room/factsheets/detail/hypertension>.

