



## **DESCRIPTION OF THE CHARACTERISTICS OF HYPERTENSION IN THE ELDERLY POSYANDU AND PUSLING THE JAILOLO PKM WORK AREA IN JULY 2023**

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### **Abstract**

*The purpose of this study was to determine the characteristics of hypertensive patients at the Elderly Posyandu and Pusling in the Jailolo Health Center working area in July 2023. The research method used was descriptive observational research. The study population included all pre-elderly and elderly patients who sought treatment and had a history or were diagnosed with hypertension during visits to Posyandu or Pusling, with a total of 20 respondents. The results showed that the level of knowledge of respondents about hypertension in the elderly at the Jailolo Health Center was mostly included in the category of sufficient knowledge, the attitudes of respondents about hypertension in the elderly at the Jailolo Health Center were mostly included in the category of sufficient and less and the behavior of respondents about hypertension in the elderly at the Jailolo Health Center was mostly included in the category of less. This finding indicates that although the level of knowledge of the community can be said to be sufficient, behaviors that are at risk of hypertension, such as high salt consumption and smoking, are still widely practiced. Therefore, education and intervention efforts are needed to increase awareness and encourage behavior change to reduce the risk of hypertension among the elderly.*

**Keywords:** Hypertension, Posyandu, Elderly, Habits, Health, Characteristics.

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INTRODUCTION

Non-communicable diseases are a global problem. Data from the World Health Organization (WHO) shows that non-communicable diseases are still the leading cause of death in the world, representing 63% of all reported annual deaths.

Hypertension is a manifestation of cardiovascular systemic hemodynamic imbalance, the pathophysiology of which is multi-factorial, so it cannot be explained by just one single mechanism (Akbar & Ningsih, 2020; Hochstein, 2016). According to Kaplan (Lase et al., 2020), hypertension involves many genetic factors, the environment and hemodynamic regulation centers. If simplified, hypertension is actually an interaction between cardiac output (CO) and total peripheral resistance (TPR) (Agustina & Sari, 2014). The problem is how many mmHg of blood pressure is called normal, so if blood pressure is above normal, then this can be said to be hypertension (high blood pressure) (Thomopoulos et al., 2017). In general, hypertension is defined as an elevated blood pressure condition with systole  $\geq$  140 mmHg and diastole  $\geq$  90 mmHg (Triaswati & Mustikasari, 2025).

Hypertension can be triggered by 2 factors, namely uncontrollable factors and controllable factors (Imelda et al., 2020; Kintiraki et al., 2015). Uncontrollable factors include heredity, gender and age (Lumowa, 2020; S. D. Ningsih & Afria, 2019). While controllable factors are obesity or overweight, fat consumption, sodium consumption, stress, exercise or physical activity, smoking (Ojangba et al., 2023; Tomiyama, 2019).

Elderly people are at high risk for degenerative diseases such as Coronary Heart Disease (CHD), hypertension, diabetes mellitus, rheumatism, and cancer (Widiana & Ani, 2017). One of the diseases often experienced by the elderly is hypertension. Hypertension is often referred to as a hidden killer. Hypertension does not give symptoms to sufferers, but that does not mean it is not dangerous (Sumarta, 2020). In general, all medical disorders that arise are usually followed by signs and symptoms, but this does not apply to hypertension (Setyanto, 2017). Hypertension tends to increase with age (Buford, 2016; Tasić et al., 2022). The facts show that hypertension attacks more adults, young people and early middle age (Ostchega et al., 2020). The comparison of hypertension attacks more men than women.

Indonesia is a country that has entered the era of an elderly structured population or Aging Structured Population because the number of people

aged 60 years and over is around 7.18%. The number of elderly people in Indonesia in 2006 was  $\pm$  19 million. In 2011 the number of elderly people was 20 million (9.51%) with an elderly life expectancy of 67.4 years and in 2020 it is estimated to be 28.8 million (11.34%) with a life expectancy of 71 years.

According to WHO data, 1.13 billion people in the world suffer from hypertension (Dzau & Balatbat, 2019). It is estimated that hypertension has caused 9.4 million deaths, the global prevalence of hypertension in adults over 18 years of age was around 22% in 2014, the prevalence of hypertension is higher in low-income countries compared to middle and high-income countries (Berek et al., 2021).

According to Riskesdas in the prevalence of hypertension in Indonesia is 34.1%, an increase compared to the prevalence of hypertension in Riskesdas 2013 of 25.8% (Kurnianto et al., 2020). Where the Indonesian population with the age group 74 years and over has the highest incidence of hypertension at 69.5%, the age group 65-74 is 62.3%, the group 55-64 is 55.2%. North Maluku itself has a hypertension incidence rate of 10.2%, an increase from 2013 which was only around 6.8%.

Based on this background description, the researcher felt the need to conduct a study with the aim of knowing the characteristics of hypertensive patients at the Elderly Posyandu and Pusling in the Jailolo Health Center working area in July 2023.

METHOD

This type of research is a descriptive observational study. This research was conducted in the villages of Ulo, Galao, Gueria, Tauro, Bukubualawa. The time of data collection in this study was carried out in July from 1-5 July 2023. The population in this study were all pre-elderly and elderly patients who came for treatment and had a history of hypertension or were diagnosed with hypertension when they came for treatment at the integrated health post or mobile health center in the PKM Jailolo work area. The sample in this study was 20 respondents.

RESULT AND DISCUSSION

Respondent Characteristics

The characteristics of respondents described in this study are based on age, gender, last education, and blood pressure of hypertensive patients.

1) Respondent Age

Table 1. Frequency distribution of age

Age Characteristics (Depkes 2003)	Frequency	Presentase (%)
45-59 age (pre-elderly)	6	30,0
60-69 age (elderly)	11	55,0
>70 age (elderly at risk)	3	15,0
Total	20	100,0

Based on the table above, a picture of the frequency distribution of the elderly's age from a total of 20 respondents at the Jailolo Health Center is obtained, namely there are 6 respondents (30.0%)

with an age range of 45-59 years (pre-elderly), 11 respondents (55.0%) with an age range of 60-69 years (elderly), 3 respondents (15.0%) with an age range of >70 years (elderly at risk).

2) Gender

Table 2. Gender frequency distribution

Gender	Frequency	Presentase (%)
Men	9	45,0
Women	11	55,0
Total	20	100,0

Based on the table above, a picture of the frequency distribution of gender from a total of 20 respondents at the Jailolo Health Center is obtained, namely, 11 respondents (55.0%) female and 9 respondents (45.0%) male.

3) Last Education

Table 3. Frequency distribution of last education

Last Education	Frequency	Presentase (%)
SD	10	50,0
SMP	8	40,0
SMA	2	10,0
Total	20	100,0

Based on the table above, the distribution of the last education of a total of 20 respondents is obtained, namely the most elementary school, 10 people (50.0%), junior high school, 8 people (40.0%), and high school, 2 people (10.0%).

4) Blood Pressure

Table 4. Blood pressure frequency distribution

Blood Pressure	Frequency	Presentase (%)
Pre-Hypertension (Sistole 120-139, Diastole1 80-89)/ small		5,0
Hypertension Stg 1 (Sistole 140-159,9 Diastole 90-99)/ medium		45,0
Hypertension Stg 2 (Sistole>160,10 Diastole>100)/ hard		50,0
Total	20	100,0

Based on the table above, the distribution of blood pressure from a total of 20 respondents is obtained, namely the most suffering from hypertension stage 2, amounting to 10 people (50.0%), hypertension stage 1 as many as 9 people (45.0%), and pre-hypertension 2 people (5.0%).

5) Drug Consumption History

Table 5. Frequency distribution of drug consumption history

Drug Consumption	Frequency	Presentase (%)
Captopril	11	55,0
Captopril Irregular	4	20,0
Never	5	25,0
Total	20	100,0

Based on the table above, the distribution of drug consumption history from a total of 20 respondents was obtained, namely captopril totaling 11 people (55.0%), captopril irregularly totaling 4 people (20.0%), and never 5 people (25.0%).

Overview of the Level of Knowledge of Elderly Hypertension Sufferers

Based on the results of the research that has been conducted, the frequency distribution of respondents based on the level of knowledge of the elderly hypertension sufferers in the table below shows that the level of knowledge of 20 respondents is in the good category of 1 person (5.0%), sufficient of 11 people (55.0%), and lacking of 8 people (40.0%).

Table 6. Frequency Distribution of Knowledge of Elderly Hypertension Sufferers

Hypertension Knowledge	Frequency	Presentase (%)
Good Knowledge	1	5,0
Sufficient Knowledge	11	55,0
Less Knowledge	8	40,0
Total	20	100,0

Overview of Public Attitudes of Hypertension in the Elderly

Based on the results of the research that has been conducted, the frequency distribution of respondents based on the attitudes of elderly

hypertension sufferers in the table below shows that the attitudes of a total of 20 respondents are in the good category of 2 people (10.0%), sufficient of 9 people (45.0%), and lacking of 9 people (45.0%).

Table 7. Frequency distribution of respondents' attitudes of elderly hypertension sufferers

Attitudes of Elderly Hypertension	Frequency	Presentase (%)
Good	2	10,0
Sufficient	9	45,0
Less	9	45,0
Total	20	100,0

Overview of Hypertension Behavior in the Elderly Community.

Based on the results of the research that has been conducted, the frequency distribution of respondents based on the behavior of elderly

hypertension sufferers in the table below shows that the attitudes of a total of 20 respondents are in the good category of 1 person (5.0%), sufficient of 9 people (45.0%), and lacking of 10 people (45.0%).

Table 8. Frequency distribution of elderly hypertensive respondents' behavior

Hypertensy respondents' behavior	Frequency	Presentase (%)
Good	1	5,0
Sufficient	9	45,0
Less	10	50,0
Total	20	100,0

Description of Salt Consumption Habits of Hypertension in the Elderly

Based on the results of the research that has been conducted, the frequency distribution of respondents based on the salt consumption habits

of elderly hypertension sufferers in the table below shows that the attitude of a total of 20 respondents is the low salt consumption category of 2 people (10.0%), and high salt consumption of 18 people (90.0%).

Table 9. Frequency distribution of respondent behavior salt consumption habits

Salt Consumption Habits	Frekuensi	Persentase (%)
Less	2	10,0
High	18	90,0
Total	20	100,0

Source: Primary Data, 2023

Description of Smoking Habits of Hypertension in the Elderly

Based on the results of the research that has been conducted, the frequency distribution of respondents based on the smoking habits of elderly hypertension sufferers in the table below shows that

the attitude of a total of 20 respondents is the category of light smokers as many as 4 people (20.0%), heavy smokers as many as 3 people (15.0%), and non-smokers as many as 13 people (65.0%).

Table 10. Frequency distribution of smoking habits of elderly hypertension respondents

Smoking habits	Frequency	Percentage (%)
Light smoker	4	20,0
Heavy smoker	3	15,0
No smoker	13	65,0
Total	20	100,0

Source: Primary Data, 2023

Discussion  
Respondent Characteristics

1) Respondent Age

In the figure of the frequency distribution of the age of respondents, the frequency distribution of the age of respondents in this study was mostly aged 60-69 years, totaling 11 respondents (55.0). The results of this study are in line with the research of Lewa et al. (2010) which showed that the age of the elderly with hypertension was in the age range of 60-69 years, as many as 43 respondents (36.1%) and at

the age of > 70 years as many as 76 respondents (63.9%).

The prevalence of hypertension tends to increase with age. This can be caused by changes in the structure of large blood vessels in the form of narrowing of the lumen and decreased elasticity of the vessel walls, thereby increasing blood pressure.

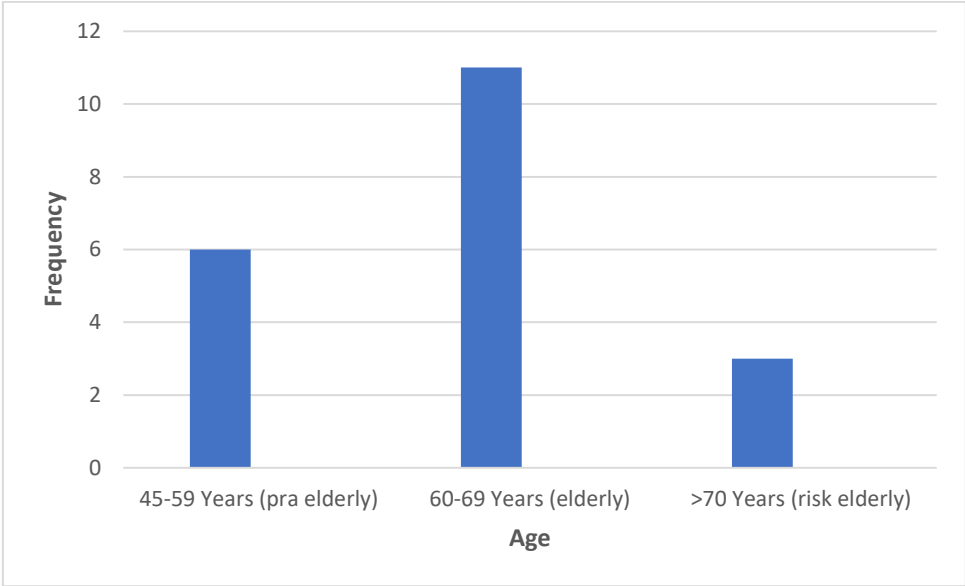


Figure 1. Respondent Characteristics Based on Age

2) Gender

In the gender frequency distribution image, the gender frequency distribution in this study is mostly female with 11 respondents (55.0%). The results of this study are in line with Azmi et al. (2018) study on the description of the quality of life of elderly hypertensive patients, it was found that the majority of respondents were female, 34 respondents (55.7%). A similar study conducted by Hazwan & Pinatih (2017) on the description of the characteristics of hypertension sufferers, it was

found that based on gender, most respondents (56%) were female.

Hypertension is dominant in women, starting from the age of over 45 years. The reason is because women who have not yet menopausal are protected by the hormone estrogen which plays a role in increasing HDL (High Density Lipoprotein). Low or high HDL levels affect the occurrence of atherosclerosis and cause increased blood pressure.

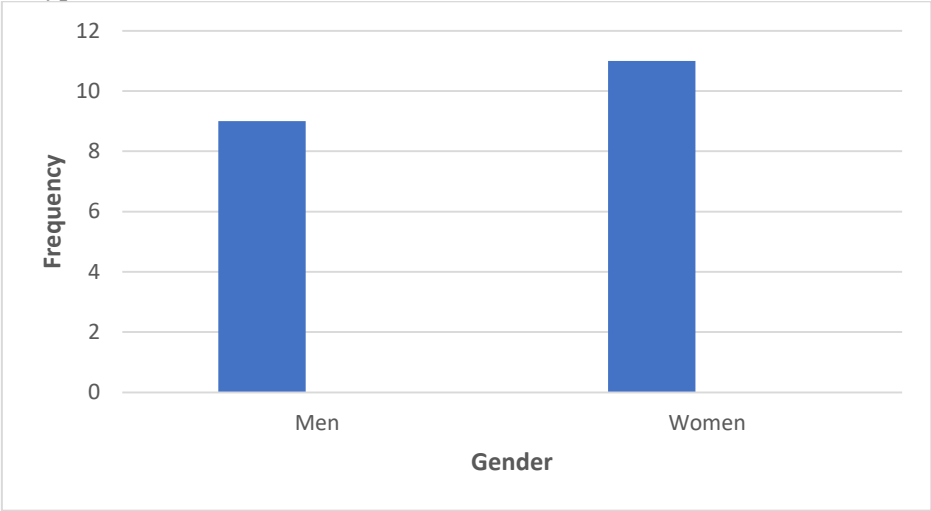


Figure 2. Respondent Characteristics Based on Gender

3) Last Education

In the last education frequency distribution image, the results of the study showed that the majority of respondents' education was elementary school, as many as 10 people with a percentage of (50.0%). This is in line with research conducted by Lumowa (2020) on hypertension sufferers in the elderly with low education levels (no school/elementary school) tend to be more than hypertension sufferers with secondary education/high education, in the data obtained from 126 hypertension sufferers, 115 of whom had low education.

From the description above, the researcher argues that the level of education can affect the occurrence of hypertension because the level of education affects a person's ability to obtain information, if someone has a high education, that person tends to be more alert and maintain a healthy lifestyle because of the amount of information he can/obtain. People who have a high level of education tend to have more compliance in taking medication and checking themselves at health services.



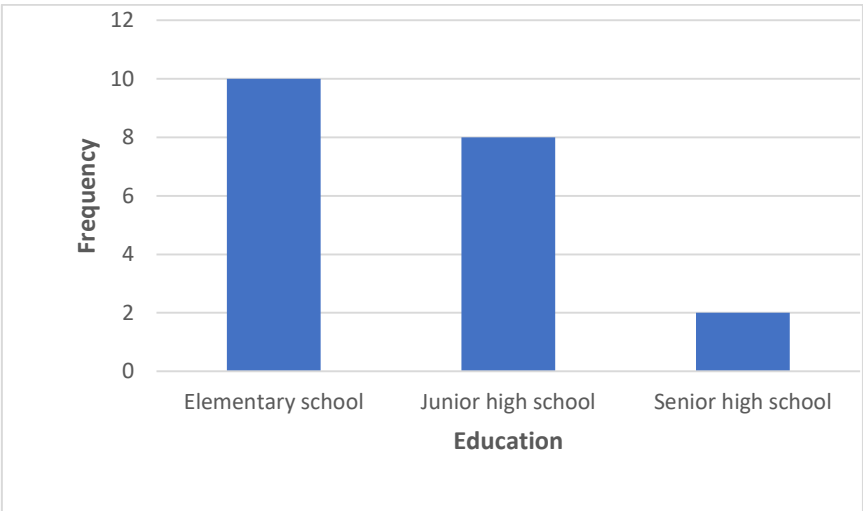


Figure 3. Respondent Characteristics Based on Education

4) Blood Pressure

In the blood pressure distribution image, the results of the study showed that the majority of respondents with hypertension in the elderly in severe levels suffered from stage 2 hypertension, namely 10 people with a percentage of (50.0%). This is different from the study conducted by Setyanto (2017) on the relationship between physical activity and the incidence of hypertension in the elderly, which showed that the majority (64.3%) of respondents with hypertension in the elderly in mild levels were 27 people. Factors that influence the incidence of hypertension in the elderly are age and education factors. Furthermore, (57.1%) of respondents aged 60-65 years were 24 people. According to the researcher, respondents who

experienced mild hypertension were because respondents were able to think about how to control hypertension by regulating the correct diet and doing enough physical activity to remove toxins from the body.

As a person gets older, there will be changes in the physical and psychological (mental) aspects. This occurs due to the maturation of organ function. In the psychological or mental aspect, the level of thinking is increasingly mature and adult. Age is a general individual calculated from birth to birthday. The older the person, the more mature the level of maturity and strength of a person will be in thinking. In terms of public trust, those who are not yet mature are trusted by people who are not yet mature. This will be from experience and maturity of the soul.

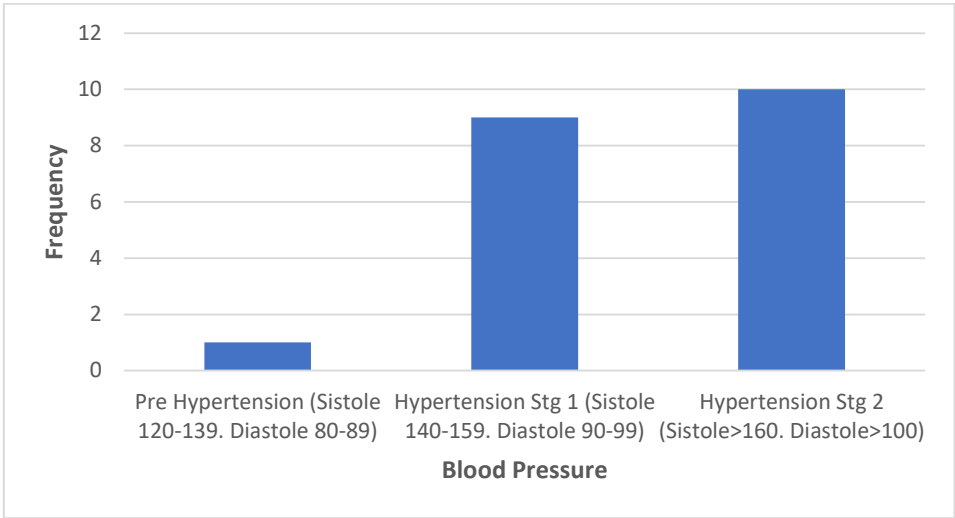


Figure 4. Respondent Characteristics Based on Blood Pressure

5) Drug Consumption History

In Figure 5, the results of the study showed that the majority of respondents had the highest drug consumption history, namely Captopril, as many as 11 people with a percentage of (55.0%). This is in line with research conducted by Mandasari et al. (2022) on Identification of Drug Classification Based on Hypertension Drug Prescriptions that the most widely used drugs were the ACE-Inhibitor group in the form of captopril 17 patients with a percentage of 31%, followed by CCB in the form of amlodipine as many as 14 patients (25%), diuretics in the form of hydrochlorothiazide as many as 4 patients (7%) and furosemide as many as 4 patients (7%). The ACE-Inhibitor group that is widely used for the treatment of hypertension with complications

is the drug captopril. ACE-Inhibitors can reduce morbidity and mortality in left ventricular dysfunction and reduce the development of chronic kidney failure. ACE-Inhibitors inhibit the conversion of angiotensin I to angiotensin II, resulting in vasodilation and decreased aldosterone secretion. In addition, bradykinin degradation is inhibited so that bradykinin levels in the blood increase and play a role in the vasodilatory effect of ACE-Inhibitors. Vasodilation will directly lower blood pressure, while a decrease in aldosterone will cause excretion of water, sodium and potassium retention. ACE-Inhibitors are effective for mild, moderate and severe hypertension. Some of them can be used in hypertensive crises such as captopril.

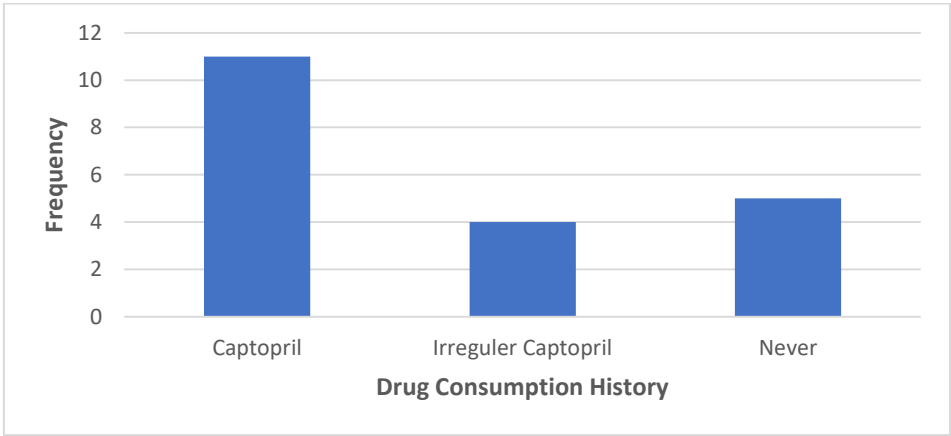


Figure 5. Respondent Characteristics Based on Drug Consumption History

Overview of Respondents' Knowledge Level of Hypertension Characteristics in the Elderly

The results of the study conducted in the Jailolo Health Center work area on 20 respondents can be seen in the image of the respondents' knowledge level, it was found that the majority of respondents had sufficient knowledge, 11 people (55.0%). This is in line with Lukita (2021) study on health maintenance efforts in the elderly that the level of knowledge of respondents about hypertension, the majority had knowledge in the sufficient category related to hypertension, as many

as 41 respondents (53.9%), knowledge was lacking as many as 18 respondents (23.7%), while respondents who had knowledge in the good category were 17 respondents (22.4%). The results of the study can be concluded that the elderly have knowledge about their disease, but still do not fully understand knowledge about hypertension. In line with the research of Zaenurrohmah & Rachmayanti (2017) which explains that most elderly respondents have sufficient knowledge about hypertension, namely 33 respondents (70%).

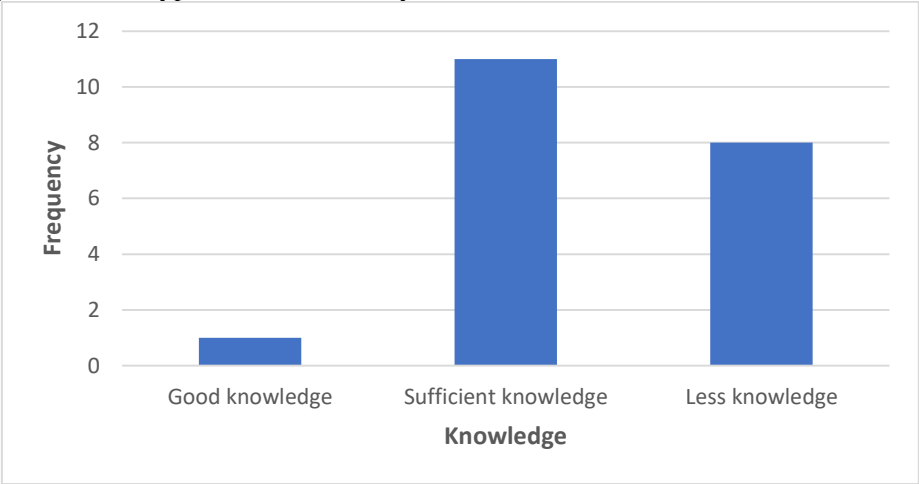


Figure 6. Respondents' Knowledge Level of Hypertension Characteristics in the Elderly

Description of Respondents' Attitudes on Characteristics of Hypertension in the Elderly

As seen in the picture of respondents' attitudes, the results of a study conducted in the Jailolo Health Center work area on respondents showed that the majority of respondents had sufficient and inadequate attitudes, as many as 9 people (45.0%). This is in line with research conducted by Romli (2021) on the Attitudes of Hypertension Patients in Wagir District, Malang Regency, that the level of attitude of a total of 50 respondents with hypertension, the majority of respondents had an attitude level in the sufficient category of 54%. While the remaining 46% had a good level of attitude.

According to Kristiawani (2018), there are two factors that influence the formation and change of attitudes, namely external factors and internal factors. Internal factors come from within the individual, such as accepting, processing, and choosing everything that comes from outside, and determining which will be accepted and which will not. Therefore, individual factors are determining factors in the formation of attitudes. And external factors come from outside the individual in the form of stimuli to form and change attitudes. These stimuli can be direct, for example individual with individual, individual with group. It can also be indirect, namely through intermediaries, such as: communication tools and mass media, both electronic and non-electronic.

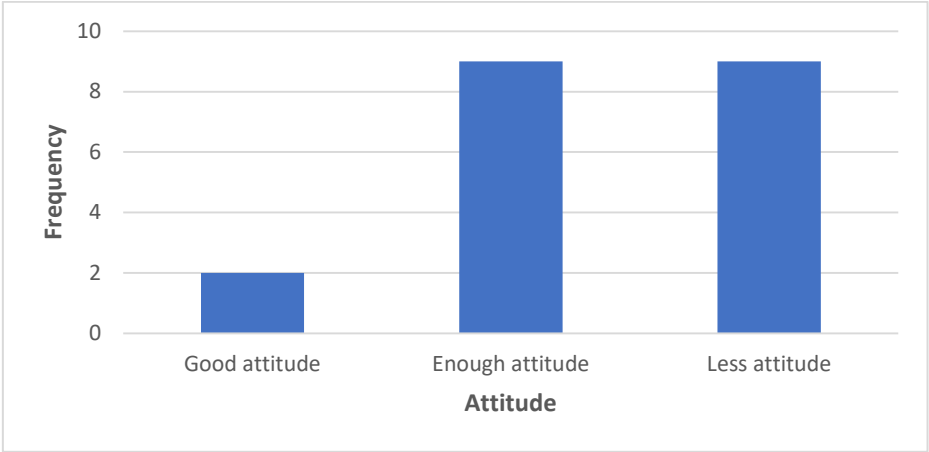


Figure 7. Respondents' Attitudes to Characteristics of Hypertension in the Elderly

**Description of Respondent Behavior Characteristics of Hypertension in the Elderly**

As seen in the picture of respondent behavior, the results of a study conducted in the Jailolo Health Center work area on respondents showed that the majority of respondents had less behavior, as many as 10 people (50.0%). This is in line with research conducted by Haqq (2021) on Eating Behavior in Young Adults in the Jembatan Kecil Health Center Work Area that almost all respondents (56.7%) had unhealthy (less) behavior. This study is in accordance with Lawrence Green's

theory which states that behavior is influenced by predisposing factors, one of which is knowledge. Knowledge is defined as the result of human sensing through the senses they have, namely ears, eyes, nose, taste and touch. Providing information will increase a person's knowledge. Knowledge can make a person aware so that they will behave according to the knowledge they have. Changes in behavior that are based on knowledge, awareness and positive attitudes are lasting because they are based on their own awareness, not coercion (Notoatmojo cited in Minati & Sartika, 2022).

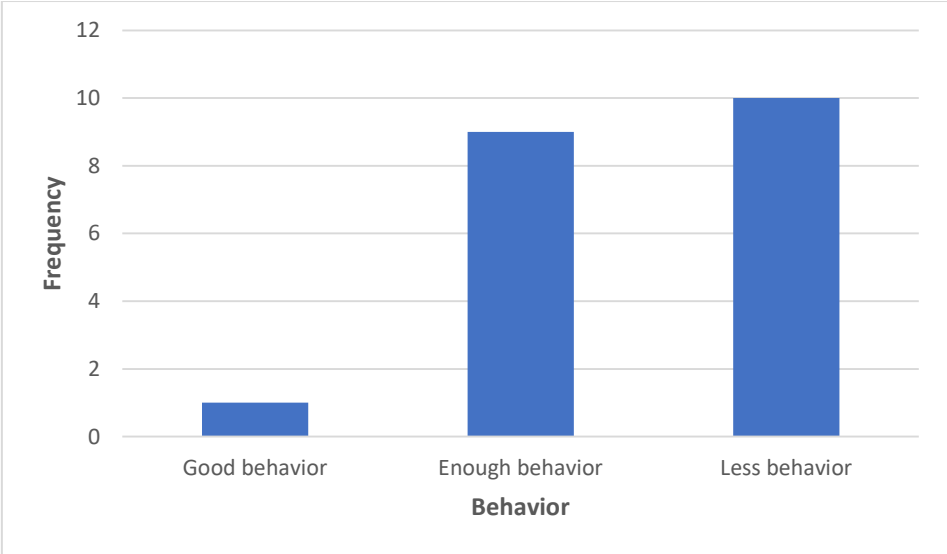


Figure 8. Respondent Behavior Characteristics of Hypertension in the Elderly

**Description of Respondents' Salt Consumption Habits Characteristics of Hypertension in the Elderly**

In the picture of salt consumption habits, it was found that 18 respondents (90.0%) had a high salt consumption level. According to Ningsih & Indriani (2017) research at Beringharjo Market, Yogyakarta, it showed that workers who often experience hypertension are workers with excessive salt consumption, namely (75.6%). This means that there is a relationship between the level of salt consumption and the incidence of hypertension. This is also in line with research conducted by Adriaansz

et al. (2016) on the elderly at the Ranomuut Health Center, Manado City, where the results of the study showed that the elderly who experienced hypertension were dominated by the elderly with high salt consumption, namely (62.7%). 29

The effect of salt intake on hypertension occurs through increased plasma volume, cardiac output, and blood pressure. The recommended salt consumption is no more than 6 grams / day. Excessive salt consumption has a direct effect on blood pressure. The higher a person's salt consumption, the higher the prevalence of hypertension.



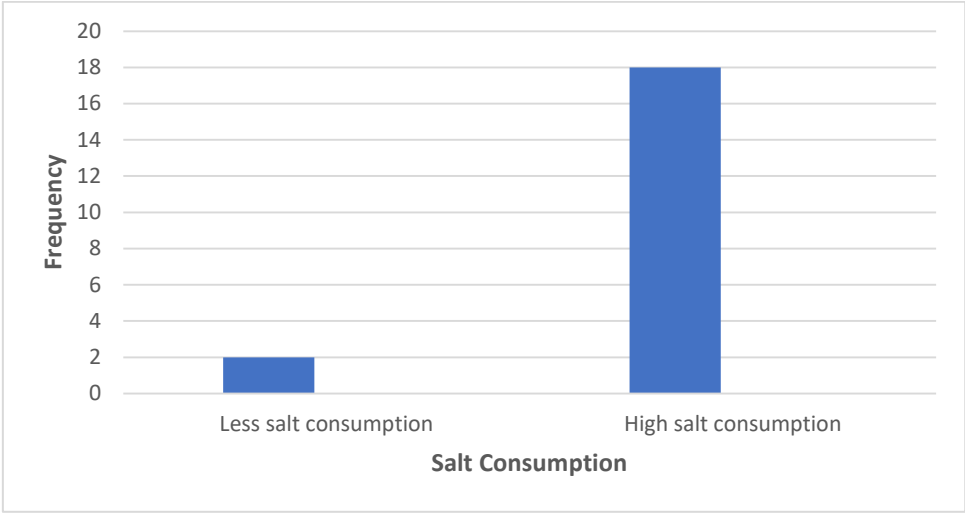


Figure 9. Respondents' Salt Consumption Habits Characteristics of Hypertension in the Elderly

Description of Smoking Habits of Respondents Characteristics of Hypertension in the Elderly

In the picture of smoking habits, it was found that most respondents did not have a smoking habit, namely 13 respondents (65.0%). This is not in line with Ricca's research (2017) where the results of the study found that 38 respondents (57.6%) had a smoking habit and 28 respondents (42.4%) did not have a smoking habit.<sup>28</sup>

Cigarette smoke contains approximately 4000 chemicals, 200 of which are toxic, some of which are very dangerous substances, including tar, nicotine, carbon monoxide, and many other

dangerous substances. In just a few seconds, nicotine reaches the brain. The brain reacts to nicotine by signaling the adrenal glands to release epinephrine (adrenaline). This powerful hormone will constrict blood vessels and force the heart to work harder due to high pressure. Smoking a cigarette will have a major effect on increasing blood pressure.<sup>28</sup>

A person smokes two cigarettes, then systolic and diastolic pressure will increase by 10 mmHg. Blood pressure will remain at this level for up to 30 minutes after quitting smoking. For heavy smokers, blood pressure will remain at a high level throughout the day.

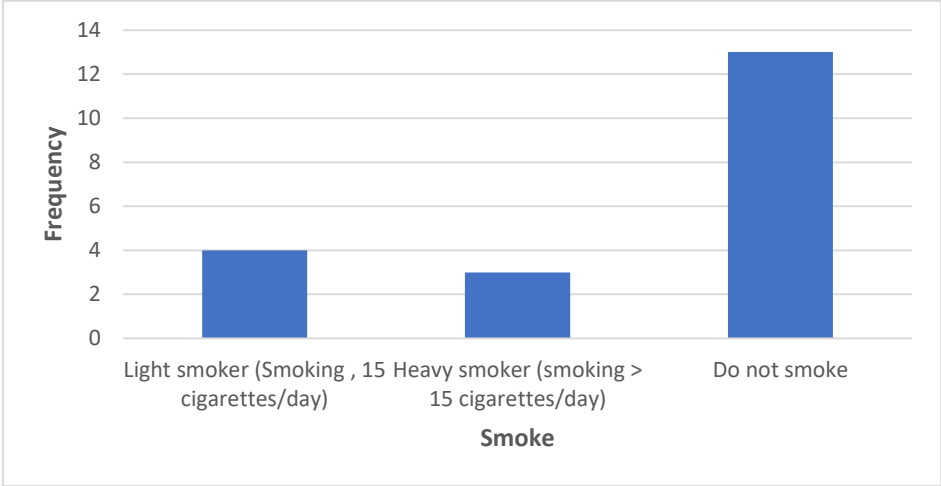


Figure 10. Smoking Habits of Respondents Characteristics of Hypertension in the Elderly

CONCLUSION

Based on the results of the research and discussion conducted regarding the characteristics of hypertension cases in the pre-elderly and elderly communities at the Jailolo Health Center, it can be concluded that the characteristics of the respondents show that the majority of respondents are in the age range of 60-69 years (elderly) as many as 11 respondents (55.0%). Based on gender, the majority of female respondents are 11 respondents (55.0%). Based on the last education, the majority of elementary school respondents are 10 respondents (50.0%). Based on blood pressure, the majority of respondents suffer from Hypertension Stg 2 (Severe) as many as 10 respondents (50.0%). Based on the history of drug consumption, the majority of respondents consume Captopril as many as 11 respondents (55.0%).

The level of knowledge of respondents about hypertension in the elderly at the Jailolo

Health Center is included in the category of sufficient knowledge, namely 11 people (55.0%). The attitudes of respondents about hypertension in the elderly at the Jailolo Health Center are mostly included in the category of sufficient and less, namely 9 people (45.0%). Respondents' behavior regarding hypertension in the elderly at the Jailolo Health Center is mostly included in the less category, namely 10 people (50.0%). The habit of salt consumption in elderly patients at the Jailolo Health Center is included in the high category, namely 18 respondents (90.0%). The habit of smoking in elderly patients at the Jailolo Health Center is included in the non-smoking category, namely 13 respondents (65.0%).

REFERENCES

Adriaansz, P. N., Rottie, J., & Lolong, J. (2016). Hubungan Konsumsi Makanan Dengan Kejadian Hipertensi Pada Lansia Di

- Puskesmasranomuut Kota Manado. *Jurnal Keperawatan*, 4(1).  
<https://doi.org/10.35790/jkp.v4i1.12132>
- Agustina, S., & Sari, S. M. (2014). Faktor-faktor yang berhubungan dengan hipertensi pada lansia di atas umur 65 tahun. *Jurnal Kesehatan Komunitas (Journal of Community Health)*, 2(4), 180–186.  
<https://doi.org/10.25311/keskom.Vol2.Iss4.70>
- Akbar, F., & Ningsih, W. (2020). Karakteristik lanjut usia dengan hipertensi di Desa Banua Baru. *Bina Generasi: Jurnal Kesehatan*, 11(2), 6–8.  
<https://doi.org/10.35907/bgjk.v11i2.141>
- Azmi, N., Karim, D., & Nauli, F. A. (2018). Gambaran Kualitas Hidup Lansia Dengan Hipertensi di Wilayah Kerja Puskesmas Sidomulyo Kecamatan Tampan Pekanbaru. *Jurnal Online Mahasiswa (JOM) Bidang Ilmu Keperawatan*, 5(2), 439–448.
- Berek, P. A. L., Irawati, D., & Hamid, A. Y. S. (2021). Hypertension: A global health crisis. *Ann Clin Hypertens*, 5, 8–11.
- Buford, T. W. (2016). Hypertension and aging. *Ageing Research Reviews*, 26, 96–111.  
<https://doi.org/10.1016/j.arr.2016.01.007>
- Dzau, V. J., & Balatbat, C. A. (2019). Future of hypertension: The need for transformation. *Hypertension*, 74(3), 450–457.  
<https://doi.org/10.1161/hypertensionaha.119.1343>
- Haqq, F. A. (2021). *Hubungan Pengetahuan dan Sikap dengan Perilaku Pola Makan pada Dewasa Muda di Wilayah Kerja Puskesmas Jembatan Kecil*. Poltekkes Kemenkes Bengkulu.
- Hazwan, A., & Pinatih, G. N. I. (2017). Gambaran karakteristik penderita hipertensi dan tingkat kepatuhan minum obat di wilayah kerja puskesmas Kintamani I. *Intisari Sains Medis*, 8(2), 130–134.  
<https://doi.org/10.15562/ism.v8i2.127>
- Hochstein, E. (2016). One mechanism, many models: A distributed theory of mechanistic explanation. *Synthese*, 193(5), 1387–1407.
- Imelda, I., Sjaaf, F., & PAF, T. P. (2020). Faktor-faktor yang berhubungan dengan kejadian hipertensi pada lansia di puskesmas air dingin lubuk minturun. *Health and Medical Journal*, 2(2), 68–77.  
<https://doi.org/10.33854/heme.v2i2.459>
- Kintiraki, E., Papakatsika, S., Kotronis, G., Goulis, D. G., & Kotsis, V. (2015). Pregnancy-induced hypertension. *Hormones*, 14(2), 211–223.
- Kristiawani, E. (2018). *Perilaku Lansia Hipertensi dalam Upaya Pencegahan Kekambuhan di Puskesmas Helvetia*. Universitas Sumatera Utara.
- Kurnianto, A., Kurniadi Sunjaya, D., Ruluwedrata Rinawan, F., & Hilmanto, D. (2020). Prevalence of hypertension and its associated factors among Indonesian adolescents. *International Journal of Hypertension*, 2020(1), 4262034.  
<https://doi.org/10.1155/2020/4262034>
- Lase, E., Wonderson, W., Christensen, C., Afrianti, D., Permana, A. D., & Dharma, A. A. (2020). LVQ algorithm for the classification of hypertension based on ESH guideline. *Jurnal Mantik*, 4(3), 1772–1778.  
<https://doi.org/10.35335/mantik.Vol4.2020.1006.pp1772-1778>
- Lewa, A. F., Pramantara, I. D. P., & Rahayujati, T. B. (2010). Faktor-faktor risiko hipertensi sistolik terisolasi pada lanjut usia. *Berita Kedokteran Masyarakat*, 26(4), 171–178.  
<https://doi.org/10.22146/bkm.3456>
- Lukita, S. V. S. (2021). *Hubungan Pengetahuan Dengan Upaya Pemeliharaan Kesehatan Pada Lansia Penderita Hipertensi*. Universitas Muhammadiyah Surakarta.
- Lumowa, G. F. (2020). *Gambaran penderita hipertensi pada lansia di wilayah kerja puskesmas karangjati kab ngawi*.
- 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(1), 287–296.  
<https://doi.org/10.37311/jsscr.v4i2.14028>
- Minati, S. D., & Sartika, A. N. (2022). Hubungan Tingkat Pengetahuan Terkait Label Gizi Terhadap Sikap Konsumsi Produk Minuman Kemasan Mahasiswa Program Studi Perencanaan Wilayah Dan Kota Universitas Pasundan Bandung. *Jurnal Ilmu Gizi Indonesia (JIGZI)*, 3(2), 7–15.  
<https://doi.org/10.57084/jigzi.v3i2.912>
- Ningsih, D. L. R., & Indriani, I. (2017). *Faktor-Faktor Yang berhubungan Dengan Kejadian Hipertensi Pada Pekerja Sektor Informal di Pasar Beringharjo Kota Yogyakarta*. Universitas 'Aisyiyah Yogyakarta.
- Ningsih, S. D., & Afria, M. (2019). Analisis Laporan Keuangan Sebagai Dasar Penilaian Kinerja Manajemen. *JAMIN: Jurnal Aplikasi Manajemen Dan Inovasi Bisnis*, 2(1), 1.  
<https://doi.org/10.47201/jamin.v2i1.41>
- Ojangba, T., Boamah, S., Miao, Y., Guo, X., Fen, Y., Agboyibor, C., Yuan, J., & Dong, W. (2023). Comprehensive effects of lifestyle reform, adherence, and related factors on hypertension control: A review. *The Journal of Clinical Hypertension*, 25(6), 509–520.  
<https://doi.org/10.1111/jch.14653>
- Ostchega, Y., Fryar, C. D., Nwankwo, T., & Nguyen, D. T. (2020). *Hypertension prevalence among adults aged 18 and over: United States, 2017–2018*.
- Romli, M. S. (2021). *Gambaran pengetahuan sikap dan perilaku pasien hipertensi di Kecamatan Wagir Kabupaten Malang*. Universitas Islam Negeri Maulana Malik Ibrahim.
- Setyanto, W. (2017). *Hubungan aktivitas fisik dengan kejadian hipertensi pada lansia (Di Desa Plandi Kecamatan Jombang Kabupaten Jombang)*. STIKES Insan Cendekia Medika Jombang.
- Sumarta, N. H. (2020). *Hubungan aktivitas fisik sehari-hari dengan derajat hipertensi pada lansia di kota batu*. Universitas Islam Negeri Maulana Malik Ibrahim.
- Tasić, T., Tadić, M., & Lozić, M. (2022). Hypertension in women. *Frontiers in Cardiovascular Medicine*, 9, 905504.

<https://doi.org/10.3389/fcvm.2022.905504>

- Thomopoulos, C., Parati, G., & Zanchetti, A. (2017). Effects of blood-pressure-lowering treatment on outcome incidence. 12. Effects in individuals with high-normal and normal blood pressure: overview and meta-analyses of randomized trials. *Journal of Hypertension*, 35(11), 2150–2160. <https://doi.org/10.1097/HJH.0000000000001547>
- Tomiyama, A. J. (2019). Stress and obesity. *Annual Review of Psychology*, 70(1), 703–718.
- Triaswati, R., & Mustikasari, M. (2025). Pemberian Terapi Progressive Muscle Relaxation (PMR) Pada Klien Hipertensi Terhadap Penurunan Kecemasan Melalui Pendekatan Teori Adaptasi Stress Stuart: Studi Kasus. *Jurnal Ners*, 9(1), 1197–1201. <https://doi.org/10.31004/jn.v9i1.33479>
- Widiana, I. M. R., & Ani, L. S. (2017). Prevalensi dan karakteristik hipertensi pada pralansia dan lansia di Dusun Tengah, Desa Ulakan, Kecamatan Manggis. *E-Jurnal Medika*, 5.
- Zaenurrohman, D. H., & Rachmayanti, R. D. (2017). Hubungan pengetahuan dan riwayat hipertensi dengan tindakan pengendalian tekanan darah pada lansia. *Jurnal Berkala Epidemiologi*, 5(2), 174–184. <https://doi.org/10.20473/jbe.v5i2.2017>