



An Overview of Blood Pressure Based on Affecting Hypertension Factors in Elderly Stage; Description Study at Garut Elderly Social Rehabilitation Service Unit

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ABSTRACT

Hypertension is systolic blood pressure greater than 140 mmHg and a diastolic pressure greater than 90 mmHg, based on two or more measurements. The factors that affect hypertension are grouped into two, which is the factors that cannot be changed and the factors that can be changed. The purpose of this study was to determine the description of blood pressure based on the factors that influence hypertension in elderly stage at Garut Elderly Social Rehabilitation Service Unit. This study used a descriptive design with a quantitative approach. The population in this study were all elderly with hypertension as many as 32 elderly. A sample of 32 elderly was taken by total sampling technique. The instruments used to measure blood pressure were a calibrated digital sphygmomanometer and a questionnaire. The data analysis used descriptive statistical analysis. The results showed that the female (53.1 percent) obtained an average systolic output of 165 mmHg and diastolic 101 mmHg. In the range of elderly (46.9 percent) and elderly (46.9 percent), at the age of 60-74 (elderly), the average systolic outcome was 169.3 mmHg and diastolic output was 103.1 mmHg. age 75- 90 (Old) obtained a mean systolic output of 166.6 mmHg and diastolic 101.2 mmHg. Patients with a family history (71.9 percent) had a mean systolic output of 167.6 mmHg and diastolic output of 103.4 mmHg. In non-obese patients (90.6 percent), with a lean BMI, the average systolic output was 170.5 mmHg and diastolic output was 101.1 mmHg, at normal BMI, an average systolic output was 165.2 mmHg and diastolic output was 165.2 mmHg. 101.6 mmHg. In patients who did not consume salty foods (96.9 percent), the average systolic output was 166.5 mmHg and diastolic output was 101.4 mmHg. Non-smoking patients (71.9 percent) had a mean systolic output of 170.1 mmHg and diastolic output of 102.7 mmHg. In patients who did exercise (68.7 percent), the average systolic output was 165.6 mmHg and diastolic output was 101.5 mmHg. It can be concluded that the systolic blood pressure picture of the overall systolic mean is 166.5 mmHg and the diastolic is 101.4 mmHg. Then the most cases of hypertension are in the elderly category with a family history of hypertension. It is recommended to detect other family members with PKMS (Social Welfare) by making home visits. It can increase preventive and curative efforts related to hypertension as well as providing counselling about hypertension to the elderly at Garut Elderly Social Rehabilitation Service Unit.

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Gambaran Tekanan Darah Berdasarkan Faktor-Faktor Yang Mempengaruhi Hipertensi Pada Lansia Di Satuan Pelayanan Rehabilitasi Sosial Lanjut Usia Garut

ABSTRAK

Kata kunci:

Tekanan darah
Hipertensi
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Hipertensi adalah tekanan darah sistolik lebih dari 140 mmHg dan tekanan diastolik lebih dari 90 mmHg, berdasarkan dua atau lebih pengukuran. Faktor-faktor yang mempengaruhi hipertensi dikelompokkan menjadi dua, yaitu faktor yang tidak dapat diubah dan faktor yang dapat diubah. Tujuan penelitian ini adalah untuk mengetahui gambaran tekanan darah berdasarkan faktor-faktor yang mempengaruhi hipertensi pada lansia di Unit Pelayanan Rehabilitasi Sosial Lanjut Usia Garut. Penelitian ini menggunakan desain deskriptif dengan pendekatan kuantitatif. Populasi dalam penelitian ini adalah seluruh lansia dengan hipertensi sebanyak 32 lansia. Sampel berjumlah 32 lansia diambil dengan teknik total sampling. Instrumen yang digunakan untuk mengukur tekanan darah adalah sphygmomanometer digital terkalibrasi dan kuesioner. Analisis data menggunakan analisis statistik deskriptif. Hasil penelitian menunjukkan bahwa berjenis kelamin perempuan (53,1 persen) diperoleh rata-rata luaran sistolik 165 mmHg dan diastolik 101 mmHg. Pada rentang usia lanjut usia (46,9 persen) dan lanjut usia (46,9 persen), pada usia 60-74 (lanjut usia) didapatkan rata-rata luaran sistolik sebanyak 169,3 mmHg dan diastolik sebanyak 103,1 mmHg, pada usia 75- 90 (Lama) didapatkan luaran sistolik rata-rata 166,6 mmHg dan diastolik 101,2 mmHg. Pada pasien dengan riwayat keluarga (71,9 persen) didapatkan rata-rata luaran sistolik sebanyak 167,6 mmHg dan diastolik sebanyak 103,4 mmHg. Pada pasien non obesitas (90,6 persen), dengan IMT kurus didapatkan rata-rata luaran sistolik sebanyak 170,5 mmHg dan diastolik sebanyak 101,1 mmHg, pada BMI normal didapatkan luaran sistolik rata-rata sebanyak 165,2 mmHg dan diastolik sebanyak 101,6 mmHg. Pada pasien yang tidak mengkonsumsi makanan asin (96,9 persen) didapatkan rata-rata luaran sistolik sebanyak 166,5 mmHg dan diastolik sebanyak 101,4 mmHg. Pada pasien non-merokok (71,9 persen) didapatkan rata-rata luaran sistolik sebanyak 170,1 mmHg dan diastolik sebanyak 102,7 mmHg. Pada pasien yang melakukan senam (68,7 persen) didapatkan rata-rata luaran sistolik sebanyak 165,6 mmHg dan diastolik sebanyak 101,5 mmHg. Dapat disimpulkan bahwa gambaran tekanan darah sistolik dari rerata sistolik keseluruhan adalah 166,5 mmHg dan diastolik sebesar 101,4 mmHg kemudian kasus hipertensi terbanyak pada kategori lansia dengan riwayat keluarga hipertensi. Disarankan untuk melakukan deteksi anggota keluarga lain dengan PKMS dengan melakukan kunjungan rumah dengan meningkatkan upaya preventif dan kuratif terkait hipertensi serta pemberian penyuluhan tentang hipertensi pada lansia di Unit Pelayanan Rehabilitasi Sosial Lanjut Usia Garut.



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Introduction

The increasing number of elderly poses special challenges in the health sector such as the emergence of degenerative and non-communicable diseases such as hypertension, diabetes and mental disorders, such as depression, hard to sleep, anxiety disorders, and dementia. With age, the elderly will experience a decrease in the elasticity of the aortic wall, causing cardiovascular disease. One of the cardiovascular diseases that cause death is hypertension (Fatmah, 2010). Hypertension is a disease in which blood pressure increases and if the blood pressure continues to increase, it will experience continuous symptoms such as coronary heart disease and stroke.

Hypertension is defined as a pressure that increases with a systolic pressure of more than 140 mmHg and a diastolic pressure of more than 90 mmHg in which the measurement is carried out twice or more (Smeltzer and Bare, 2013). An instrument for measuring blood pressure is a sphygmomanometer. Hipertensi dapat disebabkan karena dua faktor yaitu faktor yang tidak dapat diubah dan faktor yang dapat diubah. Faktor yang tidak dapat diubah yaitu

riwayat keluarga, usia, jenis kelamin, genetic dan etnis. Sedangkan faktor yang dapat diubah yaitu obesitas, konsumsi makan makanan asin/garam, kebiasaan merokok, kebiasaan olahraga, konsumsi lemak, konsumsi kafein, konsumsi alkohol dan stress (Black dan Hawks 2005).

According to WHO (2000), it shows that around 972 million people all over the world or 26.4% of residents have hypertension. Indonesia is estimated to increase the incidence of hypertension by 80% in 2025. The incidence of hypertension in Indonesia is very high. The data for 2018 shows that 34.1% of Indonesia's population suffers from hypertension. If the current population of Indonesia is 261,890,872 people, then there are 89,304,787 Indonesians who suffer from hypertension (Kemenkes RI, 2018). The hypertension rate in West Java ranks the 4th highest hypertension prevalence in Indonesia after East Kalimantan province. The amount is 29.4% of West Java total population or around 13,612,359 people (Kemenkes RI, 2014). Based on the health profile in Garut Regency, hypertension is a high case compared to other diseases. Hypertension is a disease

that threatens health. This hypertension case is included in the top 10 diseases with a total number of visits to 82,638 people (Garut District Health Office, 2018).

A preliminary study was conducted by researchers on October 17, 2019 at the Garut Elderly Social Rehabilitation Service Unit, which resulted in 75 elderly people. There were 28 elderly people experiencing hypertension and 47 people who did not experience hypertension. Physical activities carried out in the orphanage are morning exercise, social guidance and skills. Researchers conducted interviews with elderly people which have hypertension to obtain the results of 8 elderly people with hypertension, including those who smoke, have more weight and have a family history of hypertension.

An increase of hypertension requires efforts to reduce it. By identifying the factors that influence hypertension, it is hoped that it can minimize hypertension and give effective treatment. Factor identification can be done by analyzing each individual characteristic that causes hypertension. Based on the phenomenon described above, researchers are interested in conducting research on the description of blood pressure based on the factors that affect it in elderly people with hypertension at Garut Elderly Social Rehabilitation Service Unit.

Method

This study used a descriptive design with a quantitative approach. This study aims to describe blood pressure based on the factors that influence in elderly people with hypertension at Garut Elderly Social Rehabilitation Service Unit. The research variable is blood pressure in elderly people with hypertension. The population in this study were 32 elderly with hypertension. The sampling technique in this study used total sampling. The sample of this study was 32 elderly people with hypertension at Garut Elderly Social

Rehabilitation Service Unit who will be measured their blood pressure, BMI and distributed questionnaires for the study.

In this study, various instruments were used, such as a digital sphygmomanometer to measure blood pressure, a weight scale to measure body weight and a meter to measure body height so, the researchers could measure the body's BMI of respondents. The questionnaire was used to determine the characteristic variables that influence hypertension (age, gender, family history, obesity, consumption of salty / salt foods, smoking habits and exercise habits). The data analysis used in this research is descriptive statistics.

Primary data collection through interviews using a questionnaire and direct measurement of blood pressure, weight and height using the tools provided. For direct measurement, the researcher is assisted by several people who previously tested and equated perceptions with the researcher so, the measurement results between the researcher and those who helping can produce the same data. Secondary data, in the form of a patients' hypertension history, were obtained from administrative records and reports at the Garut Elderly Social Rehabilitation Service Unit.

The data analysis used in this research is a univariate analysis which aims to describe the characteristics of each research variable to describe the frequency and percentage of blood pressure description based on the factors that affect blood pressure in the elderly with hypertension at Garut Elderly Social Rehabilitation Service Unit.

The data collection was carried out in March 2020 which has the eligibility of the Unpad ethics commission with number: 188 / UN6.KEP / EC / 2020, and from Kesbangpol Garut Regency number: 072/118-Bakesbangpol / II / 2020.

Results and Discussion

Table 1
Frequency Distribution of Respondent Characteristic (n = 32)

Respondent Characteristic	Frequency	Percentage (%)
Gender		
Male	15	46,9
Female	17	53,1
Age (Year)		
60-74 (<i>elderly</i>)	15	46,9
75-90 (<i>old</i>)	15	46,9
> 90 (<i>very old</i>)	2	6,2
Family History		
Yes	23	71,9
No	9	28,1
Obesity		
Yes	3	9,4
No	29	90,6
Smoking Habit		
Yes	9	28,1
No	23	71,9
Salty foods consumption		
Yes	1	3,1
No	31	96,9
Exercise Habit		
Yes	22	68,7
No	10	31,3
Total	32	100

Based on table 1, it shows that the 32 respondents, most of them were female as many as 17 people (53.1%), with aged 60-74 years and 75-90 years as many as 15 people (46.9%). Based on family data analysis, family history with hypertension was more dominant with 23 people (71.9%), 29 people (90.6%) were not obese. Based on smoking data, it

was found that hypertension sufferers were more dominant in hypertension sufferers with no smoking amounting to 23 people (71.9%) and not consuming salty foods as many as 31 people (96.9%) and having exercise habits as many as 22 people (68.7%).

Table 2
Descriptive Statistic of Respondents' Blood Pressure

Note	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Sistole	32	73	140	213	101.45	19.542	381.886
Diastole	32	31	90	121	166.56	9.595	92.065
Valid N (listwise)	32						

Based on table 2, it shows that of the 32 respondents studied, the minimum systolic pressure is 140 mmHg and the minimum diastolic is 90 mmHg. Then for the maximum systolic pressure is 213 mmHg and the maximum diastolic

pressure is 121 mmHg. The highest standard deviation value was 19.542 mmHg and the highest variant value was 381.886 mmHg.

Table 3
Descriptive Statistic of Blood Pressure Based on the factors that affect blood pressure in the elderly.

Variable	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	
Family History	Ya							
	Sistole	23	73	140	213	167.68	21.594	466.281
	Distole	23	31	90	121	103.46	10.322	106.541
	Tidak							
Sistole	9	32	148	181	163.68	13.586	184.567	
Diastole	9	11	90	101	96.31	4.741	22.481	
Age category	Elderly							
	Sistole	15	61	140	201	169.33	19.602	384.242
	Diastole	15	31	90	121	103.17	10.053	101.056
	Old							
	Sistole	15	70	143	213	166.69	19.565	382.807
	Diastole	15	31	90	121	101.23	9.009	81.165
Very Old								
Sistole	2	8	141	149	144.75	5.728	32.805	
Diastole	2	0	90	90	90.10	.141	.020	
Gender	Male							
	Sistole	15	73	140	213	167.33	19.216	369.238
	Diastole	15	31	90	121	101.33	9.619	92.524
	Female							
Sistole	17	60	140	200	165.00	20.427	417.250	
Diastole	17	30	90	120	101.00	9.918	98.375	
BMI	Thin							
	Sistole	5	52	148	200	170.50	20.230	409.260
	Diastole	5	22	90	113	101.18	8.311	69.077
	Normal							
	Sistole	24	73	140	213	165.24	20.717	429.209
	Diastole	24	31	90	121	101.63	10.577	111.868
Obese								
Sistole	3	17	164	181	170.53	9.018	81.323	
Diastole	3	1	100	101	100.40	.361	.130	
Smoking habits	Yes							
	Sistole	9	61	140	201	157.48	17.616	310.327
	Diastole	9	31	90	121	98.26	9.554	91.285
	No							
Sistole	23	73	140	213	170.11	19.451	378.355	
Diastole	23	31	90	121	102.70	9.526	90.737	
Salty food consumption	Yes							
	Sistole	1	0	167	167	167.40		
	Diastole	1	0	101	101	100.70		
	No							
	Sistole	31	73	140	213	166.53	19.864	394.591
	Diastole	31	31	90	121	101.47	9.753	95.115

Exercise habits	Yes							
	Sistole	22	73	140	213	165.60	20.331	413.330
	Diastole	22	31	90	121	101.59	9.984	99.682
	No							
	Sistole	10	61	140	201	168.65	18.544	343.863
	Diatole	10	31	90	121	100.59	9.219	84.999
Valid N (listwise)		32						

Based on table 2, it shows that the 32 respondents studied have minimum systolic pressure about 140 mmHg and the minimum diastolic is 90 mmHg. Then for the maximum systolic pressure is 213 mmHg and the maximum diastolic pressure is 121 mmHg. The highest standard deviation value was 19.542 mmHg and the highest variant value was 381.886 mmHg.

An overview of Blood Pressure Based on Family History Factors

In this study, 23 respondents (71.9%) had a family history of hypertension and 9 respondents (28.1%) had no family history of hypertension. The results of this analysis illustrate that the hypertension is higher in respondents who have a family history of hypertension. Respondents who had a family history of hypertension had an average systolic blood pressure of 167.6 mmHg and average diastolic blood pressure of 103.4 mmHg with the highest standard deviation value of 21.594 mmHg and the highest variance value of 466.281 mmHg.

In this study, it is appropriate that the existence of genetic factors in the family will cause to have a risk of hypertension. This is due to a relationship with increased intracellular sodium levels and a low ratio of potassium to sodium. In 70-80% of cases of hypertension, there is a family history of hypertension. If a hypertension history is obtained in both parents, the suspicion of essential hypertension is greater (Suprehin, 2016).

The results of this study are supported by the research of Husna (2017) that there is a relationship between family history and hypertension. Family history can increase the risk of developing hypertension. Genetic factors are also influenced by other factors such as the metabolism of salt regulation and cell membrane renin.

An overview of Blood Pressure Based on Respondents' Age

According to Black and Hawks (2005), a person will be prone to experiencing primary hypertension because about 50-60% of patients aged 60 years have a systolic pressure of 140 mmHg and a diastolic pressure of 90 mmHg. Hypertension is due to increasing age, there will be a decrease in the elasticity of the aortic wall which will cause hypertension.

In this study, 32 respondents were obtained. The 32 respondents studied were over 60 years. The dominant categories of respondents in this study were in the age category 60-74 years (elderly) and 75-90 years (old), namely 15 people (46.9%) in each category. The age group 6-74 (elderly) had an average systolic pressure of 169.3 mmHg and an average diastolic pressure of 103.1 mmHg. Whereas in the category of respondents aged 75-90 (old) had an average systolic pressure of 166.6 mmHg and an average diastolic pressure of 101.2 mmHg with the highest standard deviation value of 19.602 mmHg and the highest variance value of 384.242 mmHg. From the results of the research analysis, it can be concluded that at the age of 60 years and over will be susceptible to experiencing primary hypertension which occurs due to decreased elasticity of the aortic wall. However, the elderly category does not affect the incidence rate of hypertension.

This study is in line with Novita's (2014) study which stated that who experience dominant hypertension in the elderly categories are almost the same, so it can be concluded that there is no relationship between elderly age and blood pressure. One of the other factors that can affect blood pressure is the food intake of the elderly which causes no relationship between age and blood pressure.

Based on the research of Widyaningrum (2014), it shows that there is a relationship between sodium, potassium and magnesium intake and blood pressure in the elderly. Excessive sodium consumption causes the concentration of sodium in the extracellular fluid to increase. The increase in extracellular fluid volume causes an increase in blood volume in the body, thus the heart must pump faster and blood pressure becomes high (Dalimartha, 2008). In this study, the elderly were in the same place so, their food intake was the same. It can possibly make them experience high blood pressure even at different ages.

An overview of Blood Pressure Based on Gender

In this study, the number of female respondents was 17 (53.1%), while the male respondents were 15 (46.9%). From the analysis, it can be seen that the incidence of hypertension is higher in women where the average systolic blood pressure is 165 mmHg and the average diastolic blood pressure is 101 mmHg with the highest standard deviation value of 19.216 mmHg and the highest variant value is 369.238 mmHg.

According to the observation of the Third National Health and Nutrition Examination Survey (NHANES) III, it shows that the incidence of hypertension is higher in men than in women who have not experienced menopause. However, in the period after menopause or approaching the age of 60, the incidence of hypertension for both men and women is almost the same. This is because when women experience menstrual cycles that can bleed regularly every month so that it can reduce the intravascular volume periodically which will stop after menopause. Increasing age in the group over 65 years, the incidence of hypertension is more common in women than men (Kaplan and Victor, 2002)

This study is in line with research according to Singalingging (2011) in Novita (2014) on average women will experience the risk of hypertension after menopause. Postmenopausal women are protected by the hormone estrogen which plays a role in increasing the levels of High-Density Lipoprotein (HDL). Low HDL cholesterol levels and high LDL cholesterol (Low-Density Lopoprotein) affect the atherosclerosis process (Anggraeni, 2009).

This is also in accordance with Haswan's (2017) study with the results that the number of women with hypertension is more than men. This is because women are experiencing menopause. During menopause, hormonal changes occur, such as a decrease in the ratio of estrogen and androgen which causes an increase in the release of renin. So, it can cause an increase in blood pressure.

An Overview of Blood Pressure Based on the Salty Foods Consumption

In this study, the respondents who did not consume salty food were 31 (96.9%) while the respondent who

consumed salty food was 1 (3.1%). From the analysis results, it was found that the respondents were more dominant on who did not consume salty foods with an average systolic pressure of 166.5 mmHg and an average diastolic of 101.4 mmHg with the highest standard deviation value of 19.864 mmHg and the highest variance value as many as 394,591 mmHg.

Salt is an essential factor in hypertension. The less salt intake than three grams per day causes a low prevalence of hypertension, whereas if salt intake is between 5-15 grams per day, the prevalence of hypertension increases to 15-20%. The effect of intake on hypertension emergence occurs through an increase in plasma volume, cardiac output, and blood pressure (Nurkhalida, 2011).

According to the research by Dirksen dik (2000) in Rustiana (2014) states that sodium consumption will activate the vasopressor mechanism in the central nervous system and stimulate water retention which causes an increase in blood pressure. The results of previous studies also prove that there is a relationship between the consumption of salty foods and the incidence of hypertension. It is in line with the research result of (Sugiharto, 2007) which states that someone who is accustomed to consuming salty foods will be at risk 3.95 times compared to people who are not used to consuming salty foods.

However, in this study, there is a gap between theory and research results. Although the respondent is dominant with hypertension by not consuming salty foods, there are still other factors that can influence the incidence of hypertension. This study was supported by Thresya et al., (2019) showing the results of the study that there was no significant relationship between eating salty, eating fatty foods, eating flavoured foods, eating vegetables and eating fruit with the incidence of hypertension (p -value > 0.05).

An Overview of Blood Pressure Based on Obesity Factors

The risk of increasing blood pressure in people who are overweight is 2-6 times higher than in people with normal weight. It is estimated that 20-30% of hypertension case are caused by being overweight. Several studies have found that a decrease in blood pressure can occur by lowering blood pressure both in individuals with hypertension and normotension. It is estimated that a decrease in mean body weight of 9.2 kg can lead to a decrease in systolic and diastolic blood pressure of 6.3 and 3.1 mmHg, respectively (PBL Guidelines, 2003).

The results showed that respondents with hypertension with obesity were 3 people (9.4%) and 29 people with hypertension were not obese (90.6%). In this variable, BMI is categorized as thin (17.0-18.5), normal (18.6-25.0), and obese (> 25.0). The results of the analysis show that the prevalence of hypertension is higher in hypertensive patients who are not obese, namely in the thin BMI and normal BMI categories. Respondents with a lean BMI had an average systolic blood pressure of 170.5 mmHg and diastolic blood pressure of 101.1 mmHg. Meanwhile, respondents with normal BMI had an average systolic blood pressure of 165.2 mmHg and an average diastolic pressure of 101.6 mmHg with the highest standard deviation value of 20.230 mmHg and the highest variant value of 409.260 mmHg.

In this study, there is a gap between theory and statistical test results. Where according to the theory according to the results of previous research, research by Sihombing (2009) in Rustiana (2014) states that obesity is closely related to an increase in blood pressure in both men and women. Likewise, the results of research conducted by Rolasina (2008) stated that someone who is obese will be more at risk of developing hypertension than someone who

is not obese. Meanwhile, in this study it was found that the statistical test results of hypertensive patients with BMI were not obese, this is possible because of other factors that influence the incidence of hypertension. The low proportion of obesity is possible because respondents at the age of more than 60 years are elderly, where the diet of the elderly in that age range has begun to decrease.

This study is in line with the research of Julianti et al. (2015) showed that the results of Kendall's Tau analysis showed a p -value of 0.235 ($p > 0.05$), there was no relationship between obesity and blood pressure. This is also supported by the opinion of many experts who say that the pathogenesis of hypertension in obesity is still unclear. Some experts argue that the role of genetic factors greatly determines the incidence of hypertension in obesity, but others argue that environmental factors have a more major role (Arthur, 2015).

An Overview Blood Pressure Based on Smoking Habit Factors

The results of this study found that respondents who smoke were 9 (28.1%) and those who did not smoke were 23 respondents (71.9%). From the analysis, it can be seen that the prevalence of hypertension is more dominant in respondents who do not have a smoking habit with an average systolic pressure of 170.1 mmHg and average diastolic blood pressure of 102.7 mmHg with the highest standard deviation value of 17.616 mmHg and the highest variant is 310.327 mmHg.

This research was conducted at the Garut Elderly Social Rehabilitation Service Unit. In this home, the elderly are not allowed to smoke, but the elderly still smoke. The access proximity to the purchase of cigarettes makes the elderly can buy them without the knowledge of the orphanage. There is even an elderly person who sells sticks of cigarettes to other elderly people with the reason to get profit from the sale of these cigarettes. Lack of knowledge of elderly people with hypertension about the factors that affect hypertension causes the elderly to continue to have an unhealthy lifestyle. This research has a relationship between knowledge and the level of independence of the elderly. This is in line with the research of Rosidin et al. (2018) that there is a relationship between knowledge and the level of independence, so that special guidance from health workers for elderly people with hypertension is needed regarding the factors that affect hypertension in the Garut Elderly Social Rehabilitation Service Unit.

According to Bowman's research conducted on 28,236 women in Massachusetts who initially did not suffer from hypertension, after 9.8 years of observation, there was a significant increase in the increase in blood pressure in women who smoked more than 15 cigarettes per day. The content in cigarettes contains nicotine which can cause an increase in heart rate and cause peripheral vasoconstriction which will increase arterial blood pressure for a short period of time during and after smoking (Black and Hawks, 2005). Meanwhile, according to Gusti (2013), there is a relationship between smoking and the incidence of hypertension in the elderly in Limbung Village, Mulyorejo Hamlet, Bunda Public Health Center, Kubu Raya Regency.

From the study results, there is a slight difference, namely that most of the hypertensive patients in this study did not smoke. This study is in line with Haendra's (2013) research that the relationship between smoking and hypertension is not clear yet. According to the literature, nicotine and carbon dioxide contained in cigarettes will damage the endothelial lining of arteries, decrease the elasticity of blood vessels, causing blood pressure to increase (MOH, 2007). This mechanism explains why respondents

who smoke every day have a risk of suffering from hypertension.

An Overview of Blood Pressure Based on Exercise Habit Factors

The results of this study found that respondents who exercised were 22 (68.7%) and those who did not exercise were 10 respondents (31.3%) with the highest standard deviation value of 20.331 mmHg and the highest variant value of 413.330 mmHg. Then the results of the analysis can be seen that the incidence of hypertension is more dominant in respondents who do not have sports habits with an average systolic blood pressure of 165.6 mmHg and average diastolic blood pressure of 101.5 mmHg.

Physical activity that can lower blood pressure is regular moderate physical activity (maximum oxygen consumption of 40-60%), this activity is carried out for approximately 30 minutes, two to three times a week (Zipes et al., 2008). According to research Beevers (2002) in Rustiana (2014) states that even though blood pressure increases sharply when doing physical activity/sports, if physical activity is done regularly, it will be healthier and have a lower blood pressure than those who do not do activities. Guidelines for the Department of Health and Human Services in the United States recommend that at least 30-60 minutes of moderate-intensity activity performed at least 5 days a week and 20 minutes of vigorous-intensity physical activity at least 3 times a week. By doing regular physical activity can reduce blood pressure as much as 20-10 mmHg (Sheps and G, 2002).

Likewise, according to research by Dalimartha (2005) in Rustiana (2014) which states that there is a relationship between physical activity and the incidence of hypertension, and individuals who are less active have a risk of suffering from hypertension by 30-50%. The results of the study were also proven by the results of previous studies, namely research conducted by Hasurungan (2012) which stated that not doing physical activity had a risk of 2.899 times higher than those who did the physical activity.

However, in this study, there is a gap where in this study most of the respondents did exercise habits. The incidence of hypertension can occur due to other factors so it cannot be ascertained that having exercise habits can reduce the incidence of hypertension. However, it can reduce the risk of hypertension. This study is in line with Sihotang research (2020) that the Spearman test shows that there is no relationship between physical activity and systolic blood pressure ($p > 0.05$).

Conclusions and Recommendations

Based on the results of the study and discussion, it can be concluded that the incidence of hypertension at Garu Elderly Social Rehabilitation Service Unit on 2020 was 32 people with a picture of systolic blood pressure from an average of 166.5 mmHg and an average diastolic of 101.4 mmHg.

The factor description that affect blood pressure in this study shows that there are 23 respondents (71.9%) who have a family history of hypertension, 17 respondents (53.1%) in the female gender with the elderly category (60-74) and the old category. (75-90), namely 15 respondents (46.9%) respectively, 27 respondents (84.5%) were obese, 31 respondents (96.9%) did not consume salty food, and did not have smoking habits 23 respondents (71.9%) and those who do exercise 22 respondents (68.7%)

An overview of the highest blood pressure obtained by a maximum systolic pressure of 213 mmHg and a maximum diastolic pressure of 121 mmHg is found in respondents who have a family history of hypertension, with the old age group, male gender, have a normal BMI, do not smoke, do not consume salty food and have exercise habits.

It is hoped that health services can provide directions for the elderly to have their blood pressure checked regularly, provide socialization efforts related to factors that affect hypertension, improve the quality of health services such as holding a psychologist for the elderly, and detect other family members with related institutions by doing home visit by increasing preventive and curative efforts related to hypertension.

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