The Incidence of Hypertension in Internal Polyclinic in Latemmamala Hospital Soppeng

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Article Info

Abstract

Hypertension, otherwise known as high blood pressure, is a condition that describes blood pressure significantly in the interval above 140/90 mmHG, which results in the death of 9.4 million people every year worldwide, with the incidence of the problem increasing over time. According to WHO, it is predicted that 1.28 billion or about 42% of people worldwide are diagnosed with hypertension, and the results of the 2018 Riskesdas suggest that the prevalence of hypertension in Indonesia increased to 34.1% from 25.8% in 2013. The type of research used is analytic observational with a cross-sectional study approach. The population in this study were all visitors recorded in the Internal Medicine Clinic register book at Latemmamala Hospital from January to December 2021, namely 707 people. The sampling technique used was simple random sampling with a total sample size of 148 people. This study finds that nutritional status (p=0.002), total cholesterol levels (p=0.000), abdominal circumference size (=0.000), and family history (p=0.000) had a relationship with the incidence of hypertension. As well as, type of work (p=0.078), marital status (p=0.916), stress level (p=0.079), smoking habits (p=0.261), and physical activity (p=0.376) have no relationship with the incidence of hypertension. This study shows a relationship between nutritional status, cholesterol levels, abdominal circumference size, and family history of hypertension. It is highly recommended for people with hypertension adopt a healthy lifestyle, such as maintaining a diet and regular physical activity to keep their blood pressure under control.

Introduction

It is predicted that 1.28 billion or about 42% of people worldwide are diagnosed with hypertension, where every 2 or 3 of them live in countries with middle to lower economic income. Yet 46% of them are not aware of it. Thus, hypertension is the leading cause of death worldwide (WHO, 2021). It affects 9.4 million people annually worldwide, and the incidence is increasing. It is estimated that hypertension cases, especially in developing countries, will increase by 80% from 639 million cases in 2000 to 1.15 billion by 2025. This prediction is based on the increase in the total population today. In addition, it is also based on the increase in the number of people with hypertension every year (Pramana, 2016).

While among all regions based on WHO regions in 2013, the highest prevalence of events was found in the African continent (46%), and the lowest was found in the Americas (35%). Meanwhile, in the Southeast Asia region alone, approximately 36% of adults suffer from hypertension (Ayukhaliza, 2020). In Indonesia alone, the population over 18 years and over shows a prevalence of 25.8% (Pramana, 2016). Then, the prevalence of hypertension increased again in 2018 by 34.1%, where the sufferers were mostly female residents, whose percentage reached 36.85%. As for the distribution by province, South Kalimantan ranks first as the province contributing the highest incidence of hypertension reaching 44.1%, while the province contributing the lowest incidence of

hypertension is Papua which only amounted to 22.2% (Riskesdas, 2018).

In Soppeng Regency, non-communicable diseases (NCDs) are the most dominating diseases in healthcare facilities, both hospitals and health centers. The most common disease is hypertension. This disease is always included in the category of the 3 highest diseases every year. Data from the Soppeng District Health Office found that essential hypertension occupied the highest position with the highest number of cases, reaching 24,778 cases with a percentage of 20% of the category of the 10 highest diseases in Soppeng (Soppeng District Health Office, 2019).

Hypertension is caused by two types of factors, unchangeable and changeable. The unchangeable factors include age, gender, and race. Meanwhile, changeable factors are closely related to a person's lifestyle, such as obesity, nutrition, alcohol consumption, lack of exercise, excessive salt consumption, family factors, and smoking habits (Setyanda et al., 2015). The process of hypertension experienced by a person is based on risk factors in each individual. For example, if a person has a nutritional status expressed in a high BMI number, it will increase the risk of developing hypertension. It is associated with high cardiac output and vascular resistance in the body. Individuals with high BMI have different vascular resistance than people with normal BMI. In addition, a person's high BMI over time can lead to an increase in blood pressure due to a strong increase in the renin-angiotensin-aldosterone mechanism (Gosal, 2020).

Then, the employment status factor has a 3.2 times chance of contributing to hypertension. It is because employment status is closely related to a person's economic level. Where, as is known, several types of diseases also arise in individuals who have middle to lower incomes as well as the level of stress that can arise from the job (Spruill et al., 2019). In line with this, socio-demographic factors that also affect the incidence of hypertension are marital status. It is based on the fact that people who do not have a life partner or live alone have a related health status and have the potential to experience stress (Lebuso & De Wet- Billings, 2022).

In addition, cholesterol levels also affect the incidence of hypertension. High cholesterol levels will lead to atherosclerosis which has the potential to clog arteries. The accumulation of cholesterol will result in the hardening of the arterial ducts. Then, the arteries will experience stiffness, and their flexibility will disappear. Thus, it will interfere with the function of these arteries in controlling blood pressure. As a result, hypertension will occur (Hidayati et al., 2020). Obesity factors such as central obesity also influence the incidence of hypertension. It is because the fat content in the body of an obese person can cause blockages in blood vessels, increasing the risk of a gradual increase in blood pressure (Pramana, 2016).

Family History also affects hypertension. It is because hypertension is closely related to genetic factors. These factors affect several genes that play a role in vascular regulatory reactions and also sodium regulation in the kidneys. So, if someone has a history of hypertension in their family, it will allow them to experience hypertension when compared to people who do not have a history of hypertension in their family (Taslima & Husna, 2017).

The state of stress is caused by the body's inability to respond to the demands of the burden it experiences. These demands can come from various aspects such as work, environment, and factors from the body (Nurdiansyah et al., 2020). Then, smoking habits against hypertension also play a vital role. The nicotine content in cigarettes will cause the accumulation of atherosclerotic plaque in the blood vessels, which disrupts it. If this situation occurs, it will certainly have the potential for someone to suffer from hypertension (Setyanda et al., 2015).

Another factor that contributes to the incidence of hypertension is low physical activity. It happens because if a person has less physical activity, there will be increased activation of one type of nerve, namely the sympathetic nerve, which affects the activation of renin - angiotensin- aldosterone (RAA), which results in increased secretion of the renin enzyme. Increased renin enzyme will cause an increase in angiotensin II and aldosterone, resulting in vasoconstriction and an increase in intravascular volume, which increases blood

pressure (Ilmaniar et al., 2021).

Latemmamala Hospital is a health service referral center in Soppeng Regency, which has a high number of people with hypertension. Based on data sourced from Hospital Medical Records in the 2019-2021 interval, the total incidence of hypertension reached 1551 cases. Where the most in 2019 were 766 cases and again increased to 484 cases in 2021, which had previously decreased in incidence in 2018 with only 301 cases (Latemmamala, 2021).

Therefore, researchers are interested in choosing this location as a place of research. This study will try to examine in more depth how far the attachment of the variables previously studied is, in addition to the addition of new variables in this study, which have also never been studied in the facility waiter in addition to the addition of new variables in this study that have also never been studied in health care facilities before, such as in terms of nutritional status including Body Mass Index (BMI), and Abdominal Circumference Size. In addition, socio-demographic aspects include marital status and employment status. In addition, this study has not been done before because researchers tested variables that

Methods

The type of research used is an observational analytic quantitative approach with a cross-sectional study design. This research was conducted at the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency. It took time from January to December 2021. The population in this study were all patients visiting the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency, totaling 707 patients. The sample was 148 patients. The sampling technique used simple random sampling. Data collection using instruments in this study used the Perceived Stress Scale (PSS) questionnaire, Global Physical Activity Quitionare (GPAQ), and medical records as secondary data instruments. The data were analyzed using the univariate analysis method and bivariate analysis with the chi-square test approach. The data that has been analyzed will then be presented in the form of tables, namely frequency distribution tables (one-way tabulation) and cross-tabulation (two-way-tabulation). The presentation of data in the form of narratives will also be used to discuss the interpretation of the results.

Result and Discussion

Based on Table 1, respondents who have hypertension status are mostly female patients as many as 33 people (41.25%), and the least are male patients who are only 23 people (33.82%). Table 2 shows that four variables are related, namely nutritional status (p= 0.002), cholesterol levels (p= 0.000), abdominal circumference size p= 0.000), and family history (p= 0.000). Table 3 shows that the variable that has the most influence on the incidence of hypertension in Latemmamala Hospital, Soppeng Regency is the cholesterol level, with an OR value of 6.991. It indicates that patients who have high cholesterol levels have a 6.991 times chance of causing hypertension.

Table 1. Distribution of Hypertension Status in Internal Medicine Poly Patients at Latemmamala Hospital, Soppeng Regency

| Gender | Hypertension Status | | | | | |
| | No Hypertension | | Hypertension | | Total | |
	n	%	n	%	n	%
Male	45	66,17	23	33,82	68	100,00
Famale	47	58,75	33	41,25	80	100,00
Total	92	62,16	56	37,83	148	100,00

Source: primary data, 2021

Table 2. Bivariate Analysis

| Independent Variables | Hypertension Status | | | | Total | | P Value |
| | No Hypertension | | Hypertension | | | | |
	n	%	n	%	n	%	
Nutritional Status							
Thin	3	42.85	4	57,14	7	100.00	
Normal	52	77,61	15	22.38	67	100.00	0.002
Fat	37	50.00	37	50.00	74	100.00	
Occupation							
Private	36	64,28	20	35,71	56	100.00	
Civil servant	12	66,67	6	33,33	18	100.00	0.078
Not Work	44	59,45	30	40,54	74	100.00	
Marital Status							
Married	60	61.85	37	38,14	97	100.00	
Not Married	32	62,74	19	37,25	51	100.00	0.916
Total Cholesterol Levels							
Low	70	76.08	22	23.91	92	100.00	
High	22	39,28	34	60,71	56	100.00	0.000
Size of Circumference Stomach							
Not Normal	51	51.00	49	49.00	100	100.00	
Normal	41	85.41	7	14.58	48	100.00	0.000
Family History							
Has History	30	36,14	53	63.85	83	100.00	
No History	62	95.38	3	4.61	65	100.00	0.000
Stress Level							
Low	2	50.00	2	50.00	4	100.00	
Moderate	87	64,92	47	35.07	134	100.00	0.079
High	3	30.00	7	70.00	10	100.00	
Habit Smoke							
Non Smoker	61	58,65	43	41.34	104	100.00	
Heavy	21	65,62	11	34,37	32	100.00	0.261
Currently	5	71,42	2	28.57	7	100.00	
Moderate	5	100.00	0	0.00	5	100.00	
Physical Activity							
Not enough	28	57,14	21	42	49	100.00	
Enough	64	64,64	35	35,35	99	100.00	0.376

Source: primary data, 2021

Table 3. Multivariate Analysis

Variables	B	Sig.	OR	95% CI
Nutritional Status	0.000	0.999	1,000	0.339 - 2.954
Cholesterol levels	1,945	0.000	6,991	2.396 - 20.396
Stomach Size Circumference	-1921	0.014	0.032	0.339 - 2.954
Family History	-3814	0.000	0.022	0.005 – 0.089

Source: primary data, 2021

From this study, the most hypertension status is found in patients who are male compared to female. Where most women who experience hypertension are those who have menopause.16 This is closely related to changes in estrogen hormone concentrations which drastically decrease so that more women are at risk of hypertension. The role of hormone estrogen in premenopausal women plays a role in protectingblood vessels from damage (Kusumawaty et al., 2016). Nutritional Status is a condition that shows equilibrium between the nutrients that enter the body by the needs of the individual. The balance is measured through growth variables, including body weight and height.18 The results of statistical tests show

a relationship between nutritional status and the incidence of hypertension in the Internal Medicine Clinic of Latemmamala Hospital. As for this study, 37 people (50.00%) included in the nutritional status of obesity who suffer from hypertension and 52 people (77.61%) in normal nutritional status who are not hypertensive. So, the researcher's argumentation stated that the comparison of people with normal nutritional status tends to be more who are not hypertensive than people who are obese. The percentage of hypertension experienced by respondents who are overweight (obesity) occurs because of the imbalance between the incoming energy that exceeds the energy coming out of the body that occurs within a certain period. If this condition is left unchecked, it can be considered a vital predictor for diseases related to hypertension (Ali et al., 2022).

Based on the results of statistical tests to see the relationship between the type of work and the incidence of hypertension, the p-value is 0.078, which means that there is no relationship between the type of work and the incidence of hypertension in patients at the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency. This study did not relate because most respondents were in the non-working category, where the respondents' jobs are as housewives and retirees. So it can affect the results of the study. In addition, this study also found that both working and non-working respondents had high hypertension status. Therefore, regardless of working or not working, a person still has the potential to suffer from hypertension due to other exposure factors that affect the type of work a person does. For example, those who work can experience work stress or lack of income, or for individuals who do not work, the onset of hypertension can come from a lack of physical activity (Ilmaniar et al., 2021; Wibowo et al., 2021).

Marital status is a situation where they have lived together and have been legally recognized by the community around them (Badan Pusat Statistik RI, 2012). Based on the results of the Chi-Square test conducted on the marital status variable with the incidence of hypertension, the test results obtained (p = 0.916), concluded that it did not get the results on the relationship between marital status and

the incidence of hypertension in patients at the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency. A total of 37 people (38.14%) of respondents who have a partner or in this case married status suffer from hypertension, and there are 60 people (61.85%) who also have no partner status (unmarried / divorced/divorced dead) who are not hypertensive. The existence of a similar proportion between married and unmarried status allegedly causes (Kirnawati et al., 2021). Then, the same results in various other studies. For example, at the main health care center in the northern part of Nablus City, West Bank Palestine where it was found that there was no association between marital status and the incidence of hypertension in people seeking treatment at the health facility with a value of (p=0.104) (Tuoyire & Ayetey, 2019).

According to the researcher's argument, if viewed literally, marital status is a factor that is not constant or can change so that it does not directly affect a person's hypertension status. It is because a person can get divorced in the future and then get married again several times. In addition, the increase in women who decide to become career women causes them not to marry. Thus, despite the various research results obtained, the marital status variable is still interesting to study (Nainggolan & Nainggolan, 2021).

Based on the results of statistical tests to see the relationship between total cholesterol levels and the incidence of hypertension, the value (p=0.000) means that there is a significant relationship between total cholesterol levels and the incidence of hypertension. Total cholesterol with the incidence of hypertension in patients at the Internal Medicine Poly Latemmamala Hospital Soppeng Regency. The results of this study are as conducted by (Trimarco et al., 2022), stating high cholesterol levels can increase cardiovascular risk in patients with hypertension. Based on multivariate analysis, we can know that cholesterol levels have an influence of 6.991 times on the incidence of hypertension. Then, another study also found a p-value <0.05 in the results of the test of the relationship between total cholesterol levels and both types of blood pressure, both systole and diastole, which were obtained (p=0.002) and

(p=0.001) respectively (Fierdania & Handayani, 2022).

The high level of total cholesterol that causes hypertension is closely related to the condition of hardened arteries. Plaque that accumulates on the walls of arterial vessels will cause narrowing. If this condition occurs, it will reduce the ability of arterial vessels to stretch. In addition, lifestyle factors such as poor diet (often consuming fatty foods or containing high cholesterol) will result in hypercholesterolemia, the accumulation of cholesterol that enters through food will break down in blood vessels into plaque. It can lead to hypertension (Naim et al., 2019).

Waist circumference is a measure used as an alternative to determining body fat distribution. In addition, it can also be used in evaluating a person's excess nutrition (Mulyasari & Pontang, 2018). Based on the results of statistical tests to see the relationship between abdominal circumference size and the incidence of hypertension, the value (p=0.000) means that there is a significant relationship between abdominal circumference size and the incidence of hypertension in patients at the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency. There were 49 (49.00%) respondents with abnormal abdominal size who suffered from hypertension, and 41 people (85.41%) who had standard abdominal size who did not suffer from hypertension. The measurement of abdominal circumference aims to detect aspects of abdominal obesity, better known as central obesity. This situation will provide an overview of the accumulation of fat that occurs in the abdominal cavity. The greater the size of the abdominal circumference shows excessive levels of fat accumulation in the abdomen (Spruill et al., 2019).

Family history in genetics is defined as the presence of genetic factors and a history of disease in the family. It can identify a person with a higher risk of developing a disease (Tozo et al., 2022). Where it can also be experienced by family members for generations. There were 53 people (63.85%) respondents who had a family history of hypertension, and there were 62 people (95.38%) who did not have a family history of not suffering from hypertension. After conducting statistical tests to see the

relationship between abdominal circumference size and the incidence of hypertension, the results showed that the value (p=0.000), which means that there is a significant relationship between family history and the incidence of hypertension in patients at the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency. These results are consistent with other studies conducted in Riau and Bandar Lampung. Where, the p-value <0.05 was obtained, namely (p=0.000) after the Chi-Square bivariate test between hypertension and family history. So, it can be concluded that there is a significance between family history variables and the incidence of hypertension (Andriyani et al., 2021; Erma Kasumayanti, 2020). The gene factor in human chromosomes is closely related to several genes that trigger hypertension. The presence of gene determinants in certain families can cause someone in the family to suffer from hypertension. Where individuals who have a family history of hypertension will be at twice the risk of people who do not have a history of hypertension (Musfirah & Hartati, 2021). Based on the results of statistical tests to see the relationship between stress levels and the incidence of hypertension, it was found that the value (p=0.079) means that there is no significant relationship between stress and the incidence of hypertension in patients at the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency. There were 47 (35.07%) respondents who had mild stress levels suffering from hypertension, and there were 87 people (64.92%) who also had mild levels who did not experience hypertension.

However, the inconsistency found in the research with the existing theory may be because most of the respondents obtained in this study are not working, or in this case, housewives and retirees. Thus, those who do not work tend not to find significant burdens. As is known, excessive burden can cause stress. It can come from various factors, including one's job. A common type of stress arising from work is psychosocial stress. An increase in sympathetic nerve activity and malfunctioning of the adrenal hypothalamus-pituitary for people experiencing psychosocial stress will make blood pressure become persistent which leads to an increase in blood pressure. Acute

stress can induce a transient elevation of blood pressure (BP) (Elsaid et al., 2021). The researcher's argument is that it means it is not experienced by people who do not work. This is because people who do not work are less mentally and physically involved in living their lives because the demands/loads of work are not there.

Based on the results of statistical tests to see the relationship between smoking habits and the incidence of hypertension, the results show that the value (p=0.261), which means that there is no significant relationship between smoking habits and the incidence of hypertension in patients at the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency. There were 43 (41.34%) respondents who had non-smokers suffering from hypertension, and there were 61 people (58.65%) who were also non-smokers who did not suffer from hypertension. Then the inconsistency in another study found that there was no relationship between smoking habits in terms of the number of cigarettes smoked per day with the occurrence of hypertension in Surabaya. Where the results obtained are (p=0.150) (Lusno et al., 2020). A greater proportion of non-smokers compared to smokers (both heavy, moderate, and light) was found in this study. It is because generally more respondents were female. In theory, the prevalence of smokers is more prevalent in men. This factor is motivated by the culture that develops in society that smoking among men is something that is natural and no longer taboo or in other words, more significant in men (Kim et al., 2018).

Based on the results of statistical tests to see the relationship between physical activity and the incidence of hypertension, the results show that the value (p=0.376) meaning no significant relationship between physical activity measures and the incidence of hypertension in patients at the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency. A total of 35 (35.35%) respondents had sufficient physical activity and suffered from hypertension, and 64 people (64.64%) with less physical activity did not suffer from hypertension. The suitability of the study found no relationship between physical activity and blood pressure in 150 adults in West Bandung Regency with test results (p=0.521) (Sihotang & Elon, 2020). Then, two other studies also found no significance between the physical activity variable and the incidence of hypertension. The amount of p-value obtained after the test concluded the same thing, namely physical activity was not associated with the incidence of hypertension. The p-values obtained are (p=0.160) and (p=0.297) respectively (Ramadhani, 2021; Yuri Ekaningrum et al., 2021). In addition, research conducted in the Netherlands also found no relationship between blood pressure and the total intensity of physical activity performed by a person with a value of (p=0.548) (ten Velde et al., 2021).

Conclusions

Based on research on factors related to the incidence of hypertension in the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency, several conclusions were drawn, namely the relationship between nutritional status, cholesterol levels, abdominal circumference size, and family history of hypertension in the Internal Medicine Clinic of Latemmamala Hospital, Soppeng Regency. The research suggestion is that people with hypertension who already have risk factors, such as obese nutritional status and an abnormal abdominal circumference size or have central obesity, should further increase their physical activity, such as exercising regularly and not doing sedentary activities so that these two factors can be controlled. In addition, limiting fatty intake or alow-fat diet so that cholesterol can be controlled. As well as, implementing a CERDIK lifestyle, including regular health checks, not smoking, regular physical activity, a diet with balanced nutrition, adequate rest, and managing stress.

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