Determinants Of Hypertension IncidenceIn Productive Age In The Working Area North Landasan Ulin Public Health Center

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Abstract- World Health Organization (WHO) in 2021 stated that hypertension is the main cause of premature death worldwide and is often referred to as a "silent killer". At productive age, they are prone to hypertension because of their busy level and lif estyle that pays little attention to health, many factors play a role in the occurrence of hypertension. The purpose of this study was to expl ain the determinants of the incidence of hypertension in productive age in the working area of the Landasan Ulin Utara Health Center. This research is a quantitative study with a cross sectional approach. The population in this study were all people of productive age (15-64 years) who were in the working area of the Landasan Ulin Utara Health Center and obtained 53 samples using the Accidental Sampling technique. Data collection was carried out by means of interviews in the form of questionnaires and measurements in the form of a tensimeter. Data analysis was performed univariately and bivariately using the Chi Square Test with a 95% degree of confidence. The results of this study indicate that the factors associated with the incidence of hypertension in the working area of the Nort h Sumatra Ulin Health Center in 2022 are family history variables with a p-value of 0.0458 (p-value <0.05). Meanwhile, factors that were not related to the incidence of hypertension in the working area of the North Ulin Foundation Health Center in 2022 were smoking habits with a p-value of 0.1027 (p-value> 0.05), sleep duration with a p-value of 0.1639 (p- value>0.05), and coffee consumption with a p-value of 0.5989 (p-value>0.05). It is necessary to provide information regarding the prevention of hypertension, one of which is to live a healthy lifestyle. For people with hypertension, even though family history is a risk factor that cannot be modified, it can be used as a screening goal so that they pay more attention to individual health by living a healthy lifestyle and carrying out examinations at the nearest health service.

Index Terms- Hypertension, Productive Age, Determinants

I. INTRODUCTION

World Health Organization (WHO) in 2021 stated that hypertension is the main cause of premature death worldwide. This is caused by the fact that many adults with hypertension are not aware that they have this condition, therefore hypertension is often referred to as the "silent killer".[1] World Health Organization (WHO) estimates that currently the global prevalence of hypertension is 22% of the total world population. Of these sufferers, only less than one-fifth make efforts to control their blood pressure.[2]

The prevalence of hypertension in Indonesia is increasing and there are still many sufferers who have not received regular treatment, resulting in various complications including stroke, heart attack and coronary heart disease. The results of the 2018 Basic Health Research (Riskesdas) data show that the prevalence of national hypertension in residents aged ≥ 18 years is 34.1% with the highest prevalence of hypertension in South Kalimantan as much as 44.1% who suffer from hypertension.[3] Basic Health Research Data (2018) shows that the prevalence of hypertension in Banjarbaru City obtained through measurements at age ≥ 18 years is 32.83%.[4] Then, based on data from the monthly report of the North Anvil Ulin Health Center in 2022 from January to August, it is known that hypertension ranks first in March and May, and often occupies the top 2 of the 10 most common diseases in the North Landasan Ulin Health Center.

The incidence of hypertension often occurs in the elderly population but does not rule out the productive age population. Productive age according to the Indonesian Ministry of Health (2021) is an age that has entered 15 -64 years. Adolescents and young adults who are in the age range of 15-25 years have a hypertension prevalence rate of 1 in 10 people. In a study conducted by Kini (2016), the prevalence of pre-hypertension and hypertension in young adults (age 20-30 years) was 45.2%.5 In addition, people of productive age are prone to hypertension because of their busy lives and lifestyles that pay little attention to health.6

Many factors contribute to the occurrence of hypertension including risks that cannot be controlled (major) and risk factors that can be controlled (minor). Uncontrollable (major) risk factors such as heredity, gender, race and age. While risk factors that can be controlled (minor) are obesity, lack of exercise or activity, smoking, drinking coffee, sodium sensitivity, low potassium lev els, alcoholism, stress, work, education and diet.7

Families who have a history of hypertension will increasingly be affected by hypertension. Research by Angesti (2018) found that family history of hypertension was related to the incidence of hypertension with a p value of 0.003 (<0.05) and a risk of 3.884 times the occurrence of hypertension in adolescents. This is because genetic factors in certain families will cause these families to h ave a risk of suffering from hypertension. The incidence of hypertension in a person is the result of changes in genetics.5

The results of the study by Adriaansz Rottie, & Lolong (2016) state that hypertensive patients are also advised not to smoke, because smoking can damage the endothelial lining of blood vessels. Cigarettes contain nicotine and carbon dioxide which can reduce the elasticity of blood vessels and increase blood pressure. The World Health Organization (WHO) estimates that 14 million people smoke tobacco and 26 thousand die every day.3 Research by Rismadi, Siagian, and Siregar states that a p-value of 0.002 (<0.05) is obtained, so that there is a significant relationship between smoking habits and the incidence of hypertension and the risk of developing hypertension is 7.870 times.8

Sleep pattern or sleep duration is also a risk factor for hypertension that can be controlled. Inadequate sleep patterns and poor sleep quality can result in disturbances in a person's physiological and psychological balance. In addition, short sleep duration over a long period of time can cause hypertension due to increased 24-hour blood pressure and heart rate, increased sympathetic nervous system, and increased salt retention. Furthermore, it will cause structural adaptation of the cardiovascular system so that blood pressur e becomes high.3 Some evidence obtained based on research conducted by Sambeka et al (2018), found a significant relationship between sleep quality and hypertension in the elderly in Tambun Village, West Likupang District in 2018 with a value of p = 0.015.5

In addition, various studies of coffee consumption related to caffeine have long been known to increase blood pressure. Excessive caffeine consumption in the long term and in large quantities is known to increase the risk of hypertension or cardiovascular disease due to increased peripheral vascular resistance and vasoconstriction caused by caffeine which has endogenous adenosine antagonist properties. Research by Firmansyah (2017) states that consuming coffee is related to the incidence of hypertension (p -value = 0.020) and has a risk of 3.467 times experiencing hypertension.5

The explanation above shows that there are several factors that influence hypertension, including coffee drinking habits, smoking behavior, and sleep duration. So that researchers are interested in conducting research on the Determinants of Hypertension in Productive Age in the Working Area of the North Landasan Ulin Health Center.

II. IDENTIFY, RESEARCH AND COLLECT IDEA

The type of research used in this research is quantitative research with an analytic observational design through a cross sec tional approach. The independent variables in this study were family history of hypertension, sleep duration, smoking habits, and c offee consumption as measured by a questionnaire as an interview guide. The dependent variable in this study was the incidence of hypertension as measured by a sphygmomanometer. This research was conducted in the working area of the North Ulin Platform Health Center, located in Liang Anggang District, Banjarbaru City. The North Ulin Platform Health Center has a working area consisting of 2 sub-districts, namely the North Ulin Platform and Central Ulin Platform Villages. The time of this research was conducted in November-December 2022, and the time of data collection was carried out for 7 days on December 12 -18 2022. The population in this study is all people of productive age (15-64 years) who are in the working area of the Anvil Ulin Health Center North and obtained 53 samples. The sampling technique used in this study is the Accidental Sampling technique. The instruments used i n this study were a tensimeter to measure blood pressure and a questionnaire as an interview guide. The univariate analysis used is the frequency distribution. The bivariate analysis used was a statistical test, namely the chi-square test.

III. RESULTS

A. Univariate

Univariate results in table 1, it shows that the majority of respondents are female at 66.04%, and more respondents are adults (26-35 years old), namely 47.1%. In Table 2, it shows the distribution of respondents who experienced hypertension at 58.49% more compared to those who did not experience hypertension, then most of the respondents did not have a fami ly history of suffering from hypertension 71.70%, then more respondents did not have smoking habits 77, 36%, then the majority of respondents had a sleep duration of 6-7 hours 73.08%, and most respondents consumed coffee 58.49%.

Table 1. Description of the Respondents' Characteristics in the Work Area of the North Landasan Ulin Health Center in 2022

Characteristic	n	%
Gender		
Man	18	33,96
Woman	35	66,04
Age		

Adolescent (12-25 years)	4	7,55
Adult (26-35 years)	25	47,1
Elderly (46-65 years)	24	45,28

Source: Primary Data, 2022

Table 2. Description of the Frequency Distribution of Respondents Based on Hypertension, Family History, Smoking Habits, Sleep Duration, and Coffee Consumption

Characteristic	n	%
Hypertension Incident		
Yes	31	58,49
No	22	41,51
Family History		
Yes	15	28,30
No	38	71,70
Smoking Habits		
Yes	12	22,64
No	41	77,36
Sleep Duration		
<5 hours	5	9,62
6-7 hours	38	73,08
>7 hours	9	17,31
Coffee Consumption		
Yes	31	58,49
No	22	41,51

Source: Primary Data, 2022

B. Bivariat

Based on table 3, it shows that respondents who have a family history of suffering from hypertension are more affected by hypertension by 12 people (80%) compared to respondents who do not have a family history of suffering from hypertension but a re affected by hypertension by 19 people (50%). Respondents who had smoking habits were more likely to have hypertensio n, as many as 8 people (66.67%) compared to respondents who did not have smoking habits but had hypertension, as many as 23 people (56.1 %). Respondents who had less sleep duration were more likely to have hypertension (2 people (40%) compared to respondent s who had sufficient sleep duration but had hypertension as many as 29 people (60.42%). Respondents who had coffee consumption habits h ad more hypertension as many as 20 people (64.52%) compared to respondents who did not have coffee consumption habits but had hypertension as many as 11 people (50%).

The results of the bivariate chi-square analysis of the determinants of the incidence of hypertension in productive age in the working area of the North Sumatra Ulin Health Center, showed that there were no independent variables related to the incidence of hypertension where the variables were family history (p-value = 2.8468), smoking habits (p- value = 0.1027), sleep duration (p-value = 0.1639), and coffee consumption (p-value = 0.5989).

Bivariate analysis was carried out further to determine the relationship between the independent variables and the dependent variable using chi-square analysis which can be seen in the following table:

Table 3. Relationship between Family History, Smoking, Sleep Duration, and Coffee Consumption with Hypertension in the Productive Age in the Working Area of the North Landasan Ulin Health Center

Variable	Disease Incidence X				*p-value*	OR Value (95%CI)
	Yes		**No**			
	N	%	n	%		
Family History						
Yes	12	80	3	20	2,8468	4,000
No	9	50	19	50		(0,970-16,4824)
Smoking Habbit						
Yes	8	66,67	4	33,33	0,1027	1,5652
No	23	56,1	18	43,9		(0,4060-6,0345)
Sleep Duration						
Yes	2	40	3	60	0,1639	2,2895

No	29	60,42	19	39,58		(0,3492-15,0104)
Coffee Consumption						
Yes	20	64,52	11	35,48	0,5989	1,8182
No	11	50	11	50		(0,5971-5,5361)

Source: Primary Data, 2022

IV.   DISCUSSION

Relationship of Family History with Hypertension

The results of bivariate analysis in this study concluded that there was a significant relationship between family history and the incidence of hypertension based on p-value = 0.0458 <0.05. This is in line with previous studies with the results of p = 0.01 <0.05, which means there is a relationship between a family history of hypertension and the incidence of hypertension.[9] The odds ratio (OR) value in this study shows that people who have a family history of hypertension sufferers will be at risk of 4,000 times experiencing hypertension compared to people who do not have a family history of hypertension sufferers. Family history is an important risk factor for hypertension that cannot be modified, due to the interaction between genes and the environment. Many studies state that hereditary traits from parents can affect the blood pressure of their biological children.[10,11] This is in accordance with this study that many of the respondents who experienced hypertension were caused by heredity from their father or mother. If one of our parents has hypertension, then we have a 25% chance of developing hypertension. In addition, if both of our parents have hypertension, then we have a 60% chance of getting the disease.[12]

The Relationship between Smoking Habits and Hypertension

Based on the results of the chi-square test analysis conducted on the independent variable (smoking habits) on the dependent variable (incidence of hypertension) a p-value of 0.1027 is obtained, meaning that there is no significant relationship between smoking habits and the incidence of hypertension at productive age in the work area of the North Landasan Ulin Health Center. In line with previous research, a p-value of 0.571 was obtained, meaning that there was no relationship between smoking habits and the incidence of hypertension.[13] Supported by other studies which show that there is no significant relationship between smoking habits and the incidence of hypertension, a p-value of 0.846 is obtained.[14]

The odds ratio (OR) value in this study shows that people who smoke have a 1.5652 times risk of developing hypertension compared to people who don't smoke. According to Sukmana (2009), smoking behavior can cause hypertension as a result of the chemicals contained in tobacco, especially nicotine which causes stimulation of the sympathetic nerves and triggers the heart to work faster, so that blood circulation will flow faster and blood vessels narrow. In addition, the content of carbon monoxide in cigarettes can replace oxygen in the blood and will force the heart to work to meet the needs of oxygen in the body.[15] Although the results of the statistical analysis in this study showed that smoking habits were not a determinant of the incidence of hypertension, this could be due to the small number of respondents who smoked, namely only 22.64% compared to respondents who did not smoke, which was 77.34%.

The research findings showed that there were as many as (56.1%) respondents who did not smoke but had hypertension. This is because most of the respondents (52.17%) of them are exposed to cigarette smoke every day both at home and at the respondent's workplace. In line with previous research that there is a relationship between smoking exposure and the occurrence of atherosclerosis, vascular disease, and stroke.[16]

Relationship between sleep duration and hypertension

The results of the bivariate analysis in this study concluded that there was no significant relationship between sleep duration and the incidence of hypertension based on p-value=0.163>0.05. This is in line with previous research where p-value=0.129>0.05 which shows that sleep duration has no effect on the incidence of hypertension.[3] The reason for the results that there was no significant relationship between sleep duration and the incidence of hypertension in this study was the lack of respondents in the category of insufficient sleep duration but who experienced hypertension was only 40% compared to respondents who had sufficient sleep and experienced hypertension, namely 60.42%. The odds ratio (OR) value in this study shows that people who sleep less have a 2.2895 times risk of developing hypertension compared to people who sleep enough.

In addition, other studies argue that there is a relationship between short sleep duration and the incidence of hypertension because short sleep duration can cause metabolic and endocrine disorders which can causes cardiovascular disorders.[17,18] The categorization of short sleep duration usually consists of less than 7 hours, 6 hours or 5 hours per night. Apart from that, previous research also states that sufficient sleep duration can help reduce the prevalence of hypertension, cardiovascular -related mortality, obesity and metabolic syndrome.[18] If we look at the age factor, in 2009, a study in Spain stated that there was no relationship between sleep duration and the incidence of hypertension in older adults. Then, in 2018, a study in China stated that there was an association between short sleep duration and a higher risk of hypertension in young adults but not in middle-aged or elderly individuals.[19] In this study, insufficient sleep duration was associated with the incidence of hypertension in late adulthood.

Relationship between coffee consumption and hypertension

Based on the results of the chi-square test analysis carried out on the independent variable (coffee consumption) on the dependent variable (incidence of hypertension), a p-value of 0.5989 was obtained, meaning that there is no significant relationship between coffee consumption habits and the incidence of hypertension in productive age in the work area. Landasan Ulin Utara H ealth Center. In line with previous research, a p-value of 0.807 was obtained, meaning that there is no relationship between coffee consumption habits and the incidence of hypertension.[20]

The odds ratio (OR) value in this study shows that people who habitually consume coffee have a 1.8182 times risk of experiencing hypertension compared to people who do not have the habit of consuming coffee. Theoretically, consuming coffee that contains 200-300 mg of caffeine or the equivalent of 3-4 cups of coffee can stimulate greater heart function and cause an increase in

blood pressure.[21,22] Although the results of statistical analysis in this study show that coffee consumption habits are not a determinant of the incidence of hypertension, this could be because the majority of respondents (95.55%) consumed only 1 -3 cups of coffee per day compared to respondents who consumed >3 cups of coffee per day. amounted to (6.45%).

Research findings show that respondents who have a habit of consuming coffee >5 years are more likely to suffer from hypertension by (66.67%) compared to respondents who have a habit of consuming coffee <5 years amounting to (57.89%).

V.   CONCLUSION

From the results of the bivariate analysis, it shows that the factor related to the incidence of hypertension in the working area of the Landasan Ulin Utara Community Health Center in 2022 is the family history variable with a p -value of 0.0458 (p-value <0.05). Meanwhile, factors that are not related to the incidence of hypertension in the working area of the Landasan Ulin Utara Commu nity Health Center in 2022 are smoking habit variables with a p-value of 0.1027 (p-value>0.05), sleep duration with a p-value of 0.1639 (p-value>0.05), and coffee consumption with a p-value of 0.5989 (p-value>0.05). So the suggestion for the Landasan Ulin Utara Community Health Center is that you should pay more attention if there are patients who visit with a family history of hypertension so that they can be given information about preventing hypertension, one of which is living a healthy lifestyle. For hypertensio n sufferers, even though family history is a risk factor that cannot be modified, it can be used as a screening pu rpose to pay more attention to the individual's health by living a healthy lifestyle and getting checked at the nearest health service. For the next researcher, this is so that can further study the factors related to the incidence of hypertension in the working area of the Landasan Ulin Utara Community Health Center with a larger number of samples.

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