Indonesian Journal of Global Health Research

Volume 3 Number 3, August 2021, pp. 305 - 316 e-ISSN 2715-1972; p-ISSN 2714-9749



http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

FACTORS RELATED TO THE INCIDENCE OF HYPERTENSION

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ABSTRACT

Hypertension is dubbed the silent killer because this disease has no specific symptoms, hypertension can attack anyone, and at any time, and can cause degenerative diseases, to death. According to several studies, people with hypertension are 12 times more likely to have a stroke and 6 times more likely to have a heart attack. Hypertension is usually not realized by the public because the symptoms are not clear and resemble health complaints in general. Patients only find out that they have hypertension after checking their blood pressure, or after the onset of other diseases. Type of research is quantitative, analytical survey research design with Cross Sectional approach. The research population of all residents aged over 45 years who live in Bandar Lampung City based on data from the population and civil registration office of Bandar Lampung city in 2020 as many as 424,183 people, with the Proportional Random Sampling technique as many as 216 people. In this study, researchers used interview techniques using questionnaires. Data analysis used Chi Square statistical test and Logistics Regression. The research was carried out on March 2021. Research result there was a correlation between caffeinee (p-value = 0.022, and OR = 1.951), smoking habits (p-value = 0.017, and OR = 2.006) obesity (p-value = 0.000, and OR = 3.580), physical activity (exercise) (p-value = 0.012, and OR = 2.078) with the incidence of hypertension in Bandar Lampung City in 2021. Obesity variable is the dominant factor that is most related to the incidence of hypertension in Bandar Lampung City in 2021 (p-value = 0.000, and OR = 32,891). This can be done by holding regular counseling at the Posyandu for the elderly and holding regular exercise programs at the Public Health Center, namely doing morning exercises with the community every Friday. Furthermore, leaflets can be distributed about hypertension when exercising at the Public Health Center, as well as posting posters about the importance of maintaining a healthy diet, maintaining an ideal body weight and exercising regularly in places that are easily accessible by the community, such as at the market, at the village hall. or at the community meeting hall.

Keywords: caffeine; exercise; obesity; smoking habits

Revised 20 July 2021	Accepted 24 July 2021		
j	Published		
25 July 2021 27 July 2021			

How to cite (in APA style)

Putri, R., Setiaji, B., & Masra, F. (2021). Factors Related to the Incidence of Hypertension. *Indonesian Journal of Global Health Research*, *3*(3), 305-316. https://doi.org/10.37287/ijghr.v3i3.519

INTRODUCTION

Hypertension is when the blood pressure in the blood vessels is very high. Blood vessels referred to here are blood vessels that transport blood from the heart that pumps blood throughout the tissues and organs of the body. Normal blood pressure is 120/80 mmHg. Blood pressure between 120/80 mmHg and 139/89 mmHg is called pre-hypertension and blood pressure over 140/90 mmHg is considered high and is called hypertension. It is said high blood pressure if the systolic pressure reaches 140 mmHg or more, or the diastolic pressure reaches 90 mmHg or more and according to the doctor's diagnosis. According to several studies, there is a tendency that men over the age of 45 are more prone to increased blood pressure. While women tend to experience an increase in blood pressure at the age above 55 years (Wulandari, 2011).

WHO data in 2019 shows 1.13 billion people worldwide suffer from hypertension, most of them (two thirds) live in low and middle income countries and are expected to increase until 2025 (WHO, 2019). The number of people with hypertension in Indonesia according to the results of Riskesdas in 2018 was 658,201 people. According to the Indonesian Health Ministry (2020), the prevalence of hypertension based on a doctor's diagnosis in the age group above 45 years is 254,401 people (38.65%). The prevalence of hypertension in Lampung Province in 2019 was 15.10% with 926,825 patients. In urban areas with the highest prevalence of hypertension, namely in Bandar Lampung City in 2019 the number of hypertension sufferers aged > 45 years was 130,076 people (Lampung Provincial Health Office, 2020).

Data on visits by hypertension patients at the Kedaton Inpatient Health Center in 2019 was 3,323 people (14.88%). Hypertension patient visits at the Kedaton Inpatient Health Center occupies the highest position when compared to the visits of hypertension patients to the Public Health Center in Bandar Lampung City. Next, hypertension patient visits at Satellite Health Center were 14.78%, Way Halim Health Center was 13.66%, Simpur Health Center was 13.23%, Gedung Air Health Center was 12.87%, Panjang Health Center was 12.35%, Kemiling Health Center was 11.69%, Kampung Sawah Health Center 11.48%, Campang Raya Health Center 11.21%, Kupang City Health Center 10.88%, Sukamaju Health Center 10.46%, Pasar Ambon Health Center 10.12%, Public Health Center Length is 9.87%, Karang City Health Center is 9.63%, and Sukarame Health Center is 9.45% (Bandar Lampung Health Office, 2020).

Results of Kedaton Inpatient Health Center Bandar Lampung City Medical Record in 2018 number of people with hypertension who received treatment was 3,047 people, in 2019 there was increased to 3,323 people. Meanwhile, in 2020 there were 3,191 patients with a diagnosis of Hypertension at Kedaton Inpatient Health Center (BP Room Medical Record Inpatient Health Center Kedaton Bandar Lampung City, 2020). At Sukaraja Health Center, Bandar Lampung City in 2018 the number of people with hypertension who received treatment was 2,371 people, in 2019 there was an increased to 2,510 people. Meanwhile, in 2020 there were 2,246 patients with a diagnosis of hypertension at Sukaraja Health Center (Medicine Record for BP Sukaraja Health Center Bandar Lampung City, 2020). At Kota Karang Health Center, Bandar Lampung City in 2018 the number of people with hypertension who received treatment was 2,527 people, in 2019 there was an increased to 2,714 people. Meanwhile, in 2020 there were 2,486 patients with a diagnosis of Hypertension at Kota Karang Health Center (Medical Record for BP Room at Kota Karang Health Center, Bandar Lampung City, 2020). At Way Halim Health Center Bandar Lampung City in 2018 the number of people with hypertension who received treatment was 1,876 people, in 2019 there was an increased to 2,248 people. Meanwhile, in 2020 there were 2,153 patients with a diagnosis of hypertension at Way Halim Health Center (Medicine Record Room BP Way Halim Health Center Bandar Lampung City, 2020).

Hypertension is also dubbed the silent killer because this disease has no specific symptoms, hypertension can attack anyone, and at any time, and can cause degenerative diseases, to death. According to several studies, people with hypertension are 12 times more likely to have a stroke and 6 times more likely to have a heart attack. Hypertension is usually not realized by the public because the symptoms are not clear and resemble health complaints in general. Patients only find out that they have hypertension after checking their blood pressure, or after the onset of other diseases (Sari, 2017).

The impact that occurs for people with hypertension is not only a high risk of suffering from heart disease, but also suffering from other diseases such as diseases of the nerves, kidneys and blood vessels. The higher the blood pressure, the greater the risk. If hypertension remains unknown and untreated, it can result in death from heart failure, myocardial infarction, stroke or kidney failure. About half of deaths from hypertension are caused by myocardial infarction or heart failure (Wilson, 2018).

In an effort to control chronic diseases, especially hypertension, the Indonesian government has made efforts to prevent and treat hypertension. The programs currently being implemented through health centers are the Healthy Indonesia Program with a Family Approach (PIS-PK) and Prolanis exercise (Chronic Disease Management Program). Prolanis is a health service system and a proactive approach that is implemented in an integrated manner involving Participants, Health Facilities and BPJS Health in the context of health care for BPJS Health participants who suffer from chronic diseases to achieve optimal quality of life with effective and efficient health care costs. One of the Prolanis activities that are routinely carried out is gymnastics activities which are carried out gradually every week for clients with hypertension (Indonesian Health Ministry, 2016).

Efforts to control PTM are also carried out through the Promotion of Clean and Healthy Living Behaviors which are carried out to control PTM risk factors, through smart behavior, namely regular health checks, getting rid of cigarette smoke, diligent physical activity, balanced healthy diet, adequate rest, and managing stress. Periodic health checks, namely the examination of PTM risk factors, can be carried out through the PTM Integrated Guidance Post (Posbindu) in the village/kelurahan, and at the Public Health Center (Indonesian Health Ministry, 2020).

Hengli's research (2013) which examined the correlation between smoking and physical activity with the incidence of hypertension in men in the working area of the Siantan Hulu Health Center, North Pontianak District. The results showed that there was a correlation between smoking and the incidence of hypertension (p=0.021) and there was a correlation between physical activity (p=0.000) and the incidence of hypertension, in Siantan Hulu Village, North Pontianak. Ramadhani's research (2017) on the correlation between smoking and coffee consumption with blood pressure in hypertension patients found that there was a correlation between smoking (p-value=0.014) and coffee consumption (p-value=0.017) with blood pressure in hypertension patients at Pembina Palembang Health Center. In 2016. Furthermore, Yanti's research (2012) concerning the Correlation between Obesity and the Incidence of Hypertension in Adults, the results showed that the statistical test value with p value = 0.031 (< 0.05), this indicates that there is a correlation between obesity and the incidence of hypertension in adulthood. , where the value of OR = 4.375, which means that adult patients will be at risk or have the opportunity to experience hypertension as much as 4.375 times.

Hypertension is now a global problem because its prevalence continues to increase in line with changes in lifestyle, especially in diet. The traditional diet, which was previously high in carbohydrates, high in crude fiber, and low in fat, shifted to a new diet that was low in carbohydrates, low in crude fiber, and high in fat, thus shifting the quality of food to an unbalanced direction. In addition, economic improvements have led to reduced physical activity of certain communities. Changes in diet and physical activity have resulted in more and more people from certain groups experiencing more nutritional problems in the form of

obesity and obesity which have an impact on the emergence of degenerative diseases (Almatsier, 2016).

Hypertension can be triggered by various factors. Factors that have the potential to cause problems for health losses are commonly referred to as risk factors. In the incidence of hypertension, risk factors are divided into two groups, namely risk factors that cannot be changed and risk factors that can be changed. Risk factors for hypertension that cannot be changed consist of age, gender, and heredity (genetic). Meanwhile, the modifiable risk factors for hypertension include being overweight or obese, stress, smoking habits, excessive alcohol and caffeinee consumption, and excessive salt consumption (Sari, 2017). Being overweight or obese is a trigger for various serious diseases, including acute hypertension. People who are overweight generally have difficulty moving freely. To be able to move the body, the heart must pump blood and make blood pressure rise. That is why obesity is also a factor in the occurrence of hypertension (Wulandari, 2011).

BMI is one of the measuring tools for a person's nutritional status and BMI can be used to determine how much a person can be exposed to the risk of certain diseases caused by their weight. The relative risk for suffering from hypertension in people with a BMI > 25 is five times higher than someone with normal weight (Bugawati, 2011 in Bagus Darwanto, 2014). Measurement of BMI is only valid for adults over 18 years of age. BMI cannot be applied to infants, children, adolescents, pregnant women and athletes (Supariasa, 2012 in Mulyadi, 2014).

Smoking is a public health problem because it can cause various diseases and even death. The tobacco epidemic is one of the biggest public health threats the world has ever faced, killing more than 7 million people a year. More than 6 million of these deaths are the result of direct tobacco use, while about 890,000 are the result of non-smokers being exposed to secondhand smoke. In adults, secondhand smoke causes serious cardiovascular and respiratory diseases, including coronary heart disease and lung cancer (WHO, 2018).

Exercise or physical activity is more associated with the management of hypertension because isotonic and regular exercise can reduce peripheral resistance which will lower blood pressure. Exercise has also been linked to the role of obesity in hypertension. Lack of exercise will increase the likelihood of obesity and if salt intake also increases it will facilitate the onset of hypertension (Tjokronegoro & Utama, 2016).

Coffee is often associated with coronary heart disease, including increased blood pressure and blood cholesterol levels because coffee contains polyphenols, potassium, and caffeinee. One substance that is said to increase blood pressure is caffeinee. Caffeinee in the human body works by triggering the production of adrenaline hormones originating from adinose receptors in nerve cells which results in an increase in blood pressure, the effect of caffeinee consumption can be felt within 5-30 minutes and lasts up to 12 hours (Indriyani in Bistara DN, & Kartini Y., 2018).

Based on research shows that 53.8% of respondents who often consume coffee positively suffer from hypertension. This is because most of the respondents who frequently consume coffee exceed the normal recommended coffee consumption limit, which is 3 cups per day. In this study, most of the respondents consumed black coffee which had a higher caffeinee content compared to instant coffee with different time variants. In addition, the study found that the average dose of coffee consumed by respondents was 1 tablespoon or 5.6 grams of

coffee. Where the amount of coffee dose affects the amount of caffeinee consumed (Susilawati, 2018).

Epidemiological triangle theory explains that the incidence of disease is caused by the influence of the host, agent and environment, which is described as a triangle. Changes in the environmental sector will affect the host, so that individual diseases and the entire population will experience these changes (Bustan, 2015). Likewise with the incidence of hypertension associated with host factors. The process of the occurrence of a disease is caused by an imbalance in the interaction of the components of the host, agent, and environment. Each component has different characteristics. Hosts have characteristics such as age, gender, occupation, genetics, marital status, family background, disease history and immunity. Agents have biological (parasites, bacteria, viruses), chemical (poisons, alcohol, smoke) and physical (trauma, radiation) characteristics. This purpose of this study was to determine the factors related the to incidence at Bandar Lampung City 2021.

METHOD

This research has been carried out at the Kedaton Inpatient Health Center, Way Halim Health Center, Sukaraja Health Center, and Karang Bandar Lampung City Health Center. The research will be carried out in March 2021. Population in this study is all residents aged over 45 years who live in Bandar Lampung City based on data from the Population and Civil Registration Office of Bandar Lampung City in 2020 as many as 424,183 people. Sampling technique uses Simple Random Sampling, where each member or population unit has the same opportunity to be selected as a sample of 216 people.

Instrument in this study was an interview guide with several questions to identify smoking habits, caffeinee and physical activity. Meter (stature meter) and weight scales (analog) to measure height and weight. Meanwhile, to determine blood pressure by checking blood pressure on respondents. Respondents who meet the criteria are given a questionnaire to fill it out and the researcher is near the respondent, if there are questions from the respondent, the researcher can immediately explain it. Respondents were reminded that all questions and statements were filled in completely, when they were completed, they were returned to the researcher. Furthermore, researchers measured height and weight using a meter (stature meter) and weight scales (analog), and checked the respondent's blood pressure using an Aneroid Sphygmomanometer and a Stethoscope.

Data collected in this study were analyzed univariately to describe all research variables in the form of tables and graphs to provide a description of obesity, smoking, caffeinee, physical activity and the incidence of hypertension. Meanwhile, the bivariate analysis used was Chi Square statistical test. Multivariate analysis used logistic regression to determine the most dominant factor associated with the incidence of hypertension.

RESULTS

Univariate Analysis

Based on the results of the study, it appears that as many as 119 people (55.1%) of respondents have hypertension, as many as 111 people (51.4%) of respondents have a risky habit of consuming caffeinee, as many as 114 people (52.8%) of respondents have a risky smoking habit, as many as 121 people (56.0%) respondents had a risky obesity level. And as many as 115 people (53.2%) respondents in Bandar Lampung City had risky physical activities (exercise).

Table 1.

Analysis Results of Factors Related with the Incidence of Hypertension (n=216)

Variable	f	%
Incidence of Hypertension		
No Hypertension	97	44,9
Hypertension	119	55,1
Caffeine Consumption		
No Risk	105	48,6
At risk	111	51,4
Smoking habit		
No Risk	102	47,2
At risk	114	52,8
Obesity		
No Risk	95	44,0
At risk	121	56,0
Physical Activity (Exercise)		
No Risk	101	46,8
At risk	115	53,2

Table 2. Correlation Between Caffeine With the Incidende of Hypertension (n=216)

	Incie	dence of H	lypertens	sion	Total			O.D.
Caffeine	No Hype	ertension	Hyper	rtension 1		Otal	p- value	OR 95% CI
	f	%	f	%	f	%	•	9370 CI
No Risk	56	53,3	49	46,7	105	100,0	0.022	1,951
At Risk	41	36,9	70	63,1	111	100,0	0,022	(1,133-3,361)

Table 3. Correlation Between Smoking Habit With the Incidende of Hypertension (n=216)

Cmalrina -	Incid	ypertens	ion	- Total			OP	
Smoking Habit	No Hype	rtension	Hyper	tension	- Total	p- ve		OR 95% CI
павн	f	%	f	%	f	%	93% C	9370 CI
No Risk	55	53,9	47	46,1	102	100,0	0.017	2,006
At Risk	42	36,8	72	63,2	114	100,0	0,017	(1,164-3,458)

Table 4. Correlation Between Obesity With the Incidende of Hypertension (n=216)

	Incide	ence of H	ypertens	sion	т	otal		OR
Obesity	No Hype	rtension	Hyper	tension	1	Otal	p- value	95% CI
	f	%	f	%	f	%		9370 CI
No Risk	59	62,1	36	37,9	95	100,0	0,000	3,580 (2,035 –6,298)
At Risk	38	31,4	83	68,6	121	100,0	0,000	

Table 5.
Correlation Between Physical Activity (Exercise) With the Incidende of Hypertension(n=216)

Physical	Incie	dence of H	Iypertens	sion	— Total			O.D.		
Activity	No Hypertension		Hypertension				1 otai		Total	
(Exercise)	f	%	f	%	f	%	•	93% CI		
No Risk	55	54,5	46	55,6	101	100,0	0,012	2,078		
At Risk	42	36,5	73	63,5	115	100,0	0,012	(1,205-3,585)		

Table 6.
Results of Bivariate Analysis Between Dependent and Independent Variables (n=216)

Variable	Nilai p	Information
Caffeine	0,016	Candidate
Smoking Habit	0,012	Candidate
Obesity	0,000	Candidate
Physical Activity (Exercise)	0,009	Candidate

Table 7.

Results of multivariate logistic regression analysis between variables of Caffeine, Smoking Habit, Obesity dan Physical Activity (Exercise) with the Incidende of Hypertension (n=216)

Variable	Nilai p	OR	95% CI
Caffeine	0,000	12,485	5,211 - 29,913
Smoking Habit	0,000	8,995	3,887 - 20,818
Obesity	0,000	32,891	12,009 - 90,089
Physical Activity (Exercise)	0,000	5,574	2,576 - 12,064

Table 8. Final model of multivariate logistic regression analysis between variables Caffeine, Smoking Habit, Obesity dan Physical Activity (Exercise) with the Incidende of Hypertension (n=216)

Variable	Nilai p	OR	95% CI
Caffeine	0,000	12,485	5,211 - 29,913
Smoking Habit	0,000	8,995	3,887 - 20,818
Obesity	0,000	32,891	12,009 - 90,089
Physical Activity (Exercise)	0,000	5,574	2,576 - 12,064

DISCUSSION

Bivariate Analysis

Correlation between caffeine with the incidence of Hypertension

Based on the results of statistical tests obtained p-value = 0.022, which means p <0.05 (Ho is rejected), it can be concluded that there was correlation between caffeine with the incidence of hypertension at Bandar Lampung City 2021, with an OR value of 1.951 which means that respondents who have a risk habit of consuming caffeine having a risk of 1,951 times experiencing hypertension compared to respondents who have a habit of consuming caffeine without risk.

Coffee is often associated with coronary heart disease, including increased blood pressure and blood cholesterol levels because coffee contains polyphenols, potassium, and caffeine. One substance that is said to increase blood pressure is caffeine. Caffeine in the human body works by triggering the production of adrenaline hormones originating from adinose receptors in nerve cells which results in an increase in blood pressure, the effect of caffeine consumption can be felt within 5-30 minutes and lasts up to 12 hours (Indriyani in Bistara DN, & Kartini, 2018). According to Sianturi (2013) excessive coffee consumption in the long term and in large quantities is known to increase the risk of hypertension or cardiovascular disease. Several studies have shown that people who consume caffeine (coffee) regularly throughout the day have a higher average blood pressure than in 2-3 cups of coffee (200-250 mg) shown to increase systolic pressure by 3-14 mmHg and diastolic pressure by 3-14 mmHg. 4-13 mmHg in people who do not have hypertension. Consuming caffeine regularly throughout the day had higher average blood pressure than those who did not consume it at

all. The habit of consuming coffee can increase blood cholesterol levels and increase the risk of heart disease

Researchers Opinion, results of this study indicate the dangers of consuming excessive coffee for individual health, one of which is the increasing cases of hypertension in the community. This phenomenon has become a tradition and culture in society to consume coffee in everyday life. In this case, the researcher suggests the need for socialization and health promotion in the community about the risks that can occur when consuming excessive amounts of coffee, by distributing leaflets and posting posters about the dangers of excessive coffee consumption at the Public Health Center, Village Hall, or in the market so that it is easily accessible by the public.

Correlation between Smoking Habits with the incidence of Hypertension

Based on the results of statistical tests obtained p-value = 0.017 which means p <0.05 (Ho is rejected), it can be concluded that there was correlation between smoking habits with the incidence of hypertension at Bandar Lampung City 2021, with an OR value of 2.006 which means that respondents who have risk smoking habits having a risk of 2,006 times of experiencing hypertension compared to respondents who have a smoking habit that is not at risk. Sari (2017) stated that smoking can cause an increase in heart rate and the need for oxygen to be supplied by the heart muscle. For patients who have atherosclerosis or fat accumulation in the blood vessels, smoking can exacerbate the incidence of hypertension and potentially other degenerative diseases such as stroke and heart disease. In general, cigarettes contain various harmful chemicals such as nicotine and carbon monoxide. These substances will be inhaled through cigarettes so that they enter the bloodstream and cause damage to the endothelial lining of the arteries, and accelerate the occurrence of atherosclerosis.

Results of this study are in line with the theory put forward by Sitepoe (2007) which states that smoking cigarettes can lead to an increase in blood pressure. However, smoking will cause vasoconstriction of peripheral blood vessels and vessels in the kidneys, resulting in an increase in blood pressure. Smoking one cigarette every day will increase the systolic pressure by 10–25 mmHg and increase the heart rate by 5–20 beats per minute.

Researchers opinion, results of this study are related to the longer the smoking habit, the longer the exposure to chemical substances contained in cigarettes. Cigarette smoke contains various chemicals, especially nicotine and carbon monoxide, so that the more smoking habits allow the more chemicals to accumulate in the blood. Nicotine in the blood can stimulate the release of adrenaline, increase heart rate and blood pressure, increase the mobilization of catecholamines which can increase the reaction of platelets and cause damage to artery walls. So that more and more nicotine levels accumulate in the blood can result in increased blood pressure.

Correlation between Obesity with the incidence of Hypertension

Based on the results of statistical tests obtained p-value = 0.000 which means p <0.05 (Ho is rejected), it can be concluded that there was correlation between obesity with the incidence of hypertension at Bandar Lampung City 2021, with an OR value of 3.580 which means that respondents who have a high level of obesity have a risk of 3,580 times having hypertension compared to respondents who have a level of obesity that is not at risk. Results of this study are in line with the theory put forward by Hasdianah (2014) which states that BMI is directly correlated with blood pressure, especially systolic blood pressure. Obesity characterized by a body mass index (BMI) >25 is one of the factors for hypertension. Apart from being at risk

for certain diseases, weight gain can also affect work productivity. Monitoring of these conditions needs to be carried out continuously, one of which is by maintaining an ideal or normal body weight.

Based on the results of the study obtained as many as 36 people (37.9%) respondents who have a level of obesity are not at risk and have hypertension. According to the researcher's opinion, this phenomenon occurs because there are other factors that affect the respondent's blood pressure, such as the lack of physical activity (exercise) and behavioral factors. Based on interviews with respondents who have no risk of obesity and have hypertension, it was found that respondents said that they had a smoking habit. This is in accordance with the opinion of Sari (2017) which states that smoking can be one of the triggering factors for hypertension. Smoking can cause the heart rate and the need for oxygen to be supplied by the heart muscle to increase. In general, cigarettes contain various harmful chemicals such as nicotine and carbon monoxide. These substances will be inhaled through cigarettes so that they enter the bloodstream and cause damage to the endothelial lining of the arteries, and accelerate the occurrence of atherosclerosis. The narrowing of the blood vessels of the brain forces the heart to work harder. This situation is very dangerous because it can cause the rupture of blood vessels in the brain causing a stroke.

Based on the results of the study also obtained as many as 38 people (31.4%) of respondents who have a risky obesity level and do not have hypertension. In the opinion of the researcher, respondents who have obesity are at risk and do not experience hypertension among the factors due to good physical activity of respondents so that they increase the body's metabolism and smooth blood flow. In this case the researcher suggests the need for education to respondents who have obesity levels at risk to lose weight in order to avoid the risk of developing hypertension by routinely carrying out physical / exercise activities such as exercise, walking, running, cycling and active exercise such as badminton.

Correlation between Physical Activity (exercise) with the incidence of Hypertension

Based on the results of statistical tests obtained p-value = 0.012 which means p <0.05 (Ho is rejected), it can be concluded that there was correlation between physical activity (exercise) with the incidence of Hypertension at Bandar Lampung City 2021, with an OR value of 2.078 which means that respondents who having physical activity (exercise) has a risk of 2,078 times having hypertension compared to respondents who have no risk of physical activity (exercise).

Exercise is more associated with the management of hypertension because isotonic and regular exercise can lower blood pressure. Lack of exercise will increase the likelihood of obesity and if salt intake also increases it will facilitate the onset of hypertension. In this modern era, many activities can be done in a fast and practical way. Humans also tend to look for things that are easy and practical so that the body automatically does not move much. In addition, with the extraordinary busyness, people feel they don't have time to exercise. As a result, we become less active and less exercise. This condition triggers high cholesterol and blood pressure that continues to strengthen, causing hypertension (Susilo & Wulandari, 2011).

Sari (2017) states that in general, physical activity including exercise is needed to maintain and improve the body's metabolism, including improving blood circulation, and making the body fit. Regular exercise can also prevent excess weight from occurring due to lack of physical activity and excessive intake. Patients with hypertension are encouraged to do regular exercise according to their body's abilities. Exercises such as leisurely walks, jogging,

cycling, or aerobics that are done regularly 3-4 times a week with a duration of 30-45 minutes on a regular basis can reduce high blood pressure.

researchers opinion, respondents who have physical activity (exercise) are not at risk but have hypertension, this is due to several factors, such as obesity, excessive coffee consumption habits, physical activity, and smoking habits. As for respondents who have physical activity (exercise) at risk and do not experience hypertension, this is because respondents can maintain their body condition to stay healthy including avoiding foods that contain lots of fat and salt, avoiding stress, and not smoking, but respondents are still encouraged to exercise. so as not to experience an increase in blood pressure because if it is not balanced with exercise then with increased anxiety the respondent can experience an increase in blood pressure.

In this case, the researcher suggests that it is necessary to increase counseling and socialization of factors related to the incidence of hypertension in Bandar Lampung City. This can be done by holding regular counseling at the Posyandu for the elderly and holding regular exercise programs at the Public Health Center, namely doing morning exercises with the community every Friday. Furthermore, leaflets can be distributed about hypertension when exercising at the Public Health Center, as well as posting posters about the importance of maintaining a healthy diet, maintaining an ideal body weight and exercising regularly in places that are easily accessible by the community, such as at the market, at the village hall. or at the community meeting hall.

Multivariate Analysis

The results showed that the most dominant factor associated with the incidence of hypertension in Bandar Lampung City was obesity with the highest Odds Ratio (OR) value of 32.891. Body mass index (BMI) or Body mass index (BMI) is a value taken from the calculation between a person's weight (BB) and height (TB), BMI can be used to determine how much a person can be exposed to the risk of certain diseases caused by weight. his body. The higher the BMI value, the higher the risk of a person suffering from several degenerative diseases due to obesity. BMI does not measure body fat directly, but BMI is correlated with body fat measurements. BMI is an alternative for measuring body fat because it is cheap and the method of screening for weight categories is easy. To monitor the body mass index of adults, weight scales and height measurements are used (Hasdianah, 2014).

Furthermore, Hasdianah (2014) stated that body weight that is below the minimum limit is stated as under weight (thinness) and body weight that is above the maximum limit is stated as over weight (obesity). People who are under normal weight have a risk of infectious diseases, while those who are above normal have a high risk of degenerative diseases. The FAO/WHO/UNU report states that the normal weight limit for adults is determined based on the Body Mass Index (BMI) value. In Indonesia, BMI is a simple tool to monitor the nutritional status of adults, especially those related to underweight and overweight, so maintaining a normal weight allows a person to achieve a longer life expectancy.

Results of this study are in line with the theory put forward by Hasdianah (2014) which states that BMI is directly correlated with blood pressure, especially systolic blood pressure. Obesity characterized by a body mass index (BMI) >25 is one of the factors for hypertension. Apart from being at risk for certain diseases, weight gain can also affect work productivity. Monitoring of these conditions needs to be carried out continuously, one of which is by maintaining an ideal or normal body weight.

Researchers opinion obesity is a hallmark of patients with hypertension. Although it is not known with certainty the relationship between hypertension and obesity, it has been proven that the pumping power of the heart and circulating blood volume in obese patients with hypertension is higher than in hypertension patients with normal weight. In people who are obese, blood pressure tends to be high because all organs of the body are encouraged to work hard to meet greater energy needs, the heart also works extra because of the large amount of fat deposits that cause high blood fat levels, so blood pressure becomes high.

In this case, the researcher suggests the need for education to respondents with an obese Body Mass Index (BMI) to lose weight in order to avoid the risk of developing hypertension by routinely carrying out physical/exercise activities such as gymnastics, walking, running, cycling and active exercise such as badminton. In addition, it is also necessary to regulate the diet, both the type of food and the frequency of eating of the respondents. Foods that contain lots of fat such as red meat/beef should be avoided and replaced with foods that contain lots of protein such as fish, eggs, and eat more vegetables and fruit. The frequency of eating, respondents should avoid eating at a time that is too late, because eating at a time that is too late causes a decrease in metabolism and the burning of food substances so that they will be stored in the body in the form of fat which will cause obesity.

CONCLUSIONS

Most respondents in Bandar Lampung City have a risky habit of consuming caffeine as many as 111 people (51.4%), have a risky smoking habit as many as 114 people (52.8%), have a risky obesity rate of 121 people (56.0%), have physical activity (exercise) that are at risk, as many as 115 people (53.2%), and have hypertension as many as 119 people (55.1%). There was correlation between caffeine with the incidence of hypertension at Bandar Lampung City 2021 (p-value = 0.022, and OR = 1.951). There was correlation between smoking habits with the incidence of hypertension at Bandar Lampung City 2021 (p-value = 0.017, and OR = 2.006).

There was correlation between obesity with the incidence of hypertension at Bandar Lampung City 2021 (p-value = 0.000, and OR = 3.580). There was correlation between physical activity (exercise) with the incidence of hypertension at Bandar Lampung City 2021 (p-value = 0.012, and OR = 2.078). Obesity variable is the dominant factor that is most related to the incidence of hypertension at Bandar Lampung City 2021 (p-value = 0.000, and OR = 32.891)

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