

Determinants of Hypertensive People Aged 20 to 44 Years Old

Rahayu Chandranita Rini¹, Honey Ivone Ndoen², Deviarbi Sakke Tira³

^{1,2,3}Faculty of Public Health, University of Nusa Cendana

e-mail : *¹rahayurini.ch@gmail.com, ²honey.ndoen@staf.undana.ac.id,

³tuamanete@yahoo.co.id

Abstract. Hypertension is a multifactorial disease that can occur in everyone due to various factors. This study aims to analyze the determinants of hypertensive people aged 20 to 44 years old in Oesapa Community Health Center, Kupang City, in 2020. This type of research is a case-control study, with 110 case samples and 110 control samples. The case sample was hypertensive people and a control sample using individual matching. Data analysis of this study used univariate analysis and bivariate analysis, with a chi-square test. The result showed that statistically the variables that had a relationship with the incidence of hypertension aged 20 to 44 years were family health history ($p=0,000$), fruit and vegetable consumption ($p=0,004$), fat consumption ($p=0,000$), obesity ($p=0,000$), physical activity ($p=0,000$), and stress level ($p=0,000$). Meanwhile, the one with no relationship was sodium consumption ($p=1,000$).

Keywords: Hypertension, Determinants, People aged 20 to 44 years old

Abstrak. Hipertensi merupakan penyakit multifaktor yang dapat terjadi pada semua orang dan terjadi karena interaksi dari berbagai faktor. Penelitian ini bertujuan untuk menganalisis determinan kejadian hipertensi pada usia 20-44 tahun di wilayah kerja Puskesmas Oesapa Kota Kupang tahun 2020. Jenis penelitian ini adalah studi kasus-kontrol, dengan 110 orang sampel kasus dan 110 orang sampel kontrol. Pengambilan sampel kasus dilakukan dengan sampel acak sederhana dan sampel kontrol dengan pencocokan individu. Analisis data penelitian ini menggunakan analisis univariat dan analisis bivariate, dengan menggunakan uji *Chi-Square*. Hasil penelitian menunjukkan bahwa secara statistik variabel yang memiliki hubungan dengan kejadian hipertensi usia 20-44 tahun yaitu riwayat keluarga ($p=0,000$), konsumsi buah dan sayur ($p=0,004$) konsumsi lemak ($p=0,000$), obesitas ($p=0,000$), aktifitas fisik ($p=0,000$), dan tingkat stress ($p=0,000$) dengan kejadian hipertensi usia 20-44 tahun. Sedangkan yang tidak memiliki hubungan yaitu konsumsi natrium ($p=1,000$).

Kata kunci: Hipertensi, Determinan, Usia 20-44 Tahun

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Introduction

Hypertension is a condition in which blood pressure increase beyond the standard limit. A person is received hypertensive if the measurement of systolic blood pressure is >140 mmHg and diastolic >90 mmHg (Pikir, Aminuddin, Subagjo, Dharmadjati, & P., 2015). World Health Organization (WHO) data in 2015 showed approximately 1,13 billion people have hypertension, meaning that 1 in 3 people in the world is diagnosed with hypertension. Southeast Asia is in the 3rd position with 25% of the total population. WHO also estimates that 1 in 5 women worldwide have hypertension. The number was more significant among the male group, 1 out of 4 people. The result of Riskesdas in 2018 shows that there has been an increase in the prevalence of high blood pressure at the age of 18 years and over from 25,8% to 34,11% (Kementrian Kesehatan RI, 2018).

Based on Kupang City Health Office data, hypertension occupies one of the top 10 highest diseases in Kupang City. The number of hypertension patients from January to December 2019 was 25.729 cases. The highest number of hypertension patients in all Kupang City Community Health Centers was the Oesapa Community Health Center with a total of 5.000 cases, followed by the Penfui Community Health Center with a total of 3.610 points. From all the data obtained, it is known that hypertension begins to occur above 15 years old (Dinas Kesehatan Kota Kupang, 2018).

Data obtained from Oesapa Community Health Center in 2019 shows that from a total of 5.000 cases, the number of patients who received service were as many as 1987 people. The hypertension prevalence is based on age characteristics, namely age 15-19 years 3 people (0,15%), 298 people aged 20 to 44 years old (15,04%), age 45-54 years 647 people (32,66%), age 55-59 years 295 people (14,89%), age 60-69 years 495 people (24,98%), age >70 years 243 people (12,26%). Hypertension prevalence in 2020 in Oesapa Community Health Center is known that 1.094 patients receive services. The prevalence of hypertension based on age characteristics, namely age 15-19 years 1 person (0,09%), 150 people aged 20 to 44

years old (13,71%), age 45-54 years 351 people (32,08%), age 55-59 years 154 people (14,07%), age 60-69 years 294 people (26,87%), and age >70 years 144 people (13,16%) (Puskesmas Oesapa, 2020).

Hypertension is a multifactorial disease, and it is referred to as a "heterogeneous group of diseases" where hypertension can occur in every age group and socio-economic group (Utami, 2009). Young adults as an age group who generally have good health. Where they have risk symptoms, doctors, and hospitals, their primary health problems are respiratory problems and complaints of cold symptoms. At this age, only a few suffer from chronic or fatal diseases, and death is rare (Lemme, 1999).

However, changes in lifestyle, socioeconomic status, and increasing life expectancy contribute to increased non-communicable diseases, including hypertension. Hypertension is now starting to occur relatively younger age in Indonesian society often. This can be seen from the prevalence of hypertension in Indonesia in 2013 in the young group, namely 18-24 years by 8,7%, in 25-34 year age group by 14,7%, and in the 35-44 year age group by 24,8% (Kementrian Kesehatan RI, 2013). Data from the research of the last result in 2018 this number experience a significant increase to 13,2% in the 18-24 year age group, 20,1% in the 25-34 year age group, and 31,6% in the 24-44 year age group (Kementrian Kesehatan RI, 2018). Current research continues to be carried out to find risk factors that influence the incidence of hypertension in adulthood. Several studies have found that adult hypertension can occur due to several risk factors such as family health history, coffee consumption, smoking habits, excessive salt consumption, consumption of fatty food, and obesity (Nurhasanah & Ardiani, 2017; Rahmayani, 2019; Sarumaha & Vivi Eulis Diana, 2018; Susiani, Priajaya, & Sirait, 2019). The aim is to analyze the determinants of the incidence of hypertension at the age of 20 to 44 years old in Oesapa Community Health Center, Kupang City, in 2020.

Method

The type of research used is an analytical survey with a case-control design, namely an analytical study (survey) that concerns how risk factors are studied using a retrospective approach (Notoadmodjo, 2018). The population of this study is people aged 20 to 44 years old in the Oesapa Community Health Center. The case sample was hypertensive patients aged 20 to 44 years old who an examination in 2020 had based on the medical examination and record results in the Oesapa Community Health Center. In comparison, the control sample is a population aged 20 to 44 years old in good health (without hypertension) in the working area of Oesapa Community Health Center. The sample selection method is used in two ways: simple random sampling for case samples and individual matching for control samples. The subject in this study was 220 people, with 110 subjects each for case and control samples.

The data collection method used in this study were interviews with questionnaires and document studies. The data processing method used in this study used a computer which included editing, coding, entry, and cleaning. The instrument used in this study were Food Frequency Questionnaires (FFQ), 24-hours Food Recall, International Physical Activity Questionnaires (IPAQ), Perceived Stress Scale-10 (PSS-10), medical records of hypertension patients, anthropometric measurement tools, and camera. The data analysis used was univariate and bivariate analysis with a chi-square test.

Result

1. Univariate Analysis

Table 1.

Distribution of respondents based on the incidence of hypertension in The Oesapa Community Health Center Area, Kupang City in 2020

No	Incidence of Hypertension	Frequency	Percentage (%)
1	Hypertension	110	50
2	Not Hypertension	110	50
Total		220	100

Table 1 shows that respondents with hypertension are the same as those who do not have hypertension, each with 50%.

Table 2.

Distribution of respondents based on family health history in The Oesapa Community Health Center Area, Kupang City 2020

No	Family health history	Frequency	Percentage (%)
1	Yes	118	53,6
2	No	102	46,4
Total		220	100

Based on table 2, it is known that respondents who have a family health history related to hypertension (53,6%) are more than those who do not have a family history related to it (46,4%).

Table 3.

Distribution of respondents based on fruits and vegetable consumption in The Oesapa Community Health Center Area, Kupang City in 2020

No	Fruits and vegetable consumption	Frequency	Percentage (%)
1	Often	204	92,7
2	Rarely	16	7,3
Total		220	100

Based on table 3, it is known that respondents who rarely consume fruits and vegetables (7,3%) are more than those who often consume fruits and vegetables (7,3%).

Table 4.

Distribution of respondents based on sodium consumption in The Oesapa Community Health Center Area, Kupang City in 2020

No	Sodium Consumption	Frequency	Percentage (%)
1	Risky	4	1,8
2	Good	216	98,2
Total		220	100

Based on table 4, we can see that respondents with good sodium consumption (98,2%) are higher than respondents with risky sodium consumption (1,8%).

Table 5.

Distribution of respondents based on fat consumption in The Oesapa Community Health Center Area, Kupang City in 2020

No	Fat Consumption	Frequency	Percentage (%)
1	Risky	106	48,2
2	Good	114	51,8
Total		220	100

Based on table 5, it can be seen that respondents with good fat consumption (51,8%) are higher than respondents with risky fat consumption (48,2%).

Table 6.

Distribution of respondents based on obesity in The Oesapa Community Health Center Area, Kupang City in 2020

No	Obesity	Frequency	Percentage (%)
1	Yes	48	21,8
2	No	172	78,2
Total		220	100

Based on table 6, it is clear that respondents who do not have obesity (78,2%) are higher than respondents with obesity (21,8%).

Table 7.

Distribution of respondents based on physical activity in The Oesapa Community Health Center Area, Kupang City in 2020

No	Physical Activity	Frequency	Percentage (%)
1	Low Activity	109	49,5
2	High Activity	111	50,5
Total		220	100

Based on table 7, respondents with vigorous activity (50,5%) are more than respondents with low activity (49,5%).

Table 8.
Distribution of respondents based on stress level in The Oesapa Community Health Center Area, Kupang City in 2020

No	Stress Level	Frequency	Percentage (%)
1	Medium and High Stress	123	55,9
2	Low Stress	97	44,1
Total		220	100

Based on table 8, respondents with medium and high stress (55,9%) are higher than respondents with low-stress levels (44,1%).

2. Bivariate Analysis

Table 9.
The relationship between family health history and the incidence of hypertension aged 20 to 44 years in The Oesapa Community Health Center Area, Kupang City in 2020

Family health history	Incidence of Hypertension from people aged 20 to 44 years old				Total		p-value	OR
	Case		Control		F	%		
	F	%	F	%				
Yes	82	74,5	36	32,7	118	53,6	0,000	6,020
No	28	25,5	74	67,3	102	46,4		
Total	110	100	110	100	220	100		

Table 9 shows that more respondents have a family health history in the case group, 82 people (74,5%) compared to those without a family health history as many as 28 people (25,5%). In comparison, more respondents in the control group did not have a hypertensive-related family health history as many as 74 people (67,3%), compared to those who had a hypertensive-related family health history as many as 36 people (32,7%).

The Chi-Square test shows a significant relationship between family health history of hypertension and the incidence of people who have hypertension aged 20 to 44 years old at Oesapa Community Health Center Kupang City, with a p-value=0,000 ($p < 0,05$). The result of the calculation of the Odds Ratio (OR) obtained a value of OR=6,020; this means that someone with a family health history has a risk opportunity for hypertension aged 20 to 44 years old by 6,020

times compared to someone who does not have a family health history of hypertension.

Table 10.

The relationship between fruit and vegetable consumption and the incidence of hypertension aged 20 to 44 years in The Oesapa Community Health Center Area, Kupang City in 2020

Fruit and Vegetable Consumption	Incidence of Hypertension from people aged 20 to 44 y.o				Total		p-value	OR
	Case		Control		F	%		
	F	%	F	%				
Less	108	98,2	96	87,3	204	92,7		
Often	2	1,8	14	12,7	16	7,3	0,004	7,875
Total	110	100	110	100	220	100		

Table 10 shows that more respondents in the case group rarely have fruit and vegetable consumption, namely, 108 people (98,2%) compared to those who often consume more fruits and vegetables (1,8%). While in the control group rarely consume fruits and vegetables as many as 96 people (87,3%), and those who often consume fruits and vegetables as many as 14 people (12,7%).

The Chi-Square test shows a significant relationship between fruits and vegetable consumption and the incidence of people who have hypertension aged 20 to 44 years old at Oesapa Community Health Center Kupang City, with a p-value=0,004 ($p < 0,05$). The result of the Odds Ratio (OR) calculation obtained a value of OR=7,875; this means that someone who consumes fewer fruits and vegetable has a risk opportunity at the age of 20 to 44 years old 7,875 times compared to someone who often consumes fruits and vegetables.

Tabel 11.

The relationship between sodium consumption and the incidence of hypertension aged 20 to 44 years in The Oesapa Community Health Center Area, Kupang City in 2020

Sodium Consumption	Incidence of people who have hypertension from age 20 to 44 y.o				Total		p-value
	Case		Control		F	%	
	F	%	F	%			
Risky	2	1,8	2	1,8	4	1,8	
Good	108	98,2	108	98,2	216	98,2	1,000
Total	110	100	110	100	220	100	

Table 11 shows that more respondents have good sodium consumption, namely 108 people in the case group (98,2%), compared to those with risky sodium consumption as many as two people (1,8%). In comparison, more respondents have good sodium consumption, as many as 108 people (98,2) in the control group than those with rarely sodium consumption, as many as two people (1,8%).

The Chi-Square test shows no significant relationship between sodium consumption and the incidence of people who have hypertension aged 20 to 44 years old at Oesapa Community Health Center Kupang City, with a p -value=1,000 ($p<0,05$).

Table 12.

The relationship between fat consumption and the incidence of hypertension aged 20 to 44 years in The Oesapa Community Health Center Area, Kupang City in 2020

Fat Consumption	Incidence of people who have hypertension aged 20 to 44 y.o				Total		<i>p-value</i>	OR
	Case		Control					
	F	%	F	%	F	%		
Risky	72	65,5	34	30,9	106	48,2		
Good	38	34,5	76	69,1	114	51,8	0,000	4,235
Total	110	100	110	100	220	100		

Table 12 shows that more respondents have risky fat consumption in the case group, namely 78 people (65,5%) compared to those with good fat consumption as many as 38 people (34,5%). In comparison, more respondents have good at fat consumption, as many as 76 people in the control group (69,1%), than those with risky fat consumption as many as 34 people (30,9%).

The Chi-Square test shows a significant relationship between fat consumption and the incidence of people who have hypertension aged 20 to 44 years old at Oesapa Community Health Center Kupang City, with p -value=0,000 ($p<0,05$). The Odds Ratio (OR) calculation obtained a value of OR=4,235. This means that someone with risky fat consumption has a risk opportunity for hypertension aged 20 to 44 years old by 4,235 times than someone with good fat consumption.

Table 13.

The relationship between obesity and the incidence of hypertension aged 20 to 44 years in The Oesapa Community Health Center Area, Kupang City in 2020

Obesity	Incidence of people who have hypertension aged 20 to 44 y.o				Total		p-value	OR
	Case		Control					
	F	%	F	%	F	%		
Yes	38	34,5	10	9,1	46	22,8		
No	72	65,5	100	90,9	174	78,2	0,000	5,278
Total	110	100	110	100	220	100		

Table 13 shows that more respondents do not have obesity in the case group, namely 72 people (65,5%) compared to those with obesity as many as 38 people (34,5%). Whereas in the control group, more respondents do not have obesity as many as 100 people (90,9%), and those with obesity as many as ten people (9,1%).

The Chi-Square test shows a significant relationship between obesity and the incidence of people who have hypertension aged 20 to 44 years old at Oesapa Community Health Center Kupang City, with $p\text{-value}=0,000$ ($p<0,05$). The Odds Ratio (OR) calculation obtained a value of $OR=5,278$. This means that someone with obesity has a risk opportunity at hypertension at the age of 20 to 44 years old by 5,278 times compared to someone who is not obese.

Table 14.

The relationship between physical activity and the incidence of hypertension aged 20 to 44 years in The Oesapa Community Health Center Area, Kupang City in 2020

Physical Activity	Incidence of people who have hypertension aged 20 to 44 y.o				Total		p-value	OR
	Case		Control					
	F	%	F	%	F	%		
Low Activity	73	66,4	36	32,7	108	49,5		
High Activity	37	33,6	74	67,3	112	50,5	0,000	4,056
Total	110	100	110	100	220	100		

Table 14 shows that more respondents have low activity in the case group, namely 73 people (66,4%) than those with vigorous activity as many as 37 people (33,6%). However, more respondents in the control group have vigorous activity as many as 74 people (67,3%), and those with low activity as many as 36

people (32,7%).

The Chi-Square test shows a significant relationship between physical activity and the incidence of people who have hypertension aged 20 to 44 years old at Oesapa Community Health Center Kupang City, with $p\text{-value}=0,000$ ($p<0,05$). The result of the Odds Ratio (OR) calculation obtained a value of $OR=4,056$. This means that someone with low physical activity has a risk opportunity for hypertension at the age of 20 to 44 years by 4,056 times compared to someone with high physical activity.

Table 15.

The relationship between stress level and the incidence of hypertension aged 20 to 44 years in The Oesapa Community Health Center Area, Kupang City in 2020

Stress Level	Incidence of people who have hypertension (20 – 40 y.o)				Total		<i>p-value</i>	OR
	Case		Control		F	%		
	F	%	F	%				
Medium and High	86	78,2	37	33,6	123	55,9	0,000	7,070
Low	24	21,8	73	66,4	97	44,1		
Total	110	100	110	100	220	100		

Table 15 shows that more respondents have medium stress in the case group, namely 86 people (78,2%) compared to those with low stress as many as 24 people (21,8%). In comparison, more respondents have low stress in the control group, as many as 73 people (66,4%), and those who have medium stress as many as 37 people (33,6%).

The Chi-Square test shows a significant relationship between stress level and the incidence of people who have hypertension aged 20 to 44 years old at Oesapa Community Health Center Kupang City, with $p\text{-value}=0,000$ ($p<0,05$). The result of the calculation of the Odds Ratio (OR) obtained a value of $OR=7,070$; this means that someone with a medium and high-stress level has a risk opportunity for hypertension age of 20 to 44 years old by 4,056 times compared to someone with a low-stress level.

Discussion

The correlation between family health history and hypertension age range 20 to 44 years old

Family health history of hypertension is a factor that increases the occurrence of hypertension, especially in primary/essential hypertension. This study shows that from 110 respondents with hypertension, 82 people (74,5%) had a family health history of hypertension from their father, mother, or both of their parents. Based on the chi-square test results, it shows that there is a significant relationship between a family health history of hypertension and the incidence of people who have hypertension aged 20 to 44 years old in the Oesapa Public Health Center Kupang City. The results of research such as that conducted by Widyartha, Putra, & Ani (2016) at the North Kuta Health Center with a case-control design, showed that there was a relationship between a family health history of hypertension and hypertension, with $p= 0.001$ and $OR = 9.20$ (Widyartha, Putra, & Ani, 2016). This study is also supported by a case-control study conducted by Saida (2011) which states that respondents who have a hypertensive-related family health history have a 2.30 times greater risk of developing hypertension than respondents who do not have a family health history (Saida, 2011).

The data collected during the study showed that of the 110 case respondents, 82 respondents had a health history of hypertension. The history of hypertension in the respondents came from one parent (father or mother), from both of their parents. Research conducted by Suparta and Rasmi (2018) at the Internal Medicine Poly Hospital of Nene Mallomo, Sidenreng Rappang Regency, stated a significant relationship between genetics and the incidence of hypertension with a $p\text{-value} = 0.004$. In his research, it can be seen that 70% of respondents with hypertension have genetic or family health history (Suparta & Rasmi, 2018). A study was also conducted by Goldstein (2008) on 220 healthy men and women aged 22-50 years to explore the association of ambulatory blood pressure in healthy adults. The results showed that women with two parents with hypertension and elevated

norepinephrine levels had higher systolic and diastolic blood pressure during the waking period, whereas in men with two parents, hypertension and high norepinephrine were only associated with diastolic blood pressure when awake sleep (Goldstein et al., 2008).

The correlation between fruits and vegetables consumption and hypertension age range 20 to 44 years old

Consumption of enough fruit and vegetables also plays a role in maintaining normal blood pressure. The respondents' level of consumption of vegetables and fruit in this study tended to be low consumptions, but that does not mean they did not consume vegetables and fruit. The most often consumed vegetables are mustard greens and tomatoes, while the fruit that is often consumed is bananas. Research conducted by The Rowett Research Institute in Aberdeen, Scotland, found that a yellow gel covering tomato seeds can prevent blood clots and clots that can cause hypertension, heart disease, and stroke. Bananas contain bioflavonoids which can strengthen the capillary walls of blood vessels (Widyaningrum, 2012).

This study indicates a relationship between the consumption of vegetables and fruit with the incidence of people who have hypertension aged 20 to 44 years old at the Oesapa Health Center. This can be seen by seeing that 98.2% of case respondents rarely eat vegetables and fruit. This is clear from the consumption of vegetables and fruit, which is at 66% for monthly consumption, or from daily consumption, and respondents do not even reach 2.5 servings of vegetables and three servings of fruit. However, in more detail, it is known that respondents have a good vegetable consumption compared to deficient fruit consumption because interview data show that each day on average, the respondents consume 1-2 types of vegetables with a frequency of 1-3 times per day. There were several reasons for the low consumption of vegetables and fruit during the interview, including many family members. Therefore, the distribution of vegetables and fruits was uneven. They also dislike certain vegetables or fruits, lack knowledge regarding the benefits

of vegetables or fruit, or have difficulties accessing vegetables and fruits. The results of research conducted by Anwar (2014) using the case-control method, stated that there was a significant relationship between fruit and vegetable consumption and the incidence of hypertension with a p-value= 0.000 where less consumption of fruits and vegetables had a risk of 5.30 times the incidence of hypertension (Anwar, 2014). Another study conducted by Rihi Leo, Willa, and Bilaut (2020) showed that a lack of fruit and vegetable consumption increased the risk of hypertension by 6.67 times compared to subjects who consumed enough fruit and vegetables (Rihi Leo, Willa, & Bilaut, 2020).

The correlation between sodium consumption and hypertension age range 20 to 44 years old

Ideally, sodium consumption for adults is 500 mg per day but should not exceed 2,400 mg of all food consumed in a day. When sodium consumption is more than the recommended daily consumption standard, it can trigger an increase in blood pressure due to the rise in the extracellular fluid, which increases blood volume in the body. This causes the heart to pump harder, rising blood pressure (Almatsier, 2001).

This study indicates no relationship between sodium consumption and the incidence of people who have hypertension aged 20 to 44 years old in the working area of the Oesapa Public Health Center, Kupang City. Based on the results of the consumption history collected, respondents did consume processed foods such as bread, sausage, instant noodles, salted fish, and seasonings such as soy sauce, sauce, and powdered broth. However, the amount of their consumption was still in the recommended amount. This can be seen because 98.2% of respondents fall into good sodium consumption below 2400 mg per day. This amount is known from the respondent's 2x24 hour consumption history, which NutriSurvey has analyzed to see the total daily consumption of sodium from all the food that has been consumed. A study conducted by Hauzaipah (2018) showed a significant

relationship between excessive sodium consumption and hypertension in Arifin Achmad Hospital, Riau Province. This is because the respondents in this study consumed many high-sodium foods such as instant noodles, bread, salted fish, shrimp, powdered cream milk, soy sauce, sauces, and seasonings in excessive amounts. This study shows that consuming excessive sodium increases the risk of hypertension 2,810 times compared to those who consume adequate sodium (Hauzaipah, 2018).

The correlation between fat consumption and hypertension age range 20 to 44 years old

Consumption of fat in daily food consumption is recommended not to exceed 25% of the total daily consumption. Based on the results of % RDA of respondents' average fat consumption from a 2x24 questionnaire analysis of food history using the NutriSurvey application, it is clear that 65.5% of case respondents have risky fat consumption habits, which are above 25% of daily consumption. The results of the analysis of this study indicate that there is a relationship between fat consumption and the incidence of people who have hypertension aged 20 to 44 years old at the Oesapa Public Health Center, Kupang City. This study is in line with Widyaningrum's research (2012), which states that there is a significant relationship between fat consumption and the incidence of hypertension, with a p-value = 0.010 (Widyaningrum, 2012).

The high consumption of fat in the respondents of this study was caused by the tendency to consume foods containing saturated fat in fried foods, crackers, and chips, which were relatively high and even almost equivalent to the consumption of other foods. In addition, respondents process most of their daily side dishes by frying and sautéing. The foods they often process in this way are tofu, tempeh, eggs, fish, meat, crackers, fried food, and fried rice. Foods that are processed in these ways will cause fat to accumulate in the body and cause plaque or deposits in the arteries that can clog blood vessels if you overeat it. At the time of the interview, it

was known that the respondents chose the fried processing method because they felt that this type of processing was the fastest and simplest processing method. It also does interrupt the other work they do concurrently. An analytical observational study using a case-control design at Panembahan Senopati Hospital, Bantul, Yogyakarta, conducted by Kartika, Afifah, Suryani (2016) showed that most hypertensive patients tend to consume high fat (87.50%). The results of the chi-square analysis showed a significant relationship with p-value = 0.009 with OR = 3.8, which means that respondents with fat intake were 3.8 times more likely to have hypertension than respondents with moderate and low fat intake (Kartika, Afifah, & Suryani, 2016).

The correlation between obesity and hypertension age range 20 to 44 years old

Lifestyle changes today cause a lack of balance in human life. Nowadays, the ease of technology causes a lack of human activity. Besides that, various fast food processed foods also contribute to the decline in the quality of human life. When the energy consumed is not balanced with the energy expended, there will be a buildup of energy in the body which will then be stored in the form of fat under the skin. When someone is already in the category of obesity or overweight, individual productivity will decrease. In addition, this condition can trigger complications with non-communicable diseases such as hypertension if not treated early (Sudargo, Ftreitag, Rosiyani, & Kusmayanti, 2014).

The results of statistical tests in this study indicate a relationship between obesity and the incidence of people who have hypertension aged 20 to 44 years old. BMI as a categorization of obesity was carried out on the respondents in this study. BMI is a measure to predict the percentage of fat in the human body, obtained from the ratio of body weight in kilograms to height in square meters. The data processing results showed as many as 34.5% of case respondents were obese or overweight, as indicated by BMI at 25. Respondents of this study were in adulthood, but based on the interviews, respondents stated that due to the density of their daily

activities, it became difficult to choose healthy foods and prefer foods that are faster to obtain and neglect to do enough physical activity. As a result, the fat in the body increases and accumulates, which can block blood flow. This study is strengthened by a case-control study conducted by Erikamayarni, Harahap, Safitri (2019); there is a significant relationship between obesity and the incidence of hypertension ($p = 0.004$) in the community in Air Tiris Village, Kampar Health Center with an OR = 3.676, which means someone who has Obesity has a 3.676 times greater risk of developing hypertension compared to those who are not obese (Erikamayarni, Harahap, & Safitri, 2020). Another study was also conducted by Sulistyowati (2010), which states a relationship between obesity and the incidence of hypertension with p -value = 0.001 and OR value = 0.192 (Sulistyowati, 2010).

The correlation between physical activities and hypertension age range 20 to 44 years old

Physical activity can be classified according to its level, including heavy and light physical activities. The statistical tests showed a relationship between physical activity and the incidence of people who have hypertension aged 20 to 44 years old at the Oesapa Public Health Center, Kupang City. In this stud, it is known that most of the respondents are in the category of low physical activity (low). Research conducted by Harahap, Rochadi supports this study, and, Sarumpaet (2017), which shows that there is an effect of physical activity on hypertension in early adult men (18-40) who do light physical activity with a pp -value= 0.010 and an OR value = 3.095 (Harahap, Rochadi, & Sarumpaet, 2017).

WHO recommends doing moderate-intensity physical activity for 30 minutes/day in one week or 20 minutes/day for five days a week with strenuous intensity to get optimal results. The respondent's physical activity can be identified by conducting a MET/week assessment. In the control respondents, it was known that the activity level was quite good because the accumulation results showed that 67.3% of the respondents were in the heavy activity category with a total MET/week

of 600 minutes MET/week. In more detail, it is known that many control respondents carry out activities consistently in a week with quite a variety of activities and the average duration of physical activity is 30 minutes-3 hours a day. Whereas in the case group, the level of physical activity tends to be low, where 66.4% of respondents have activities with a total MET/week under 600 minutes MET/week. This can happen because the average case respondent does not always carry out daily activities. Activities are usually carried out only 2-3 days per week with a duration of 10 minutes-1 hour per day. The light activities that respondents usually do are typing, washing, cooking, and sweeping. Based on the respondents' answers, the lack of physical activity is caused by overcrowding. There is no means to exercise, so supporting physical activities such as exercise is not regular and not good. Another study conducted by Lestari, Yudnarni, and Saparwati (2020) also strengthens this research by stating that adults with lighter physical activity are at risk of developing hypertension compared to those with strenuous activities. The results showed a relationship between physical activity and the incidence of hypertension at the Kedu Health Center, Temanggung Regency (p-value = 0.001) (Lestari, Yudanari, & Saparwati, 2020).

The correlation between stress and hypertension age range 20 to 44 years old

Stress makes the body produce more adrenaline hormones, making the heart work stronger and faster. If it occurs for a long time, a series of reactions will arise from other body organs. Functional changes in blood pressure caused by stressful conditions can cause intermittent recurrent hypertrophy. Likewise, stress experienced by people with hypertension will affect the increase in blood pressure which tends to stay or even increase, causing the condition of hypertension to become more severe (Oparil, Zaman, & Calhoun, 2003).

In this study, it was found that most of the respondents had moderate and severe stress levels, which triggered an increase in the incidence of hypertension. Based on the results of the interviews, it is known that the causes of stress

experienced by respondents are generally caused by feelings or events that are not predictable when these things or problems occur in their daily lives or their work. This situation makes them unable to adjust to the existing demands, which triggers feelings of nervousness and stress. The results of the Chi-Square test show a significant relationship between stress and the incidence of people who have hypertension aged 20 to 44 years old in the working area of the Oesapa Public Health Center, Kupang City. This research is reinforced by research conducted by Sartika (2014), which shows a relationship between stress levels and hypertension levels in middle-aged adults in Niten Nogotirto Gamping Sleman Yogyakarta with $p = 0.338$ (Sartika, 2014). Another study that supports this research is research conducted by Artiyaningrum (2016), which shows a relationship between stress and the incidence of hypertension, where the value of $p = 0.001$ and $OR = 6.333$ (Artiyaningrum, 2016).

Conclusion

Based on the result of the study showed that the variables that had a relationship with the incidence of people who have hypertension aged 20 to 44 years old were related to their family health history ($OR=6,020$), fruits and vegetables consumption ($OR=7,875$), fat consumption ($OR=4,235$), obesity ($OR=5,278$), physical activity ($OR=4,056$), and stress level ($OR=7,070$) with the incidence of people who have hypertension aged 20 to 44 years old. While the one that had no relationship with the incidence of hypertension aged 20 to 44 years old was the sodium consumption variable.

Suggestion

For related institutions, especially the Oesapa Health Center and the Kupang City Health Office, cases of incidence of people who have hypertension aged 20 to 44 years old can be prevented by carrying out health promotion and prevention such as providing education to the public about hypertension and the risk factors

that we can modify. For Faculty of Public Health, University of Nusa Cendana, it is hoped that the results of this research can be an additional source of learning to improve the quality of human resources, especially for students at Faculty of Public Health, University of Nusa Cendana. For further researchers, it is hoped that they will carry out further research to deepen the study of each variable, especially for the variables of sodium and fat consumption, physical activity, and stress levels in adulthood and their relation to certain jobs using qualitative methods.

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