Pengaruh Hubungan antara Obesitas dan Merokok dengan Kejadian Hipertensi pada Lansia

The Relationship between the Effect of Obesity and Smoking on the Incidence of Hypertension in the Elderly Age

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ABSTRAK

Latar Belakang: *Latar belakang dari penelitian yang dilakukan Hipertensi merupakan the silent killer atau the silent disease dikarenakan penderitanya tidak mengetahui bahwa dirinya mengidap hipertensi. Kejadian hipertensi di Indonesia mengalami peningkatan kasus dari data Riskesdas tahun 2013, usia 55-64 tahun sebesar 45,9% meningkat menjadi 55,2% dari data Riskesdas 2018.*
Tujuan: *Tujuan penelitian bertujuan untuk menganalisis hubungan antara usia obesitas, merokok dengan kejadian hipertensi pada lansia*
Metode: *Metode yang dipakai dalam penelitian ini Jenis penelitian yang digunakan adalah observasional analitik dengan rancang bangun penelitian cross sectional. Penelitian ini menggunakan data sekunder Indonesian Family Life Survey (IFLS) 5. Sampel penelitian adalah seluruh penduduk lansia (usia > 60 tahun) yang berjumlah 1.050 responden yang telah memenuhi kriteria. Variabel yang diteliti adalah obesitas dan merokok. Analisis data yang digunakan dalam penelitian ini adalah analisis univariat dan bivariat yang menggunakan Chi-square.*
Hasil: *Hasil penelitian menunjukkan bahwa terdapat hubungan antara, obesitas (p value = 0,000; PR = 0,46; CI = 0,37 - 0,58), dan merokok (p value = 0,001; PR = 1,25; CI = 1,09 - 1,44) dengan kejadian hipertensi pada lansia*
Kesimpulan: *Kesimpulan penelitian ini adalah obesitas dan merokok merupakan variabel yang berhubungan dengan kejadian hipertensi pada lansia. Variabel merokok termasuk faktor risiko kejadian hipertensi dan variabel obesitas termasuk faktor protektif kejadian hipertensi. Saran penelitian ini diharapkan masyarakat lansia dapat menerapkan perilaku hidup sehat, serta pemerintah dapat memberikan edukasi terkait faktor risiko hipertensi pada masyarakat lansia.*

Kata kunci: *Hipertensi, Obesitas, Merokok, Risiko, Perilaku.*

ABSTRACT

Background: The background for this work hypertension is the silent killer or the silent disease because the sufferer does not know that he has hypertension. The incidence of hypertension in Indonesia has increased from the 2013 Riskesdas data, aged 55-64 years by 45.9%, increasing to 55.2% from the 2018 Riskesdas data.
Objectives: State the objectives of this research This study aims to analyze the relationship between age, obesity and smoking with the incidence of hypertension in the elderly
Methods: The methods employ in this research The type of research used is analytic observational with cross sectional research design. This study uses secondary data from the Indonesian Family Life Survey (IFLS) 5. The research sample is the entire elderly population (age > 60 years) totaling 1,050 respondents who have met the

criteria. The variables studied obesity, and smoking. This study was univariate analysis and bivariate analysis using Chi-square.

Results: The results showed that there was a relationship betweenobesity (p value = 0.000; PR = 0.46; CI = 0.37 - 0.58), and smoking (p value = 0.001; PR = 1.25; CI = 1.09 - 1.44) with the incidence of hypertension in the elderly.

Conclusions: Obesity and smoking are variables associated with the incidence of hypertension in the elderly. Smoking are risk factors for hypertension, obesity is a protective factor for hypertension. Suggestions for this research are expected that the elderly community can implement healthy living behaviors, and the government can provide education regarding risk factors for hypertension in the elderly community.

Keywords: Behavior, Elderly, Hypertension, Obesity, Smoking

INTRODUCTION

Hypertension is the silent killer or the silent disease because the sufferer does not know that he has hypertension or does not know before checking himself. Symptoms of hypertension can vary for each individual, even many who do not realize that they suffer from hypertension. According to the World Health Organization (WHO), worldwide there are about 972 million people (26.4%) will suffer from hypertension in the elderly, this figure is likely to increase by 2025 around 29.2%. Based on data from the World Health Organization (WHO), the prevalence of hypertension globally reaches 22% of the total population in the world (Kemenkes RI, 2019).

This study uses secondary data from the Indonesian Family Life Survey (IFLS) wave 5 of 2014. IFLS is a survey that aims to provide a sustainable overview of the socio-economic and health conditions of households in Indonesia. The advantage of IFLS wave 5 compared to the previous survey is that it has used the Computer-Assisted Personal Interview (CAPI) system and no longer uses paper questionnaires. This CAPI program has been prepared and tested for approximately 18 months, and has used a voice recorder so that the quality of the data can be well controlled (Strauss, et al 2016)

The objective of this study was to analyze the link between obesity, smoking, and physical activity with the incidence of high blood pressure in the elderly. As well as increasing the knowledge of researchers related to the relationship of sex, age, obesity, smoking and physical activity with the incidence of hypertension in the elderly.

Based on Riskesdas (2013) the highest elderly health problem is hypertension, which is 45.9 (aged 55-64 years). According to the results of Riskesdas, the incidence of high blood pressure in Indonesia from the result of blood pressure measurements in residents aged 18 years, the percentage was 25.8% in 2013 and increased again in 2018 to reach 34.1%. The prevalence of high blood pressure or hypertension in the population around aged 18 years according to characteristics, in

the population around 55-64 years old is 45.9%, aged around 65-74 years is 57.6%, and then for aged around 75 years is 63.8% (Depkes RI, 2013). The prevalence of hypertension in 2018 has increased, namely the population aged 55-64 years by 55.2%, aged 65-74 years by 63.2% and age 75 years by 69.5% (Kemenkes.RI, 2018).

Several risk factors contribute to an increase in high blood pressure. The risk factors for hypertension itself are divided into two categories, namely. risk factors that cannot be changed and risk factors that can be changed. Non-modifiable risk factors such as gender, age, and family history. The modifiable risk factors include obesity, smoking, physical activity, stress, alcohol consumption, excessive salt consumption and dyslipidemia (Kemenkes, 2018).

Smoking can increase the risk of hypertension, heart attack, and chronic disease. In addition to causing hypertension and heart attacks, it also causes a decrease in quality of life. Tobacco in cigarettes is one of the causes of hypertension and heart attacks (Musni, 2019). People who smoke have a 3.4 times risk of suffering from hypertension compared to people who don't smoke, based on the results of the chi square test, it shows that there is a relationship between smoking behavior and hypertension with a probability value of 0.008 (Sutriyawan, 2019).

According to (Julianti et al., 2015) in a previous study, obesity has a risk of hypertension because the heart's pumping power and circulating blood volume in obese people are higher than people with normal weight. In the study of Kartika, et al (2020), it was concluded that obesity is associated with the incidence of hypertension in the pre-elderly with a risk of 2.53 times greater than that of non-obesity.

Research related to the relationship of risk factors for hypertension in the elderly is important to know. The risk factors for the incidence of hypertension, namely obesity and smoking, are important to be known by the public, especially the elderly, so that they can make learning to do prevention efforts related to hypertension. Excessive nutritional status is also a risk factor for

hypertension. Based on research conducted by Dhika and Syarif (2017), it is stated that respondents who are obese have a 2,008 times risk of suffering from grade 1 hypertension compared to respondents who are not obese. The nutritional status of a person is related to the picture of consumption patterns in the long term. Obesity is known as being overweight compared to normal weight, which is due to excess accumulation of fat in the body (Nugroho, Triandhini and Haika, 2019)

METHODS

This research uses analytic observational research. It's,because the data were obtained without any treatment or experiment on the research topic under study and the variables studied. This research was conducted using a cross sectional research design to test the independent and dependent variables simultaneously.

This study uses secondary data from the 2014 Indonesian Family Life Survey (IFLS) Wave 5. IFLS is a survey that aims to provide an overview of the socioeconomic status and health of Indonesian households in a sustainable manner. The advantage of IFLS Wave 5 compared to previous surveys is that it uses the Computer Assisted Personal Interview (CAPI) system and no longer uses paper questionnaires. This CAPI program was prepared and tested for approximately 18 months and uses a voice recorder to ensure good data quality control (Strauss, et al 2016)

RESULT AND DISCUSSION

Univariate Analysis

Incidence of Respondents' Hypertension
The frequency distribution of hypertension incidence in the elderly in Indonesia, categorized into two categories, namely hypertension and not hypertension. Here is a table showing the frequency distribution of hypertension.

Table 1. Frequency Distribution of Hypertension

Hypertension	Frequency	Percentage (%)
Yes	396	37.71
No	654	62.29
Total	**1050**	**100.00**

Primarily based on the table may be visible that respondents who do not suffer from hypertension as many as 654 respondents (62.29%).

Respondents' Obesity
The frequency distribution of obesity incidence in the elderly, categorized into two categories, namely obesity and non-obesity. Here is a table showing the frequency distribution of respondents' obesity. Based on the table 2 can be seen that respondents who suffer from obesity as many as 818 respondents (77.90%).

Table 2. Frequency Distribution Of Obesity

Obesity	Frequency	Percentage (%)
Yes	818	77.90
No	232	22.10
Total	**1050**	**100.00**

Smoking Respondents
The frequency distribution of smoking incidence in the elderly, categorized into two categories, namely smoking and not smoking. Here is a table showing the distribution of respondents ' smoking frequency. The table 3 can be seen that most of the respondents who do not have the habit of smoking there are 505 respondents (48.1%).

Table 3. Frequency Distribution of Smoking

Smoking	Frequency	Percentage (%)
Smoking	545	51.90
Not Smoking	505	48.10
Total	**1050**	**100.00**

Bivariate Analysis
The Relationship between Obesity and the Prevalence of Hypertension in the Elderly
The following is a table of statistical test results of the relationship between obesity variables with the incidence of high blood pressure in the old age. Based on the table, it can be seen that the respondents who suffer from hypertension are the most obese respondents as many as 265 respondents (32.4%). The results of statistical tests obtained a p value of 0.000 (p value< α), lt can be concluded that there is a relationship between obesity and hypertension. In the above analysis shows the calculation of the Prevalence Ratio (PR) of 0.46 (95% CI = 0.37-0.58) which means that the elderly who are obese have a risk of 0.46 times greater to suffer from hypertension than the elderly who do not suffer from obesity.

The results of this research indicate is there a relationship between obesity and the prevalence of hypertension in the elderly. These results are in line with research conducted by Misyati (2019) stating that obesity is associated with the incidence of hypertension in the elderly (p-value = 0.019). In line also with the research Sinaga et al. (2019) stated that is there any relationship between obesity and the incidence of high blood pressure in the old age (p-value = 0.044).

This research is also strengthened by the results of research conducted by Rury Widyasari and Raodah (2019) showing that there is a relationship between obesity and the incidence of hypertension in the elderly in the working area of the Ulee Kareng

Table 4. Bivariate Analysis of the Relationship Between Obesity and the Prevalence of Hypertension in the Elderly

Obesity	Hypertension				Total		PR (95% CI)	P – Value
	Hypertension		Not Hypertension					
	n	%	n	%	n	%		
Yes	265	32.4	553	67.60	818	100	0,46	0.000
No	131	56.47	101	43.53	232	100	(0.37-0.58)	

This research is also strengthened by the results of research conducted by Rury Widyasari and Raodah (2019) showing that there is a relationship between obesity and the incidence of hypertension in the elderly in the working area of the Ulee Kareng Banda Aceh Health Center (p-value = 0.0021). In line with Nurleny's research in 2021, it showed that there were more than half of the 52 (54.2%) respondents who were obese so that this study had a relationship between obesity and the incidence high blood pressure in the old age (p-value = 0.000).

The results of this study are in accordance with research at the elderly posyandu, Sidotopo Wetan Health Center, Surabaya city in 2020 showed a significant relationship between nutritional status and hypertension in the elderly, nutritional status of excess weight or obesity has a 1.32 times greater risk of hypertension compared to the elderly with normal nutritional status and underweight. In line with research Wang et al., (2018), showed that there is a relationship between obesity and hypertension in the elderly population in China (p-value = 0.000).

In this study obesity included protective factors or factors that reduce the chance of hypertension. In line with research conducted by Farida in four districts/cities that have the highest prevalence of hypertension in Java and Kalimantan in 2009, the nutritional status of obesity is said to be a protective factor against hypertension because a person does not consume foods at risk for hypertension (especially salty foods) even though a person is obese. Another study related to the consumption of salty foods also states that the consumption of salty foods ≥ 1 time/day becomes a protective factor against hypertension, because the consumption of salty foods does not take into account the related amount and type of food so that the effect of salty food consumption on hypertension is not proven (Tri Hardati and Andono Ahmad, 2017).

Obesity is a condition where a person is overweight as much as 20% or more of a person's ideal body weight. Obesity has a positive relationship to the incidence of hypertension. There is a hypothesis that increasing the relative normal weight by 10% can increase blood pressure by 7 mmHg (Ole, Basuki and Ricky, 2014).

The habit of eating unhealthy foods can increase the incidence of degenerative diseases, one of which is hypertension. There are some food habits that should be avoided or reduced in eating because it can trigger hypertension, including bread, biscuits, foods cooked with excess salt, smoked meat, jerky, shredded, salted fish, canned fish, dried shrimp, salted eggs, and others. The habit of eating healthy foods can protect the body from hypertension, including rice, potatoes, cassava, wheat flour, tapioca flour, hankue, vermicelli, foods cooked without salt, and others (Damanik and Sitompul, 2020)

Research conducted by Langingi (2021), states that respondents in their research like to consume high-fat foods that are associated with weight gain without being balanced by regular physical activity. In line also with the research Hasanah, et al (2016) that the majority of Javanese people who like to eat sweets and coconut milk but not balanced with healthy foods that can cause excess weight that over time can lead to obesity. The greater a person's body mass, the greater the amount of blood needed to provide oxygen and food to the tissues in the body, thus making the arterial walls will get greater pressure than usual, and will cause an increase in blood pressure (Ulumuddin and Yhuwono, 2018)

The Relationship between Smoking and the Prevalence of Hypertension in the Elderly

The following is a table of statistical test results of the relationship between smoking variables with the incidence of hypertension in the elderly Based on the table above, It can be seen that the most respondents who suffer from hypertension are respondents with smoking behavior that is as many as 232 respondents (42.6%). The results of statistical tests obtained a p value of 0.001 (p value < α), It can be concluded that there is a relationship between smoking and hypertension. In the analysis above shows the calculation of the Prevalence Ratio (PR) of 1.25 (95% CI = 1.09-1.44) which means that the elderly who smoke have a risk of 1.25 times greater to suffer from hypertension than the elderly who do not smoke.

The results of this study indicate that there is a relationship between smoking behavior with the incidence of hypertension in the elderly. These results are in line with research conducted by Fikri and Siregar (2020) related to hypertension factors in the elderly stating that smoking variables have a meaningful relationship (p-value = 0.046). Atwhu Wahyuddin et al. (2016) stated that smoking is significantly associated with the incidence of

Table 5. Bivariate Analysis of the Relationship between Smoking and the Prevalence of Hypertension in the Elderly

Smoking	Hypertension				Total		PR (95% CI)	P – Value
	Hypertension		Not Hypertension					
	n	%	n	%	n	%		
Smoking	232	42.6	313	57.4	545	100	1.25	0,001
Not Smoking	164	32.4	341	67.5	505	100	(1,09-1,44)	

hypertension in elderly men in the area of Puskesmas Medokan Ayu, Surabaya (p-value = 0.000).

In the study Ni'mah, et al (2017) stated that the risk factors for hypertension in the elderly in the Working Area of Puskesmas Pemurus Banjarmasin City, smoking behavior is associated with the incidence of hypertension (p-value = 0.006). The results of this study are also in in line with Dalina, 2018 research related to smoking status with the incidence of hypertension in the elderly has a significant relationship (p-value = 0.040), as many as 27 respondents are smokers and have hypertension. In line with research related to smoking habits with hypertension, there is a significant relationship (p-value 0.03) (Rani, et al 2020).

Cigarette smoke can vasocontrict peripheral blood vessels and vessels in the kidneys, leading to increased blood pressure. Smoking a cigarette every day will cause an increase in systolic pressure of 10-25 mmHg and make the heart rate increase 5-20 times per minute (Nudin and Yasmin, 2018). Based on research conducted by Alifah (2021), a person is said to be a heavy smoker if he smokes > 20 cigarettes per day. The more cigarettes smoked every day, the more levels of toxic chemicals contained in cigarettes that can cause hypertension.

Recapitulation of Bivariate Analysis Results

Recapitulation of the results of this statistical test is a summary of the test that has been done on each independent variable and dependent variable. In the table below is the result of a recapitulation of all variables that have been.

Tabel 6. Summary of Bivariate Analysis Results

No.	Variable	P-value	Correlation	PR (95% CI)	Explanation
1.	Obesity	0,000	Significant	0,46 (0,37-0,58)	Elderly people who are obese have a 0.46 times greater risk of suffering from hypertension compared to elderly people who are not
2.	Smoking	0,001	Significant	1,25 (1,09-1,44)	Elderly who have the habit of smoking have a 1.25 times greater risk of suffering from hypertension than the elderly who do not have the habit of smoking.

CONCLUSION

Based on the results of related studies, the relationship between obesity, smoking, and physical activity with the incidence of hypertension in the elderly, the following conclusions were obtained:
1. The majority of respondents in this study did not have hypertension, were obese and had a smoking habit,
2. There is a relationship between obesity and the incidence of high blood pressure in the elderly.
3. There is a relationship between smoking and the incidence of hypertension in the elderly.

It is expected that people with hypertension, especially the elderly, can implement healthy lifestyle behaviors by eating healthy and nutritious foods such as not consuming foods that trigger hypertension (salty foods, sweet foods/drinks, fatty foods and preserved foods), avoiding smoking habits, doing physical activities by increasing sports or doing physical activities such as walking. It is also expected to routinely check blood pressure and take antihypertensive drugs regularly as recommended so as to minimize the occurrence of complications due to hypertension.

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