

RELATIONSHIP OF OBESITY WITH HYPERTENSION DISEASE IN PUSKESMAS LEGUNG, SUMENEP REGENCY

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ABSTRACT

Hypertension is defined as an increase in systolic and diastolic blood pressure >140/90 mmHg in adults over the age of 18 years with at least 2 examinations. Obesity is overweight which is characterized by the results of a body mass index that is above normal. Measurement of body mass index can be done by measuring height, weight, upper arm circumference, as well as waist and hip circumference. The results of measurements of excess body mass index (obesity) are one of the factors that can trigger hypertension. Based on this, it is important to conduct research related to the relationship between obesity and hypertension. To determine the relationship between obesity and hypertension at the Legung Health Center, Batang-Batang District, Sumenep Regency. Using an observational analytic method with a cross sectional approach. From 133 research populations, 100 samples were selected using the Slovin formula calculation. Simple random sampling technique was used for sampling to be used in a random sample of hypertensive patients. Research Results: The number of respondents who are obese is 75 people. A total of 87 respondents had grade II hypertension and 13 respondents had grade I hypertension. Statistical analysis using the Chi-Square method obtained p value = 0.626 ($p > 0.05$) so it can be interpreted that there is no significant relationship between body mass index and hypertension. From the results of Chi-Square analysis, it is known that there is no significant relationship between body mass index and hypertension. Respondents with hypertension patients who are not obese may be due to the fact that patients always control their blood pressure by maintaining their diet by avoiding coconut milk and not eating fried foods.

Keywords: hypertension, obesity, body mass index, chi-square

INTRODUCTION

Hypertension is a disease that often occurs in the community which can be interpreted as an increase in systolic and diastolic blood pressure > 140/90 mmHg in adults over the age of 18 years with at least 2 examinations (Tanto C, 2014). According to the World Health Organization/WHO 2019, hypertension is a non-communicable disease which is one of the factors causing death in the world which is influenced by various factors of cardiac output and peripheral blood pressure such as high salt intake, obesity, stress, genetic factors, age and other factors (Krisnanda, 2017).

The incidence of hypertension globally reaches 22% of cases of the total population worldwide. Southeast Asia ranks the 3rd highest case with a prevalence of 25% of cases to the total population (WHO, 2019). Another source said that in 2025 the incidence of hypertension will continue to increase by around 29% of hypertension cases in the world (Dhartikasari, 2014). Meanwhile, the prevalence of hypertension in Indonesia reaches 34.1%. This figure increased quite high compared to the results of Riskesdas in 2013, where the incidence of hypertension based on the results of blood pressure measurements in Indonesia in 2013 was 25.8% (Tirtasari & Kodim, 2019). According to Basic Health Research (Riskesdas) data in 2019, the prevalence in patients diagnosed with hypertension and receiving health services in East Java province reached 35.60%, consisting of the proportion of men 48.83% and women 51.17%. Meanwhile, the prevalence of cases in Sumenep Regency reached 4.1% (Riskesdas Team, 2019).

Obesity is a health problem that is increasingly being found and is a trigger for various diseases, one of which is a trigger for hypertension. Obesity is a serious problem because the incidence of obesity is increasing every year. This increase in incidence occurred in 2013 and 2018 where the number of someone who was obese in Indonesia in 2013 was 14.8% while in 2018 it reached 21.8%. The cause of the increase in the incidence is due to changes in lifestyle and increasingly rapid globalization. The prevalence of obesity in East Java reaches 20.1%. (Tim Riskesdas, 2018).

Based on the results of measurements of body mass index, weight gain (obesity) is one of the factors that can cause several non-communicable diseases such as hypertension, diabetes mellitus and health improvement in the future (Archilona, et al., 2016). Some authors state that there is a relationship between obesity and hypertension (Febriyani, 2016). Body mass index is a tool used to monitor a person's nutritional status, so that we can find out whether a person's weight is normal, thin or fat. The method used to determine a person's body mass index by measuring height, weight, arm circumference, head circumference, waist circumference and hip circumference (Supariasa, et al., 2012). In this study, the relationship between obesity and hypertension will be discussed. The

existence of this study is expected to explain the relationship between obesity and hypertension in the Leung Health Center, Batang-Batang District, Sumenep Regency.

METHODS

This study uses an observational analytic method with a cross sectional research approach design, namely by collecting data at the same time and the researcher only observes without giving any treatment to the research subject (Pradana, 2014). On this basis, the research design is in accordance with the research to be carried out, namely to find out whether there is a relationship between body mass index and the incidence of hypertension at the Leung Health Center, Batang-Batang District, Sumenep Regency.

In this study, the data obtained from medical records were then entered into a table and analyzed using the Statistical Package for the Social Sciences (SPSS) version 25 program. Data analysis was carried out using the Chi-Square test because the data scale used was in nominal form.

This study obtained information on ethical feasibility by the Health Research Ethics Committee of the University of Muhammadiyah Surabaya No. 003/KET/II.3/AU/F/2022.

RESULTS

The characteristics of the respondents in this study were described based on BMI and blood pressure.

Table 1. Frequency Distribution of Respondents Based on BMI in November and December 2020

BMI Category	Frequency (n)	Percentage (%)
Weight Loss	1	1,0%
Light Level Skinny	4	4,0%
Normal	20	20,0%
Advantages of Light Level	53	53,0%
Overweight	22	22,0%
Total	100	100%

Based on table 5.7 above, it can be seen that the measurement of BMI that occurred in November and December there were most of the respondents experiencing mild excess levels as many as 53 people (53.0%), excess weight levels 22 people (22.0%), normal 20 people (20.0%), 4 people were light weight (4.0%) and at least 1 person was severely underweight category (1.0%).

Table 2. Frequency Distribution of Respondents Based on BP in November

Hypertension Category	Frequency (n)	Percentage (%)
Grade I hypertension (140-159)	13	13,0%
Grade II Hypertension (≥ 160)	87	87,0%
Total	100	100%

Based on table 5.8 above, it can be seen that most of the respondents had grade II hypertension (≥ 160) as many as 87 people (87.0%) and grade I hypertension 13 people (13.0%).

Table 3. Frequency Distribution of Respondents Based on BP in December

Hypertension Category	Frequency (n)	Percentage (%)
Prehypertension (120-139)	1	1,0%
Grade I hypertension (140-159)	56	56,0%
Grade II Hypertension (≥ 160)	43	43,0%
Total	100	100%

Based on Table 5.9 above, it can be seen that the number of respondents with prehypertension (120-139) is only 1 person (1.0%), the highest category of hypertension is with hypertension grade I (140-159) as many as 56 people (56.0%), and for hypertension grade II (≥ 160) 43 people (43.0%).

Table 4. Cross Tabulation Between Obesity and Hypertension

Obesity	Hypertension				Total	
	Yes		No			
	N	%	N	%	N	%
Yes	23	23,0%	9	9,0%	32	32%
No	55	55,0%	13	13,0%	68	68%
Total	78	78%	22	22%	100	100%

Based on Table 5.10 above, it can be seen that the number of respondents or samples of hypertensive patients who are obese are 23 people (23.0%), while those who are not obese are 55 people (55.0%). Patients who do not have hypertension but are obese as many as 9 people (9.0%). And patients who do not have hypertension and are not obese as many as 13 people (13.0%).

Analysis with Chi-Square method showed p value = 0.626 ($p > 0.05$). These results indicate that there is no significant relationship between Body Mass Index (BMI) and hypertension in respondents who were at the Legung Health Center, Sumenep Regency from November to December 2020.

DISCUSSION

From the results of research at the general polyclinic of the Ledung Public Health Center, Batang-Batang Sumenep District, it shows that the respondents or samples studied in November and December 2020, most of the research respondents experienced a mild increase in body weight as many as 53 people (53.0%) we can see in Table 5.7. Meanwhile, the least data was found in the heavy weight category, which was only 1 person (1.0%). For the overweight level as many as 22 people (22.0%) and for the normal level as many as 20 people (20.0%) from the total sample with obesity.

The results of this study are in line with research conducted by Tisna (2013) where in this study showed that hypertensive respondents with excess body weight were 11.76%, while respondents with normal weight were 0.58%. In addition, this study is also in line with research conducted by a previous study in 2011 which showed that someone who was overweight was greater in women (43.4%) than men (27.5%).

Based on the results of statistical tests in Table 5.8 to find out the number of frequency distributions, the number of samples in November who experienced hypertension grade I was 13 people (13.0%) which was only a small part when compared to respondents who experienced hypertension degree II with the highest total being 87 people. (87.0%). As for Table 5.9 in December the highest category of hypertension was in grade I hypertension with a total of 56 people (56.0%), of which 43 people (43.0%) were for grade II hypertension, and the least was in the prehypertension category with a total of only 1 person (1.0%) only.

The results of this study were conducted on 100 respondents or samples taken in November and December at the Legung Health Center, Sumenep Regency in 2020 which showed that in November many respondents had grade II hypertension when compared to respondents who had grade I hypertension with a percentage of 87.0% and 13.0%, for the results in December were inversely proportional to what happened in November which showed that more respondents had grade I hypertension than grade II hypertension as well as pre-hypertension with a percentage of 56.0%, 43.0% and 1.0%.

The results of this study are in line with research conducted by Anbarasan, in which the study showed that more patients had grade II hypertension, namely 34 people (56.7%) in elderly

patients (Suprayitno, 2019).

This shows that the hypertension level of the respondents studied in the 2 months period experienced instability, which means that respondents with hypertension could change at any time. Things that can affect changes in blood pressure include the use of antihypertensives, stress, consuming excess salt, and activities (Nuraini, 2015). Based on the results of research using the Chi-Square test to determine the relationship between obesity variables and the incidence of hypertension, the p value = $0.626 > 0.05$ which means that there is no relationship between obesity and the incidence of hypertension in respondents at the Legung Health Center, Sumenep Regency, so that respondents who are obese do not always have a greater risk of hypertension than respondents who are not obese.

From table 5.10 it can be concluded that the majority of respondents with hypertension patients are not obese, which is the possibility that respondents always control, maintain their diet from foods that contain coconut milk, and don't eat fried foods too often. In addition, how to cook food with coconut milk that is often warmed can increase the fat content in food which causes the buildup and formation of plaque in the blood vessels (atherosclerosis) to become narrower and reduce elasticity so that blood pressure can increase and become one of the risk factors for obesity and obesity. hypertension.

The results of this study are in line with research conducted by Rahwah (2010) that from 50 samples there were 68% of hypertensive patients who were obese while 44 samples contained 63.6% of hypertensive patients who were not obese. Where from the results of the study showed p value (0.820) > 0.05 , which means that there is no relationship between nutritional status of obesity and the incidence of hypertension.

The results of research conducted by Akbar (2017) also stated that there was no significant relationship between the two variables with $p = 0.131$ ($p > 0.05$). The results of this study are similar to research conducted in Tomohon City in 2015 which stated that there was no significant relationship between obesity and hypertension. In this study, the p value in Chi-Square analysis was 0.639 ($p > 0.05$).

CONCLUSION

From the results of the study, it can be concluded that there is no significant relationship between obesity and the incidence of hypertension at the Legung Health Center, Sumenep Regency with p value = $0.626 > 0.05$, so that it can be concluded that there is no statistical relationship between obesity and the incidence of hypertension.

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