

The Relationship Of Physical Activity And Abdominal Circumstances With The Event Of Hypertension In Obesity Women In Malang

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Article Information	ABSTRACT
<i>Received:</i> 08.02.2024	This study aims to analyze the level of relationship between physical activity and abdominal circumference with the incidence of hypertension in women in Malang Raya. The research method is observational using a cross sectional research design. The sample used is 100 people. The sampling technique was carried out by probability sampling or simple random sampling. The independent variables in this study were physical activity and abdominal circumference. The dependent variable is the incidence of hypertension. Respondents' criteria were having female sex, > 50 years old and having an abdominal circumference > 80 cm. Analysis of the data used is the Spearman rank statistical test. The results of the statistical test of physical activity with the incidence of hypertension resulted in a p value = 0.020 or there was a significant level of relationship between physical activity and the incidence of hypertension, with a correlation coefficient value of -0.232, namely the more often you do physical activity, the smaller the degree of hypertension experienced. The results of the statistical test of abdominal circumference with the incidence of hypertension resulted in a p value = 0.002 or there was a significant relationship between abdominal circumference and the incidence of hypertension, with a correlation coefficient value of 0.302, namely the greater the abdominal circumference, the higher the degree of hypertension.
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Introduction

Hypertension is a health case that must be watched out for throughout the world due to hypertension as a cause that refers to diseases related to blood vessels and heart disease which every year occurs 9.4 million cases of death caused by hypertension worldwide[1]. Hypertension occurs in Indonesia by 34.1% with an age prone to hypertension, namely at the age of 45-54 years by 45.3% and by 55.2% occurring at the age of 55-64 years[2]. In East Java Province, the percentage of hypertension is around 935,736 people or 13.47%, with the proportion of men around 387,913 people (13.78%) and women around 547,823 residents (13.25%) [3]. Hypertension in Malang City and Malang Regency during 2015-2018 became the second most common disease after ARI (Acute Respiratory Infection). The number of cases was 74,098 in 2015 and 97,498 in 2016[4]

Hypertension is a silent killer (Silent Killer), invisible and rarely causes symptoms. Elevated blood pressure is a serious sign that significant lifestyle changes (physical activity) are needed[5]. High blood pressure usually develops over time. This happens due to an unhealthy

lifestyle, lack of physical activity which can also lead to obesity which can increase the risk of developing high blood pressure[6]. The increasing prevalence of hypertension is also related to population growth, aging and unhealthy eating patterns, as well as a lack of physical activity such as exercise, overweight and stress.

Previous research conducted stated that there was a significant relationship between physical activity and blood pressure in the elderly in Malang Regency with hypertension grade 1 being the highest with moderate physical activity 14 people (46.7%) and hypertension grade 2 with moderate level of physical activity with a total of 3 people (10%)[7]. The results of a similar study carried out stated that there was a link between physical activity and hypertension in people with hypertension in Malang City with frequent physical activity or regular exercise to control hypertension[8].

Another study conducted explained that (abdominal obesity) is a triggering factor that has a high probability of causing hypertension[9]. The results of another study conducted revealed a relationship between abdominal circumference or central obesity with hypertension $p = 0.023$ ($\alpha = 0.05$) and showed that people with central obesity were 2.3 times at risk of suffering from hypertension than people who did not suffer from central obesity[10].

Method

The research method used is observational analysis using cross sectional which means measuring results in large groups and looking for correlation values between variables without being given treatment at one time. This research was carried out in Malang Raya which was carried out in three places, namely Malang Regency, Malang City and Batu City in December 2020 - January 2021. The population of this study was women in Greater Malang who had an abdominal circumference of > 80 cm and aged > 50 years. The sampling technique is using probability sampling method of simple random sampling type with a total sample of 100 samples. The main data collection was carried out based on interviews with respondents who became the object of research using questionnaires. Supporting data were obtained from abdominal circumference measurements and medical check-ups for hypertension markers. The statistical test in this study used the spearman bivariate test which was processed in the SPSS statistical data processing application for windows version 26.

Results

Characteristics by Age

Subjects in this study were in the age group 50-55 years as many as 43 people (43%), 56-60 years as many as 21 people (21%) and 61 years as many as 36 people (36%).

Table 1. Dissemination of respondent frequency by age

Age	Frequency	Percentage (%)
50-55	43	43
56-60	21	21
≥ 61	36	36
Amount	100	100

Characteristics Based on Physical Activity

Physical activity of 100 elderly women as many as 46 elderly (46%) who have a high level of physical activity category, 44 elderly (44%) have moderate physical activity category and 10 elderly (10%) have low category physical activity.

Table 2. Dissemination of respondent frequency based on physical activity

Physical Activity	Frequency	Percentage (%)
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Rendah	10	10
Sedang	44	44
Tinggi	46	46
Amount	100	100

Characteristics Based on Abdominal Circumference

The characteristics of the abdominal circumference of this study resulted that most of the subjects had an abdominal circumference of 80-89 as many as 59 respondents (59%), 90-99 as many as 25 respondents (25%) and 16 respondents (16%) had an abdominal circumference 100.

Table 3. Dissemination of respondent frequency based on abdominal circumference

Abdominal Circumference	Frequency	Percentage (%)
80 - 89	59	59
90 - 99	25	25
≥100	16	16
Amount	100	100

Characteristics based on the Incidence of Hypertension

The incidence of hypertension in elderly women, namely most of the elderly experienced the incidence of hypertension grade 1 as many as 30 people (30%), hypertension degree 2 as many as 21 people (21%), high normal as many as 17 people (17%), optimal category as many as 9 people (9 %), and isolated hypertension as many as 7 people (7%).

Table 4. Dissemination of the frequency of respondents based on the incidence of hypertension

Degree of Hypertension	Frequency	Percentage (%)
Optimal	9	9
Normal	7	7
Normal High	17	17
Degree 1	30	30
Degree 2	21	21
Degree 3	7	7
HST	9	9
Amount	100	100

Analysis of the Relationship of Physical Activity with Hypertension Incidence

Based on table 5, it is explained that there are 10 elderly people (10%) who have low physical activity with those suffering from hypertension including 4 elderly people (4%) suffering from grade 1 hypertension, 3 elderly people with hypertension (3%), and 1 elderly people (1%) have hypertension grade 3. A total of 44 elderly people (44%) who are physically active are suffering from hypertension which includes hypertension grade 1 as many as 14 elderly people (14%), hypertension grade 2 as many as 11 elderly people (11%) , 3 elderly people (3%) had grade 3, isolated systolic hypertension were 3 elderly people (3%), and 4 elderly people (4%) had normal hypertension degrees, and 4 elderly people (4%) had optimal hypertension levels. Of the total 46 subjects (46%) who had high physical activity, 12 elderly people had grade 1 hypertension (12%), 7 elderly people with grade 2 hypertension (7%), 3 elderly people (3%) had grade 3 hypertension, 3 elderly people had isolated systolic hypertension, and 13 elderly people (13%) had high normal hypertension, 4 elderly people (4%) had normal hypertension and 4 elderly people (4%) had optimal hypertension.

Tabel 5. Hasil analisis hubungan antara aktivitas fisik dengan derajat kejadian hipertensi

Physical Activity	DEGREE OF HYPERTENSION									<i>P value</i>
	O	N	NT	D1	D2	D3	HST	Amount		
	N	N	N	N	N	N	N	N	%	
Low	1	0	0	4	3	1	1	10	10	0,042
Medium	4	3	4	14	11	3	5	44	44	
High	4	4	13	12	7	3	3	46	46	
Amount	9	7	17	30	21	7	9	100	100	
Correlation coefficient – 0,204										

Tabel 6. Hasil analisis hubungan antara lingkar perut dengan derajat kejadian hipertensi

Abdominal Circumference	DEGREE OF HYPERTENSION									<i>P value</i>
	O	N	NT	D1	D2	D3	HST	Amount		
	N	N	N	N	N	N	N	N	%	
≥ 80	9	4	10	19	7	2	8	59	59	0,04 9
≥ 90	0	1	6	9	5	3	1	25	25	
≥ 100	0	2	1	2	9	2	0	16	16	
Amount	9	7	17	30	21	7	9	10	10	
									0	0
Correlation coefficient 0,198										

Analysis of the Relationship of Physical Activity with Hypertension Incidence

Table 6. explains that there are 59 elderly people (59%) who have an abdominal circumference of 80-89 with the incidence of hypertension degrees including 19 elderly people (19%) having hypertension degree of 1, 7 elderly people (7%) having degree 2, in grade 3 there are 2 elderly people (2%), 8 elderly people (8%) have isolated systolic hypertension, and 10 elderly people (10%) have high normal hypertension degree, 4 elderly people (4%) have normal hypertension degree, and 9 elderly (9%) had optimal hypertension degree. In elderly people who have an abdominal circumference of 90-99 there are 25 elderly people (25%) with the incidence of hypertension degree, 9 elderly people (9%) suffer from hypertension degree 1, degree 2 as many as 5 elderly people (5%), 3 elderly people (3%) had grade 3, 1 elderly person (1%) had isolated systolic hypertension, and 6 elderly people (6%) had high normal hypertension, and 1 elderly person (1%) had normal hypertension. In the abdominal circumference category 100, there were 16 elderly people (16%) with hypertension, namely 2 elderly people (2%) had grade 1 hypertension, in grade 2 hypertension 9 elderly people (9%), 2 elderly people (2%) had hypertension grade 3, and 1 elderly (1%) had high normal hypertension, 2 elderly people (2%) had normal hypertension.

Dicussion**The Relationship of Physical Activity With The Incidence Of Hypertension In Women In Malang Raya**

In table 5. Spearman rank test results show that the p value sig. based on physical activity with the incidence of hypertension in women in Malang Raya obtained p value = 0.042 > 0.05 this means that there is a relationship between physical activity and the incidence of hypertension in women in Malang Raya. The correlation coefficient value obtained is -0.204 indicating that the relationship between the two variables is very weak. The correlation coefficient value obtained is negative, which means that the direction of the relationship between the two variables is not in the same direction or opposite, meaning that the higher the physical activity, the lower the incidence of hypertension experienced by the respondent. Based on table 4.6, it can be seen that the majority of respondents with high activity have a degree of hypertension, namely normal height to degree 1 and degree 2 and 3 tend to be suffered by respondents who have moderate physical activity. So it can be said that the higher the physical activity carried out, the lower the degree of hypertension that will be experienced.

This is in line with previous research which made the elderly as the research sample by obtaining the Spearman rank test results of $0.001 < 0.05$ which explained that a significant correlation was found between physical activity and the degree of hypertension[11]. The same research was conducted which states that the proportion of elderly who suffer from hypertension has moderate physical activity, namely from 50 samples there are 21 respondents who have hypertension with a significance value of $p = 0.017 < 0.05$ which means that there is a significant correlation between physical activity performed with the incidence of hypertension[12]. The results of previous research [13] stated that from a total of 34 subjects with light activity, 23 people (67.6%) suffered from hypertension, while from a total of 30 subjects with moderate and heavy activity, 9 people (30%) suffered from hypertension with p value = 0.005 and states that subjects who do not often do physical activity are at risk of having the possibility of contracting hypertension 2.26 times more at risk than subjects who have moderate and heavy physical activity.

In this study, based on the cross tabulation table between physical activity and hypertension, the subjects who had less physical activity suffered from hypertension grades 1 and 2 as many as 9 elderly people, while those who did not have hypertension only 1 elderly. Subjects who did moderate physical activity who suffered from hypertension grades 1 and 2 were 33 elderly people and 11 people who did not have hypertension. Subjects who have high physical activity and who suffer from hypertension grades 1 and 2 are 21 elderly people and those who do not suffer from hypertension are 25 elderly people, so that from 42% of respondents experience an increase in blood pressure if they have mild to moderate physical activity.

The Relationship between Abdominal Circumference and the Incidence of Hypertension in Women in Greater Malang

In table 6. the results of the Spearman rank test show that the p value sig. Based on abdominal circumference and blood pressure, p value = $0.049 > 0.05$, this means that there is a relationship between abdominal circumference and the degree of hypertension in women in Malang Raya. The correlation coefficient value obtained is 0.198 indicating that the correlation between the two variables is very weak. The value of the correlation coefficient is positive, which means that the direction of the relationship is in the same direction or if the waist circumference is higher, the incidence of hypertension also increases.

The results above agree with [14] which was conducted in Galan Tiortosari hamlet, Kretek Bantul, Yogyakarta and got a p value of $0.008 < 0.05$ or there is a significant correlation between abdominal circumference and hypertension. The same study conducted [15] describes that abdominal obesity is a risk factor for hypertension with a p value = 0.002 and a PR value = 2.556, which means that subjects with abdominal obesity have 2.556 times greater risk than those without abdominal obesity. In the study of [16] which was carried out in 4 areas in the city of Padang, West Sumatra Province by taking samples aged 35-65 years, the results were p value = 0.009 and stated that hypertension was often found in subjects with abdominal obesity problems. compared with subjects who are not abdominal obesity.

CONCLUSION

From the description above, it was found that there was a relationship between physical activity and the incidence of hypertension in elderly women in Malang, and there was also a relationship between abdominal circumference and the incidence of hypertension in elderly women in Malang.

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