

RELATIONSHIP OF PHYSICAL ACTIVITIES AND FAMILY HISTORY WITH HYPERTENSION INCIDENCE LEVEL IN ANGGALOMOARE SUBDISTRICT COMMUNITIES

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ABSTRACT

Background: Hypertension is a condition where systolic blood pressure ≥ 140 mmHg and diastolic pressure ≥ 90 mmHg at two measurements with intervals of five minutes in a resting state. Many factors can cause hypertension including physical activity and family history. **Purpose:** The purpose of this study was to determine the relationship of physical activity and family history of hypertension and the incidence of hypertension in the community in Anggalomoare Subdistrict. **Method:** This research is an observational analytic study with cross sectional design with independent variables are physical activity and family history and the dependent variable is hypertension. The sample of hypertension sufferers as many as 120 respondents were taken using purposive sampling technique and using Chi Square data analysis. Data were collected using the International Physical Activity Questionnaire questionnaire and family history questionnaire with a 95% confidence level ($\alpha \leq 0.05$). **Results:** Respondents with moderate physical activity more than mild activities and severe, the results of the study showed a relationship between physical activity and the incidence of hypertension with a p value 0.002. Respondents who have a family history of hypertension are more than respondents who do not have a family history of hypertension and the results of the study there is a relationship of family history of hypertension with the incidence of hypertension with a p value 0,000. **Conclusion:** There is a relationship between physical activity and family history of hypertension with the incidence of hypertension in the community in Anggalomoare subdistrict.

INTRODUCTION

Hypertension is a condition where systolic blood pressure ≥ 140 mmHg and diastolic pressure ≥ 90 mmHg on two measurements with an interval of five minutes at rest (3). billion people worldwide suffer from hypertension. The prevalence of hypertension in Southeast Sulawesi obtained through measurements in the 18-year-old population was 29.7% (11,12). Based on data from the Konawe District Health Office, hypertension is ranked first in non-communicable diseases, totaling 1310 cases in 2018. Lifestyle is an important factor that affects people's lives. Unhealthy lifestyles can be the cause of hypertension such as physical activity, stress, and the wrong diet is one of the risk factors that increase hypertension (10). Physical activity greatly affects blood pressure stability. People who are not active tend to have a higher heart rate frequency. This causes the heart muscle to work harder with each contraction. The harder the heart muscle pumps blood, the greater the blood pressure that imposes on the Arteta wall so that peripheral resistance causes an increase in blood pressure. Lack of physical activity can also

increase the risk of being overweight which will cause the risk of hypertension to increase (4). Several studies have found genetic factors and 70-80% of essential hypertension cases are accompanied by a family history of hypertension (9). This study aims to analyse the relationship between physical activity and family history of hypertension with the incidence rate of hypertension.

METHODOLOGY

This study is an observational analytical study between one variable and another using a Cross-Sectional design. The sample of this study amounted to 120 respondents taken using purposive sampling with the target population, namely all patients diagnosed with hypertension at the Agglomerate Health Centre. The sample inclusion criteria were people who resided in the Agglomerate District area and were willing to become respondents, people who were found to have more than normal pressure and were aged 18-64 years. The dependent variable of this study was hypertension and the independent variables were physical activity and family history, data were obtained using the International Physical Activity Questionnaire and family history questionnaire. Data were analyzed using Chi Square test which is to determine the relationship between the dependent variable and the independent variable.

RESULTS AND DISCUSSION

Characteristics		n	%
Age	18-24 Years	27	22,5
	25-34 Years	18	15
	35-44 Years	29	24,2
	45-54 Years	31	25,8
	55-64 Years	15	12,5
Gender	Male	99	82,5
	Female	21	17,5

(Source: Primary data, 2019)

Based on table 1 above, the age distribution of the most respondents at the age of 45-54 years was 32 respondents (26.7%), followed by age 35-44 years as many as 29 respondents (24.1%), respondents aged 18-24 years as many as 27 respondents (22.5%), age 25-34 years as many as 18 respondents (15%), and the least age 55-64 years as many as 14 respondents (11.7%). Based on table 1, the distribution of male respondents was 99 respondents (82.5%) and female respondents were 22 respondents (17.5%). Based on Table 2, the distribution of respondents obtained with moderate activity was 69 respondents (57.5%), heavy activity was 27 respondents (22.5%), light physical activity was 24 respondents (20.0%). Based on table 2, the distribution of respondents obtained hypertension patients with a family history of as many as 66 respondents (55%), respondents who did not have a family history were 54 respondents (45%). Based on table 5, the distribution of respondents who obtained stage 1 hypertension was 63 respondents (52.5%), followed by pre-hypertension as many as 30 respondents (25.0%), and respondents who obtained stage 2 hypertension were 27 respondents (22.5%).

Table 2. Distribution of respondents based on family history, physical activity and hypertension

Variable	n	%
Family History		
At Risk	66	55

Non At Risk	54	45
Physical Activities		
Light	24	20,0
Medium	69	57,5
Heavy	27	22,5
Hypertension		
Pre Hypertension	30	25,0
Stage 1 Hypertension	63	52,5
Stage 2 Hypertension	27	22,5
Total	120	100

(Source: Primary Data, 2019)

Table 3. The relationship between physical activity and the incidence of hypertension in the community in Agglomerate Sub-district

Physical Activities	Incidence Rate Of Hypertension						Total		p-value
	Pre Hyp		Stage 1 Hyp		Stage 2 Hyp		N	%	
	n	%	N	%	n	%			
Light	8	6,67	7	5,83	9	7,50	24	20,0	0,002
Medium	10	8,33	46	38,33	13	10,83	69	57,5	
Heavy	12	10,0	10	8,33	5	4,17	27	22,5	
Total	30	25	63	52,49	27	22,5	120	100	

(Source: primary Data, 2019).

Based on table 3 there are 69 (57.5%) respondents who do moderate physical activity where pre hypertension is 10 (8.33%) respondents, stage 1 hypertension is 46 (38.33%) respondents and stage 2 hypertension is 13 (10.83%) respondents, followed by 27 (22.5%) respondents who do heavy physical activity with the incidence of pre hypertension as many as 12 (10%) respondents, stage 1 hypertension is 10 (8.33%) respondents and stage 2 hypertension is 5 (4.17) respondents. Then there are 24 (20%) respondents who do light physical activity with pre hypertension 8 (6.67%) respondents, stage 1 hypertension is 7. Then there are 24 (20%) respondents who do light physical activity with pre hypertension 8 (6.67%) respondents, stage 1 hypertension there are 7. The results of the analysis obtained a p value of 0.002 indicate that there is a relationship between physical activity and the incidence of hypertension. Based on table 4, there are 66 (55%) respondents who have a family history (heredity) of hypertension who experience the incidence of pre-hypertension (5.83%) respondents and stage 2 hypertension there are 9 (7.5%) respondents. There are 6 (5%) respondents, stage 1 hypertension there are 36 (30%) respondents and stage 2 hypertension there are 37 (22.5) respondents. Then as many as 54 (45%) respondents who did not have a family history (heredity) but suffered from hypertension with the incidence of pre hypertension as many as 24 (20%) respondents, stage 1 hypertension as many as 27 (22.5%) respondents and stage 2 hypertension as many as 3 (2.5%) respondents. The results of the analysis obtained a p value of 0.000, indicating that there is an association between family history of hypertension and the incidence of hypertension.

Table 4. Relationship between family history and incidence of hypertension in the community in Agglomerate Sub-district

Family History	Incidence Rates Of Hypertension						Total		p-value
	Pre Hyp		Stage 1 Hyp		Stage 2 Hyp		n	%	
	n	%	n	%	n	%			

At Risk	6	5	36	30,0	24	20,0	66	55	0,000
Non At Risk	24	20	27	22,5	3	2,5	54	45	
Total	30	25	63	52,5	27	22,5	120	100	

(Source: Primary Data, 2019)

Discussion

People with low levels of physical activity but uncontrolled appetite can lead to excessive energy consumption which will then lead to weight gain and obesity. Increased body weight can cause an increase in blood volume so that the burden on the heart to pump blood also increases. The heavier the work of the heart in pumping blood throughout the body, the peripheral pressure and cardiac output can increase (9). The results showed that most of the study respondents had a moderate level of physical activity with MET values ≥ 600 to < 3000 MET-minutes/week with most activities being sitting, gardening and walking. Based on the results of the study, it was found that there was a relationship between physical activity and the incidence rate of hypertension with a p value of 0.002. The results of this study are in line with (6), that there is a relationship between physical activity and the degree of hypertension with a p value of 0.039. This is because activity or exercise greatly affects the occurrence of hypertension, where people who lack activity will tend to have a higher heart rate frequency so that the heart muscle will work harder in each contraction. The harder and more often the heart muscle pumps, the greater the pressure imposed on the arteries (2).

The results of the study showed that there were respondents who had heavy physical activity but suffered from hypertension, this was likely due to other factors that influence hypertension such as food consumption patterns. This is in line with the research (1), showing that there is a relationship between salty food consumption and the incidence of hypertension p 0.000. The results of this study found that 55% of hypertensive respondents had a family history of hypertension. There are about 6.06% of respondents who have a family history of hypertension from both parents.... Then respondents who had a family history from their father were 46.97% and from their mother were 34.85%. While 12.12% of respondents have a family history from their own siblings. This is in line with research conducted (8), that there is a relationship between family history and hypertension.

The relationship between family history of hypertension and the incidence of hypertension is also produced by research (7), the risk of hypertension increases in offspring who come from parents who have a history of hypertension. The risk of hypertension is even greater when both parents suffer from hypertension. Therefore, hypertension can be called hereditary and related to genetics. Based on the results of research conducted, said there are abnormalities in the angiotensinogen gene but the mechanism may be polygenic (5). Genes that play a role in the mechanism of hypertension are genes that affect sodium homeostasis in the kidney, including the I/D (insertion/deletion) polymorphism of the Angiotensin Converting Enzyme (ACE) gene, and genes that affect steroid metabolism. Studies suggest the I/D polymorphism of the ACE gene can produce 3 genotypes: II homozygous, ID heterozygous and DD homozygous. Individuals with homozygous DD have higher ACE concentrations and hence higher angiotensin II concentrations. High angiotensin II can cause a progressive increase in blood pressure through 2 mechanisms: vasoconstriction in peripheral arteries and decreased excretion of salt and water by the kidneys.

CONCLUSION

There is an association between physical activity and family history of hypertension with the incidence of hypertension.

Advice

Further researchers and health institutions, especially the Anggalomoare Health Centre, are expected to increase promotive and preventive activities related to hypertension to the people of Anggalomoare Subdistrict.

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