Risk Factors for Hypertension in Outpatients at the Mother and Child Hospital in Aceh Province

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Abstract— Introduction: Hypertension or high blood pressure is a condition where systolic blood pressure is ≥140 mmHg and diastolic blood pressure is ≥90 mmHg. In general, hypertension often occurs without complaints, so that patients do not know they have hypertension and are only known after complications occur. The risk factors for hypertension can be distinguished into risk factors that cannot be changed (such as family history, gender, and age) and risk factors that can be changed, such as being overweight or obese, lack of exercise or physical activity, smoking, stress, alcohol consumption and salt consumption. Objective: this is to find out the risk factors for hypertension at the Mother and Child Hospital in Aceh province in 2022. Methodology: This research is a type of analytic survey research using a quantitative method approach of the analytic observational type with a case control (retrospective) study design. The population in this study were all hypertensive patients who visited the outpatient polyclinic at the Mother Children's Hospital in the province of Aceh, a total of 2,740 people and the case sample was 97 while the control sample was 97 people. Data were processed univariately, bivariately and multivariately. Results: The results showed that there was a relationship between genetic history (P value 0.005), obesity (P value 0.000), diet (P value 0.002), while physical activity (P value 0.23) which means there is no relationship to the incidence of hypertension (P value 0.23). Recommendations: The results of this study indicate that the most dominant factor related to the incidence of hypertension is obesity.

Keywords— Hypertension, Family History, Obesity, Diet, Physical Activity.

I. Introduction

Hypertension or high blood pressure is a condition where systolic blood pressure is ≥140 mmHg and/or diastolic blood pressure is ≥90 mmHg. In general, hypertension often occurs without complaints, so that patients do not know they have hypertension and are only known after complications occur. Therefore, hypertension is said to be the silent killer. Uncontrolled increase in blood pressure can cause kidney disease, heart disease and stroke which can end in death (Kemenkes, 2019).

The 2018 Basic Health Research (Riskesdas) stated that the prevalence of hypertension based on measurement results in residents aged ≥18 years was 34.1%, the highest was in South Kalimantan (44.1%), while the lowest was in Papua (22.2%). The estimated number of cases of hypertension in Indonesia is 63,309,620 people, while the death rate in Indonesia due to hypertension is 427,218 deaths. Outpatient data obtained at the Banda Aceh RSIA in 2019 showed that hypertension was in the second highest rank with a total of 3,188 cases (17.75%). In 2020 hypertension is still in second place, namely 1,886 people (15.83%).

In 2021 there will be a significant increase where hypertension is the highest number 1 disease with a total of 2,740 patients (27.49%) The impact of hypertension if not treated immediately can result in fatal disorders. These abnormalities, for example, blood vessel disorders, heart (cardiovascular) and kidney disorders, even rupture of capillaries in the brain or more commonly referred to as strokes and ending in death (Sarumaha, 2018).

Many risk factors as a cause of hypertension. The risk factors for hypertension can be distinguished into risk factors that cannot be changed (such as family history, gender, and age) and risk factors that can be changed, such as being overweight or obese, lack of exercise or physical activity, smoking, stress, alcohol consumption and alcohol consumption. salt (Sarumaha, 2018).

Individuals with a family history of hypertension have twice the risk of suffering from hypertension than people who do not have a family history of hypertension. Hypertension increases with age, and men have a higher risk of developing hypertension earlier. Obesity can also increase the incidence of hypertension, this is because fat can cause blockages in blood vessels so that it can increase blood pressure gradually. Salt intake between 5-15 grams per day can also increase the prevalence of hypertension by 15-20%. Smoking habits have an effect on increasing the risk of hypertension even though the mechanism for the emergence of hypertension is not known with certainty (Pramana, 2016).

Based on these problems, the researcher is interested in conducting research related to "Risk Factors for Hypertension in Outpatients at the Mother and Child Hospital in Aceh Province".

II. Method

This research is a quantitative observational analytic type study with a case control (retrospective) study design. Effects or disease are identified at this time, then viewed retrospectively (past time) for the occurrence of risk factors. According to (Soekidjo Notoadmojo 2012), Analytic Survey is a study that tries to explore how and why health phenomena occur. This study aims to look at the relationship between the factors that influence the occurrence of hypertension in the Mother and Child Hospital in Aceh Province.

A. Location

This research was conducted at the Outpatient Clinic for Mother and Child Hospital (RSIA) in Aceh Province.

B. Time of Research

The time for the research was conducted from 04 to 28 April 2023.

C. The Sample in This Research

The population in this study were all hypertensive patients visiting the outpatient polyclinic at the Mother Children's Hospital in Aceh province. so that in this study at least researchers will take a sample of at least 97 people

III. RESEARCH RESULTS

From Table 1. in the case group, there were 97 respondents (100) aged ≥ 31 years. While respondents aged ≤ 31 years, were not found at all in this study. For the control group, there were 11 respondents (11.3%) who were aged ≥ 31 years. While the respondents aged ≤ 31 years were around 86 (88.7%).

Regarding the work variable in the case group, it can be seen that 4 respondents (4.12%) had jobs as civil servants. Meanwhile, 35 respondents (36.08%) worked as entrepreneurs, and 58 (59.8%) worked as IRT. Then in the control group. there were respondents who had jobs as civil servants as many as 6 respondents (11.4%). Meanwhile, 38 respondents (34%) worked as entrepreneurs, and 53 (54.6%) worked as IRT.

Regarding a family history of hypertension, it can be analyzed that the respondents in the case group who had a family history of hypertension were 34 respondents (35.05%). Meanwhile, there were 63 respondents (64.95%) who did not have a history of hypertension in their family. For the control group who had a family history of hypertension, there were 38 respondents (39.17%). Meanwhile, there were 59 respondents (60.83%) who did not have a history of hypertension in their family.

Furthermore regarding body weight, it can be analyzed that respondents in the case group who were obese were 91 respondents (93.81%). Meanwhile, only 6 respondents (6.19%) were not obese. For the control group, there were 66 respondents (68.05%) who were obese. Meanwhile, only 31 respondents (31.95%) were not obese. While on the dietary pattern variable it can be analyzed that the respondents in the case group who had a good eating pattern were 8 respondents (8.25). While as many as 89 respondents (91.75%) had a bad eating pattern. For the control group, there were 25 respondents (25,785) who had a good diet.

While the very dominant were respondents who did not have a good diet, namely as many as 72 people (74.22%). there were respondents who had jobs as civil servants as many as 6 respondents (11.4%). Meanwhile, 38 respondents (34%) worked as entrepreneurs, and 53 (54.6%) worked as housewives. Regarding a family history of suffering from hypertension, it can be analyzed that the respondents in the case group who had a family history of hypertension were 34 respondents (35.05%). Meanwhile, there were 63 respondents (64.95%) who did not have a history of hypertension in their family. For the control group who had a family history of hypertension, there were 38 respondents (39.17%). Meanwhile, there were 59 respondents (60.83%) who did not have a history of hypertension in their family. Furthermore, regarding weight

Meanwhile, only 6 respondents (6.19%) were not obese. For the control group, there were 66 respondents (68.05%) who were obese. Meanwhile, only 31 respondents (31.95%) were not obese. While on the dietary pattern variable it can be analyzed that the respondents in the case group who had a good eating pattern were 8 respondents (8.25). While as many as 89 respondents (91.75%) had a bad eating pattern. For the control group, there were 25 respondents (25,785) who had a good diet. While the very dominant were respondents who did not have a good diet, namely as many as 72 people (74.22%).

Still in table 1, it can be analyzed that the respondents in the case group who had a good diet were only 14 respondents (14.44). Meanwhile, 83 respondents (85.56%) had no eating patterns. Meanwhile, in the control group, there were 28 respondents (28.86) who had good activity. While those who did not have good activity were 69 respondents (71.14%).

TABLE 1. Frequency analysis of univariate data for the case and control groups obtained the following results:

Characteristics		N	%
Age (Case)	≥ 31 Years	97	100
	≤ 31 Years	0	0
Age (Control)	≥ 31 Years	11	11,3
	≤ 31 Years	86	88.7
Occupation (Case)	civil servant	4	4,12
	Self-employed	35	36.08
	IRT	58	59.8
Work (Control)	civil servant	6	11,4
	Self-employed	38	36.08
	IRT	53	56,8
Family History (Case)	There is	34	39,17
	There isn't any	63	60,83
Family History (Controls)	There is	38	39,17
	There isn't any	59	60,89
Weight (case)	Obesity	17	33,3
	No	30	58,9
Body weight (control)	Obesity	66	68.05
	No	31	31.95
Diet (case)	Good	8	8,25
	No	89	91.75
Diet (control)	Good	25	25.78
	No	75	74,22
Pattern of activity (case)	Good	14	14,44
	No	83	85.56
Activity pattern (control)	Good	28	28,86
	No	69	71,14

TABLE 2. The Relationship Between Family History and the Risk of Hypertension.

Family History	Hypertension Status				Total		P-Value	OR
	Control		Case					
	f	%	f	%	f	%		
No	81	83.5	63	64,9	144	74,2	0.005	2,723 (1.385-5389)
There is	16	16.5	34	35,1	50	25,8		
Amount					194	100		

Table 2. shows that the most common family history of hypertension is in the case group, namely 34 (35.1%) respondents. Based on statistical tests at 5% alpha, a P-value of 0.005 was obtained. This value indicates that there is a significant relationship between family history and the incidence of hypertension. In addition, an OR value of 2,732 was obtained for the family history variable. This value indicates that people who have a family history of hypertension

are 2,732 times more at risk of experiencing hypertension than people who do not have a family history of hypertension.

Table 3 shows that the most common family history of hypertension was in the case group, namely 34 (35.1%) respondents. Based on statistical tests at 5% alpha, a P-value of 0.005 was obtained. This value indicates that there is a significant relationship between family history and the incidence of hypertension. In addition, an OR value of 2,732 was obtained for the family history variable. This value indicates that people who have a family history of hypertension are 2,732 times more at risk of experiencing hypertension than people who do not have a family history of hypertension.

TABLE 3. The Relationship Between Obesity and the Risk of Hypertension.

| Obesity | Hypertension Status | | | | Total | | P-Value | OR |
| | Control | | Case | | | | | |
	f	%	f	%	f	%		
No	31	32.0	6	6,2	37	19,1	0.000	7.124 (2,811-18,052)
Obesity	66	68.0	91	93.8	157	80.9		
Amount					194	100		

Table 4. shows that the number of respondents who have a bad eating pattern is in the case group (91.8%). Based on the statistical test of 35 at 5% alpha, a P-value of 0.002 was obtained. This value indicates that there is a significant relationship between dietary history and the incidence of hypertension. In addition, an OR value of 259 was obtained for the dietary history variable. This value indicates that people who have a bad diet are 259 times more at risk of developing hypertension than people who have a good diet.

TABLE 4. Relationship Between History of Diet and Risk of Hypertension.

| Pattern Eat | Hypertension Status | | | | Total | | P-Value | OR |
| | Control | | Case | | | | | |
	f	%	f	%	f	%		
Not good	72	74.8	89	91.8	161	83.0	0.002	.259 (110-608)
Good	25	25.8	8	8,2	33	17.0		
Amount					194	100		

Table 5. shows that respondents who had a pattern of physical activity that was not good were in the case group with a total of 83 (85.6%). Based on statistical tests at 5% alpha, a P-value of 0.23 was obtained. This value indicates that there is no significant relationship between a history of activity patterns and the incidence of hypertension.

TABLE 5. The Relationship Between Activity Patterns and the Risk of Hypertension.

| Pattern Physical Activity | Hypertension Status | | | | Total | | P-Value | OR |
| | Control | | Case | | | | | |
	f	%	f	%	f	%		
Not good	69	71,1	89	85.6	152	78.4	0.23	7.124 (2,811-18,052)
Good	28	28.9	14	14,4	42	21,6		
Amount					194	100		

Table 6 shows that when viewed from a significant value with a p value <0.05, the variable influences obesity (0.000) with an OR value (5.567) and family history (0.010) with an OR value (2.649). So it can be interpreted that the most dominant and significant independent variables influencing the incidence of hypertension are obesity and family history variables. Based on the Odd Ratio (OR) value, it can be

interpreted that the influence of family members has a 5,567 chance of causing hypertension. Likewise with a family history of 2,649 times the chance of causing hypertension.

TABLE 6. Multiple Logistic Regression Test.

| Variable | B | SE | Wald | df | Sig. | Exp (B) | 95% CI for EXP (B) | |
							Lower	Upper
Family History	.974	.377	6,673	1	010	2,649	78,40	5,548
Obesity	1,717	.492	12187	1	.000	5,567	21.60	14,596
Dietary habit	-1,167	.468	6,251	1	012	.311	.124	.777
Physical Activity	-.673	.407	2,736	1	.098	510	.230	1.133
Constant	-1,359	.484	7,875	1	005	.257		

IV. DISCUSSION

Relationship of Family History with the Risk of Hypertension

In this study, it was shown that the most common family history of hypertension was in the case group, namely 34 (35.1%) respondents. Based on statistical tests at 5% alpha, a P-value of 0.005 was obtained. This value indicates that there is a significant relationship between family history and the incidence of hypertension. In addition, an OR value of 2,732 was obtained for the family history variable. This value indicates that people who have 37 families with a history of hypertension are 2,732 times more at risk of experiencing hypertension than people who do not have a family history of hypertension.

The results of this study are relevant to research conducted by Dinda Asa (2020) which shows that there is a significant relationship between obesity and the incidence of hypertension. Respondents who have families with a history of hypertension have a risk of 5,066 times greater than respondents who do not have a family history of hypertension.

This is also similar according to (Yanita 2022) Hypertension is prone to occur in someone who has a family member with a history of high blood pressure. This is related to an increase in intracellular sodium levels and a low ratio between potassium to sodium. Individuals with parents with hypertension have a two times greater risk of suffering from hypertension than people who do not have a family history of hypertension.

The Relationship between Obesity and the Risk of Hypertension

In this study, it was found that there were more respondents who were obese in the case group, which was around 91 (93.8%), compared to the control group, which only had around 66 (68.0%). Based on statistical tests at 5% alpha, a P-value of 0.05 was obtained. These values indicate that there is a significant relationship between a history of obesity status and the incidence of hypertension. In addition, an OR value of 7,124 was obtained for the obesity history variable. This value indicates that people who are obese are 7.124 times more at risk of developing hypertension than people who are not obese.

These results are in accordance with research conducted by (Asyfah 2020) which shows the results of an analysis of the relationship between obesity and the incidence of hypertension in the working area of the inpatient Sidomulyo Health Center. Of the 18 respondents who were pre-obese, 17 respondents

(18.5%) had hypertension and 1 respondent (1.1%) of them did not have hypertension. While of the 74 respondents who were obese, 52 respondents (56.5%) had hypertension and 22 respondents (23.9) of whom did not have hypertension. Based on the results of statistical tests using the chi square test, a p value of 0.036 (p value <0.05) was obtained, so Ha was accepted, so it can be concluded that there is a significant relationship between obesity and hypertension in the working area of the Sidomulyo Health Center inpatient care.

According to Jiang, et al (2016) stated that, although the relationship between obesity and hypertension is clear in both children and adults, the mechanism by which obesity directly causes hypertension is being investigated. Sympathetic nervous system activation, amount of intra-abdominal and intra-vascular fat, sodium retention leading to increased renal reabsorption, and the renin-angiotensin system are thought to have important roles in the pathogenesis of obesity-associated hypertension.

The Relationship between Diet and the Risk of Hypertension.

Respondents who had a bad eating pattern were in the case group (91.8%). Based on statistical tests at 5% alpha, a Pvalue of 0.002 was obtained. This value indicates that there is a significant relationship between dietary history and the incidence of hypertension. In addition, an OR value of 259 was obtained for the dietary history variable. This value indicates that people who have a bad diet are 259 times more at risk of developing hypertension than people who have a good diet.

The results of this study are in accordance with research conducted by (Efendi, Adha, and Febriyanti 2022). The results showed that there was a tendency in the case group with frequent trigger eating patterns, namely 61.9% greater than in the control group. Based on the results of statistical test calculations Chi Square ($X2$) obtained p value = 0.009 (so that Ha is accepted. Thus it can be concluded that there is a relationship between trigger eating patterns and the incidence of hypertension in the elderly in Limbung Village, Dusun Mulyorejo Posyandu Bunda, Kubu Raya Regency, with an OR value of 95% CI 3.529 (1.4458.619) means that respondents with frequent trigger eating patterns are at risk of 3.529 times experiencing hypertension events compared to infrequent trigger eating patterns.

This research is also in accordance with what was explained (Yanita 2022) factors that can cause hypertension, one of which is consuming too much salt or consuming too little food that contains potassium. This can result in high sodium in the blood, so that fluids are retained and increase the pressure in the blood vessels

Relationship of Physical Activity Patterns with the Risk of Hypertension

From table above it can be seen that respondents who had a pattern of physical activity that was not good were in the case group with a total of 83 (85.6%). Based on statistical tests at 5% alpha, a P-value of 0.23 was obtained. This value indicates that there is no significant relationship between a history of activity patterns and the incidence of hypertension. These results show a difference with the research conducted by (Harahap, Rochadi, and Sarumpae 2018). the results of bivariate analysis using the

Chi-square test, in the case group as many as 30 people (68.2%) early adult men who had mild physical activity and 14 people (31.8%) early adult men who had moderate physical activity medium and heavy physique While in the control group there were 18 people (40, 9%) early adult men who have light physical activity and 26 people (59.1%) early adult men who have moderate and heavy physical activity. The results of statistical tests showed that there was an effect of physical activity on the incidence of hypertension (p = 0.010) at a significant level a = 0.05. Light physical activity has an estimated risk of 3 times suffering from hypertension compared to those with moderate and heavy physical activity.

Physical activity can lower a person's blood pressure, the more often physical activity is carried out, the smaller the risk of developing hypertension (Anisah, 2018). Lack of physical activity increases the risk of suffering from hypertension because it has a risk of being overweight. A person with less activity also tends to have a higher heart rate so that the heart has to work harder when it contracts and the pressure in the arteries increases (Sapitri & Suyanto, 2016).

Physical activity that is carried out regularly causes several changes such as the strengthening of the heart muscles so that the capacity becomes large and the contractions become strong and regular because the elasticity of blood vessels increases due to relaxation and vasodilation of blood vessels. In addition, physical activity also helps improve work efficiency heart as a whole (Mubarak, 2015).

V. CONCLUSION

The conclusions in this study are:
1. There is a relationship between family history and the incidence of hypertension, where in this study there was a P-value of 0.005 and an OR value of 2.732.
2. There is a relationship between obesity and the incidence of hypertension, where in this study there was a P-value of 0.000 and an OR value of 7,124.
3. There is a relationship between diet and the incidence of hypertension where in this study there was a P-value of 0.002 and an OR value of 259.
4. There is no relationship between physical activity and events, because the P-value is 0.23.
5. In the age variable, it was found that hypertension sufferers were over 30 years old, reaching more than 80%.
6. As for the gender variable, overall the respondents were female, therefore a bivariate test was not carried out

Research Ethics

The research ethics has been issued by the Head of the Health Research Ethics Committee (KEPPKN) of the Faculty of Medicine, Syiah Kuala University (USK) with registration number: 1171012P. Ethical Exempted with letter number: 049/EA/FK/2023

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