

## THE INFLUENCE FACTORS OF HYPERTENSION IN DAYAK AND BANJAR ETHNIC IN HULU SUNGAI SELATAN DISTRICT

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**Abstract**—Hulu Sungai Selatan Regency was ranked the 2nd highest for hypertension, which was 30.8%. The number of hypertension cases in Hulu Sungai Selatan district in 2014 was 1,675 people, in 2015 it was 2,449 people and increased in 2016 amounting to 2,671 people. The research aims to explain factors that influence the incidence of hypertension in Dayak and Banjar ethnics in Hulu Sungai Selatan Regency. This study uses a cross-sectional design using the comparative method. The results of bivariate analysis show that there is an influence between lack of physical activity in the male and female groups of Banjar ethnic (p-value 0.005), lack of physical activity in Dayak ethnics and Banjar ethnic (p-value 0.012), obesity in the Dayak ethnic (p-value 0.021), obesity in the Banjar ethnic (p-value 0.000), obesity in the Dayak ethnic group and Banjar ethnic (p-value 0,000 ), stress on the Banjar ethnic (p-value 0.005), While the family history of the Dayak ethnic (p-value 0.114), family history of the Banjar ethnic (p-value 0.405), family history of the Dayak ethnic and male groups Banjar ethnic (p-value 1,000), family history of female from the Dayak ethnic and female Banjar ethnic (p-value 1,000), family history of the Dayak and Banjar ethnics (p-value 0.083), smoking in the Dayak ethnic (p-value 0.49), smoking in the male group and Banjar ethnic female (p-value 0.317), smoking in Dayak and male Banjar ethnics (p-value 1,000), smoking in Dayak ethnic groups and Banjar ethnic female (p-value 1,000), smoking in Dayak and Banjar ethnics (p-value 0.561), lack of physical activity in Dayak and male Banjar ethnic groups (p-value 1,000), lack of physical activity in Dayak ethnic groups and Banjar female (p-value 1,000), obesity in the Dayak and male Banjar ethnic groups ( p-value 1,000), obesity in the Dayak ethnic group and the female Banjar ethnic ( p-value 1,000), consumption of vegetables and fruits less in the male group male and female of the Dayak ethnic (p-value 0.429), consumption of vegetables and fruit less in the group ok Banjar male and female (p-value 0.243), lack of vegetables and fruit consumption in the Dayak ethnic group and male Banjar ethnic ( p-value 1,000), lack of vegetable and fruit consumption in the Dayak ethnic group and female of the Banjar ethnic (p-value 1,000), the consumption of vegetables and fruit is less in the Dayak and Banjar ethnics (p-value 0.172), stress on the Dayak and male Banjar ethnic ( p-value 1,000), the stress on the Dayak and female Banjar ethnic (p-value 1,000), showed no influence with the incidence of hypertension. The multivariate results show that lack of physical activity, obesity and consumption of vegetables and fruits are less in the order the most dominant relates to the incidence of hypertension will decrease 18,556 times. For obesity variable value that if obesity decreases one time, then the incidence of hypertension will decrease 18,018 times. If fruit and vegetable consumption increased by one times the incidence of hypertension will decrease by 2,660 times compared to fruit and vegetable consumption is less.

**Keywords**— hypertension, Dayak ethnic, Banjar ethnic

### I. INTRODUCTION

Hypertension is still ranked high in the world and is still a health problem in both developed and developing countries. Hypertension is one of the highest causes of death among people in the world. This disease is also called the silent killer. The prevalence of hypertension has reached 31.7%

According to (WHO, 2014) there are about 600 million hypertensive sufferers worldwide. The highest prevalence occurs in the African region at 30%. The lowest prevalence is in the Americas by 18%. According to the American Heart Association (AHA), Americans over the age of 20 suffering from hypertension have reached numbers up to 74.5 million, but almost 90-95% of cases are the unknown cause (Ministry of Health RI, 2014). An estimated 80% increase in cases hypertension mainly occurs in developing countries in 2025, from some 639 million cases in 2000. This number is estimated to increase to 1.15 billion cases in 2025 (Ardiansyah, 2012).

Based on the 2016 Non-Communicable Disease Profile (PTM) data, the number of cases of hypertension in the First Level Health Facility (FHCF) was 166,511 cases, and of these, the largest was in women, namely 114,546 cases. South Hulu Sungai Regency was ranked the 2nd highest for the incidence of hypertension which was 30, 8%. The number of hypertension cases in Hulu Sungai Selatan district in 2014 was 1,675 people, in 2015 it was 2,449 people and increased in 2016 amounting to 2,671 people. Hypertension cases have increased in 3 consecutive years. The highest cases of hypertension are in the Daha Utara sub-district of 240 people and the Loksado sub-district of 66 people with hypertension in 2016.

While the incidence of hypertension according to age groups, was diagnosed with the most hypertension in the productive group (age 35-59 years) of 73,639 cases or 44% of the total number of patients according to age group. Based on an exciting background to analyze the factors that influence the incidence of hypertension in Dayak ethnics and Banjar ethnics in the Hulu Sungai Selatan district

## II. METHOD

The research used quantitative research design with a cross-sectional design. The population are hypertensive patients in Dayak and Banjar ethnic in the district of Hulu Sungai Selatan. While a sample of 52 respondents uses random sampling. Data were analyzed using Man Whitney different test for bivariate, and logistic regression test for multivariate with a significance level of 95%.

## III. RESULT AND DISCUSSION

**Table 1. Distribution of Respondents' Frequency by Characteristics on Dayak Ethnics**

Characteristics of Respondents	Male		Female	
	Amount(n)	Persentase (%)	Amount(n)	Percentage(%)
Gender	13	100	13	100
Age (year)				
<30	1	7.7	3	23.1
≥30	12	92.3	10	76,9
Blood Order				
<120/80	0	0	0	0
120/80	1	7.7	3	23.1
130/80	0	0	0	0
140/80	2	15.4	0	0
> 140/80	11	84.6	10	76, 9
Weight				
<50 Kg	0	0	1	7.7
> 50 Kg	13	100.0	12	92.3
Height				
<150 cm	0	0	2	15.4
> 150 cm	13	100	11	84.6

<b>Stomach Circumference</b>				
<80 cm	1	7.6	4	30.8
> 80 cm	9	69.2	3	23.1
> 90 cm	3	23.1	6	46.2
<b>Total</b>	<b>13</b>	<b>100</b>	<b>13</b>	<b>100</b>

Table 1 Based on the gender characteristics of respondents in male, there were 13 respondents (100%), and female gender was 13 respondents (100%). Based on the age characteristics of the number of 13 respondents in male as many as 4 respondents aged <30 years (31%) and 9 respondents aged  $\geq 30$  years (69.0%). Whereas from the number of 13 respondents to female as many as 2 respondents aged <30 years (15.4%) and 11 respondents aged  $\geq 30$  years (84%). Based on the characteristics of male pressure with the number of respondents 13 people, blood pressure 120/80 as many as 2 respondents (15.2%), 140/80 as many as 4 respondents (30.1%), > 140/80 as many as 7 respondents (53, 8%). Based on the characteristics of male body weight <50 kg as many as 0 respondents and > 50 kg as many as 13 respondents (100%). Female sex <50 kg as many as 3 respondents (23.1%) and > 50 kg as many as 10 respondents (76.9%). Base on the characteristics of male respondents <150 cm 0 respondents, and 150 cm as many as 13 respondents (100%) and for female respondents <150 cm as many as 2 respondents (15.2%), and > 150 cm as many as 11 respondents (84.6%). Based on the characteristics of the abdominal circumference of male gender <80 cm as much as 1 respondent (7.6%), > 80 cm as many as 6 respondents (46.1%), > 90 cm as many as 6 respondents (46.1%) and for this type male sex <80 cm as much as 2 respondents (15.4%), > 80 cm by 4 respondents (30.1%), > 90 cm by 7 respondents (53.8%).

**Table 2 Distribution of Frequency of Respondents by Characteristics on Banjar Ethnic**

Characteristics of Respondents	Male		Female	
	Amount(n)	Percentage(%)	Amount(n)	Percentage(%)
Gender	13	100	13	100
Age (year)				
<30	1	7.6	4	30.8
$\geq 30$	12	93	9	69.2
Blood Order				
<120/80	2	15.4	0	0
120/80	0	0	1	7,6
130/80	0	0	1	7.6
140/80	7	53.8	1	7.6
> 140/80	4	30.8	10	76,9
Weight				
<50 Kg	0	0	1	7.6
> 50 Kg	13	100	12	92.3
Height				
<150 cm	0	0	0	0
> 150 cm	13	100	13	100
Stomach Circumference				
<80 cm	0	0	3	23.1
> 80 cm	13	100	1	7.6
> 90 cm	0	0	9	69.2
<b>Total</b>	<b>13</b>	<b>100</b>	<b>13</b>	<b>100</b>

Table 2 Based on the gender characteristics of respondents in male, there were 13 respondents (100%), and female gender consisted of 13 respondents (100%). Based on the age characteristics of the number of 13 respondents in male as many as 1 respondent aged <30 years (, 7.6%) and 12 respondents (93%) aged  $\geq 30$  years (69.0%). While from the number of 13 respondents to female as many as 4 respondents aged <30 years (30.7%) and 9 respondents aged  $\geq 30$  years (69.3%). Based on the characteristics of male blood pressure with 13 respondents, 120/80 blood pressure was 1 respondent (7.6%), 140/80 were 5 respondents (38.4%), > 140/80 as many as 7 respondents (53.8 %). Based on the characteristics of male body weight <50 kg as many as 0 respondents and > 50 kg as many as 13 respondents (100%). Female gender <50 kg as many as 1 respondent (7.6%) and > 50 kg as many as 12 respondents (92.3%). Based on the characteristics of height, the number of male respondents <150 cm is 0 respondents, and 150 cm is 13 respondents (100%) and for female respondents <150 cm is 0 respondents, and > 150 cm is 13 respondents (100%). Based on the characteristics of the abdominal circumference of male gender <80 cm as many as 0 respondents (0%), > 80 cm as many as 2 respondents (15.1%), > 90 cm as many as 11 respondents (84.6%) and for female gender <80 cm as many as 1 respondent (7.6%), > 80 cm as many as 3 respondents (23%), > 90 cm as many as 9 respondents (69.3%).

**Table 3 Bivariate Analysis Results**

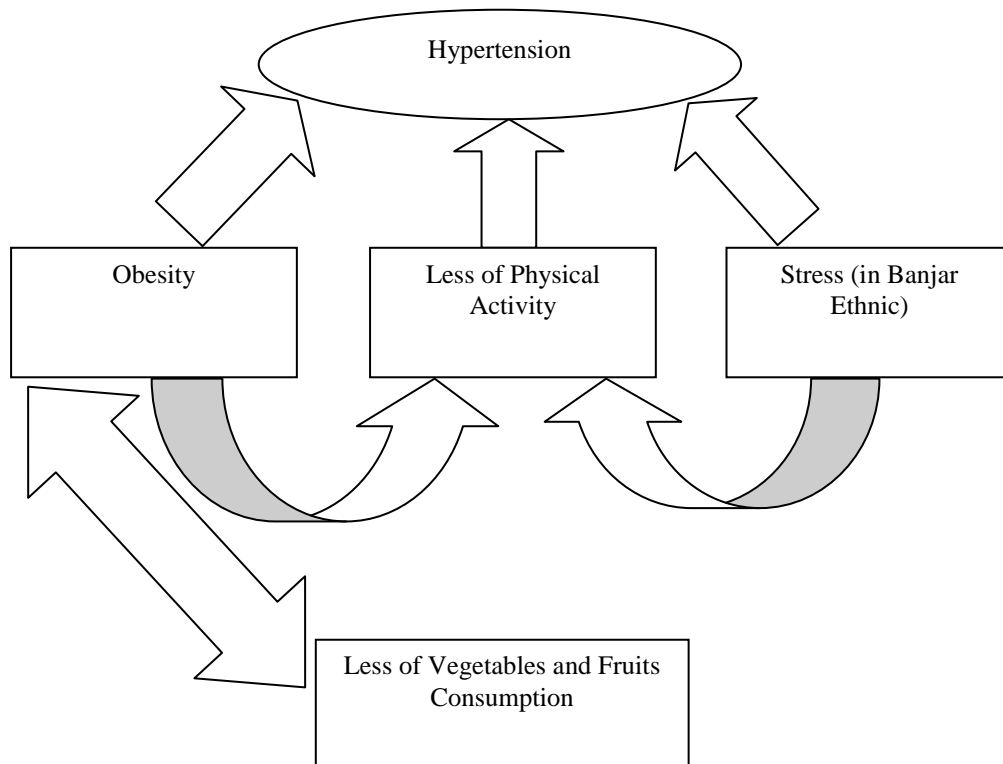
Variables	Dayak Ethnic				Asymp Sig / P Value	Banjar Ethnic				Asymp Sig / P Value	Merger				
	Man		Women			Man		Women			Dayak Ethnic		Sukan Banjar		Asymp Sig / P Value
	N	%	N	%		N	%	N	%		N	%	N	%	
<b>Less of Physical Activity</b>															
Yes	11	42.3	7	26.9	0.096	5	19.2	11	42.3	0.005 *	8	15.4	10	19.2	0.012 *
No	2	7.7	6	23.1		8	30.8	2	7.7		18	34.6	16	30.8	
Total	13	50.0	13	50.0		13	50.0	13	50.0		26	50.0	26	50.0	
<b>Obesity</b>															
Yes	3	11.5	9	34.6	0.021 *	0	0	10	38.5	0.000 *	12	23.1	10	19.2	0.000 *
No	10	38.5	4	15.4		13	50.0	3	11.5		14	26.9	16	30.8	
Total	13	50.0	13	50.0		13	50.0	13	50.0		26	50.0	26	50.0	
<b>Stress</b>															
Yes	5	19.2	3	11.5	0.405	5	19.2	1	3.8	0.005 *	8	15.4	9	17.3	0.773 *
No	8	30.8	10	38.5		8	30.8	12	46.2		18	34.6	17	32.7	
Total	13	50.0	13	50.0		13	50.0	13	50.0		26	50.0	26	50.0	

The results of the bivariate analysis showed that there was an influence between lack of physical activity in the Banjar ethnic of male and female (p-value 0.005), lack of physical activity in the Dayak ethnic and Banjar ethnic (p-value 0.012), obesity in the male group and Dayak female (p-value 0.021), obesity in the male and female group of Banjar ethnic (p-value 0.000), obesity in the Dayak and Banjar ethnic groups (p-value 0,000), stress in the male and female groups Banjar ethnic (p-value 0.005). While the family history of the Dayak ethnic of male and female (p-value 0.114), family history of the Banjar ethnic of male and female (p-value 0.405), family history of the Dayak ethnic and male groups Banjar ethnic (p-value 1.000), family history of the Dayak ethnic group and female Banjar ethnic (p-value 1,000), family history of the Dayak ethnic and Banjar ethnic (p-value 0.083), smoking in the male and female group Dayak ethnic (p-value 0.49), smoking in the Banjar ethnic of male and female (p-value 0.317) , smoking in the Dayak ethnic and male Banjar ethnic (p-value 1,000).

Smoking in Dayak ethnic groups and female of Banjar ethnic (p-value 1.000), smoking in Dayak and Banjar ethnics (p-value 0.561), lack of physical activity in Dayak ethnic male and Banjar ethnic male (p-value 1.000), lack of physical activity in Dayak ethnic groups and female of Banjar ethnic (p-value 1.000), obesity in Dayak and male Banjar ethnic (p-value 1.000), obesity in Dayak ethnic groups and female of Banjar ethnic (p-value 1.000), consumption of vegetables and fruits is

less in the Dayak ethnic group of male and female (p-value 0.429), consumption of vegetables and fruit is less in the Banjar ethnic of male and female (p-value 0,243), the consumption of vegetables and fruit is less in the Dayak and male Banjar ethnic (p-value 1,000), the consumption of vegetables and fruits is less in the Dayak ethnic group and the female Banjar ethnic (p-value 1.000), consumption fewer vegetables and fruits in the Dayak and Banjar ethnics (p-value 0.172), stress on the Dayak ethnic group and male Banjar ethnic (p-value 1,000), stressed in the Dayak ethnic group and female Banjar ethnic (p-value 1,000), showed no influence on the incidence of hypertension.

The results of the final analysis showed that the most dominant variable influenced the incidence of hypertension in Dayak and Banjar ethnics in the Hulu Sungai Selatan district, it is illustrated in the following model chart:



Based on multivariate modelling on Dayak and Banjar ethnics, it is known that the incidence of hypertension is influenced by lack of physical activity. Lack of physical activity can cause obesity. Obesity and lack of physical activity in Dayak and Banjar ethnics have an inseparable relationship that can affect the incidence of hypertension directly. Some of the causes of obesity are lack of physical activity and lack of consumption of vegetables and fruits. Research on Dayak and Banjar ethnics is one of the factors that can influence the incidence of hypertension, namely the consumption of vegetables and fruit is less. According to the results of research on the Banjar ethnic community, it is known that stress can affect the incidence of hypertension directly. Based on the results of the study that there is a relationship between stress and lack of physical activity, it can be said that the Banjar ethnic people with stress conditions tend to lack physical activity and can cause hypertension.

It contrasts with Jufri's research, et al. (2012) which states that there is no relationship between physical activity and the incidence of hypertension. Research by Kurniasih and Muhammad (2013) obtained a p-value of 0.549, which means that there was no statistically significant relationship between the level of physical activity and the incidence of hypertension in patients treated at Sron dol Health Center Semarang.

Novitaningtyas Research (2014) also mentions that physical activity is not related to blood pressure in the elderly in Makamhaj Village. The results of this study the results of statistical

analysis concluded that there was no significant relationship between physical activity with the incidence of hypertension. This is because most respondents have sufficient physical activity, and the average age of respondents who do not engage in physical activity or who have less physical activity is in the 85-99 year age group. The age group is already unable to carry out heavy activities. Even walking is notable and can only rest in bed.

According to the theory of Notoatmodjo (2010), physical activity is one manifestation of healthy behaviour related to health maintenance and improvement. Physical activity will be beneficial in regulating body weight and strengthening the heart and blood vessels and helps the body's metabolic system.

While obesity is a risk factor for hypertension. Obese patients have a risk of hypertension 2.2 times greater than subjects who have a normal BMI (Diana Natalia et al., 2014). This is reinforced from research in several developing countries that there is a significant relationship between obesity and the incidence of hypertension (Jafar TH, 2006; Humayun, 2009).

The results showed that there was a relationship between obesity and the incidence of hypertension in the General Polyclinic of the Touluaan Health Center in Southeast Minahasa Regency. The results of the statistical test showed  $p = 0,000$  ( $p < 0.05$ ) with an OR value of 3.48. The results of this study mean that respondents who are overweight are at risk 3.4 times experiencing hypertension than respondents who are not obese.

In line with the results of previous research conducted by (Fitriani, 2012) in the Labuang Baji General Hospital, Makassar, there was a relationship between stress and the incidence of hypertension. There is a significant relationship between stress and hypertension in outpatients at Rapak Mahang Health Center in Kutai Kartanegara Regency, East Kalimantan province (Katerin Indah, et al, 2015).

#### IV. CONCLUSION

Based on the results of the study the incidence of hypertension in the Dayak ethnic and the Banjar ethnic in the Hulu Sungai Selatan district was influenced by lack of physical activity and obesity. Lack of physical activity can cause obesity. Obesity and lack of physical activity in Dayak and Banjar ethnics have an inseparable relationship that can affect the incidence of hypertension directly. One factor that can also affect the incidence of hypertension is stress and lack of consumption of vegetables and fruits.

It is recommended that there be a policy from the government to urge the people of South Hulu Sungai Regency to increase physical activity and reduce obesity in the community with joint exercises before starting activities for example in Posyandu, Elderly Posyandu and Posbindu Non-Communicable Diseases and also improve health promotion through counselling about hypertension and also people are encouraged to conduct early detection of non-communicable diseases (PTM), especially hypertension routinely to the nearest health facilities to find out and improve health status, primarily to prevent the occurrence of hypertension.

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