

# A Control Case Study: Dietary Pattern at Alas Ethnic Community with Hypertension in Lawe Bulan District, Southeast Aceh Regency

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*Abstract- Hypertension ranks the third of ten serious disease in Aceh Tenggara district. Kutambaru Health Center ranks the highest in hypertension with 3.010 cases in 2013. The condition is probably related to food consumption of the “Alas communities” that tends to have the habit of life such as drinking coffee, smoking, eating fat and salty food. The objective of the research was to find out and to analyze a case control study: dietary pattern at Alas Community with Hypertension in Lawe Bulan District, Southeast Aceh Regency. The research was observational with case control study. The population was all Alas people who got medication and medical faculty at Kutambaru Health Center, Lawe Bulan District. The samples were 118 patients who visited the health center; 59 of them belonged to the case group and were affected by hypertension and the other 59 of them belonged to the control group and were not affected by hypertension. The data were analyzed by using univariate and bivariate analyses with chi square test at the significance level of  $\alpha=0.05$ . The result of the research showed that eating pattern (food frequency, energy intake, protein intake and fat intake) had related on the incidence of hypertension ( $p=0.000<0.05$ ). It is recommended that health care providers should provide counseling about eating*

*pattern which does not take the risk of being affected by hypertension, and the “Alas community” should consume variety food in their menu like fruit and vegetables it can decrease blood pressure. They should reduce the habit of smoking and drinking liquor.*

*Key Words- Eating Patern, Hypertension, Alas Community*

## I. INTRODUCTION

World Health Day on 7 April 2013 reminds all countries in the world to be aware of the threat of hypertension or high blood pressure. Hypertension is now a global health problem that is worrying and causing higher health costs.

More than a quarter of the world's population is currently suffering from hypertension. Besides, because of the prevalence is high and likely to increase in the future, as well as severity of disease is very high such as heart disease, stroke, kidney failure, and others, also cause permanent disability and sudden death [8] .

In 2011, WHO noted that one billion people worldwide suffer from hypertension. Two-thirds of whom are in developing countries with low and middle income. Indonesia is located in a row of 10 countries with the highest prevalence of hypertension in

the world, along with Myanmar, India, Sri Lanka, Bhutan, Thailand, Nepal, Maldives. In the world of health statistics in 2012, the World Health Organization (WHO) reported that hypertension is a high-risk condition which causes about 51% of deaths from stroke, and 45% of coronary heart disease.

The prevalence of hypertension in Indonesia is quite high, 6-15% of the percentage of disease in the elderly. As a comparison, in the United States 15-20%, 12-20% in Japan, in Polonesia Island from 15.4 to 20%, India 15%, Argentina 15%, in Ghana 15% (Darmojo, 1994). Riskesdas 2013, show that the prevalence of hypertension in Indonesia based on measurements at age  $\geq 18$  years of 25.8%, the highest in Bangka Belitung (30.9%), followed by South Kalimantan (30.8%), East Kalimantan (29.6%) and West Java (29.4%), and Aceh (21.5%). Based on the results Riskesdas 2013, the prevalence of hypertension has decreased by 5.9% from 31.7% in 2007 to 25.8% in 2013.

Hypertension is a common condition where blood pressure greater than 140/90 mmHg or more for ages 13-50 years and the blood pressure reaches 160/95 mmHg for those above 50 years. And should be measured blood pressure of at least twice to be certain circumstances [8].

Increasing the number of degenerative diseases associated with lifestyle changes a person who lived for example in eating patterns that are not healthy by the lack of eating vegetables and fibrous foods, lack of exercise, and high stress levels [12].

A diet is a way or behaviors adopted person or group of people in choosing, using food ingredients in food consumption on a daily basis which includes the type of food and meal frequency are based on socio-cultural factors in which they live [4].

Food consumption patterns are affected eating habits have a close relationship with a person's nutritional status. Based on the preliminary survey in PHC Kutambaru of 10 hypertensive patients gained weight (BMI: 25.0 to 29.9) as 6 people, Normal (BMI: 18.5 to 24.9) of 3 people, Obese class I (BMI: 30.0 to 34.9) as much as one person.

Based on preliminary survey in Southeast Aceh District Health Office in the quarterly report PHC In 2013, hypertension was ranked three of the 10 biggest disease in the district after the ISPA and Gastric by 1793 patients. That report also showed of 18 health centers in Southeast Aceh Regency, PHC Kutambaru ranks first in terms of hypertension [7].

It is associated with food consumption patterns in Alas ethnic communities tend to have habits such as drinking coffee, smoking, dietary fat and high salt. Based on the results [6], the national average for the proportion of consumption behavior less vegetables and fruits at 93.5%, it is no visible change compared to 2007. The behavior of food consumption risk to the population aged  $\geq 10$  years at most consume seasoning is 77, 3%, followed by food and sugary drinks 53.1% and 40.7% fatty foods. This situation is not much different from the diet of people Alas ethnic in Southeast Aceh district.

Based on interviews with traditional leaders Alas ethnic community which says that every custom events either marriage or death they are always present beef or goat, curry carp, fatty vegetables, sweet foods, coffee. Food consumption behavior like this certainly is very risky for the onset of degenerative diseases such as hypertension. The food consumption behavior becomes their daily food pattern in Alas ethnic community although there is no custom events.

Alas ethnic is one of the largest rate of about 55% of all people living in Southeast Aceh district, and approximately 17% Batak Toba, and Gayo (14%). The remainder consists of ethnic Batak Karo, Batak Mandailing, Batak Pak-pak, Minangkabau, Aceh, Singkil, Java, and Nias. Residents of Southeast Aceh Regency in 2013 as many as 221 686 people [15].

Base on above background, the researchers are interested in doing research on "a case control study: dietary patterns at Alas ethnic community with hypertension in Lawe Bulan District, Southeast Aceh Regency".

## Research Issues

Is there a association of Alas ethnic dietary pattern with hypertension in PHC Kutambaru, Lawe Bulan Districts, Southeast Aceh Regency?

## Research Purposes

The purposes of this research was to find out and analyze the dietary pattern and hypertension at ethnic Alas community in PHC Kutambaru, Lawe Bulan Distric, Southeast Aceh Regency

## Benefit Of Research

This research may provide information or advice to Southeast Aceh Health Department and PHC Kutambaru in order education's programs and prevention of hypertension to improve community health status, and are expected to be used as reference in future research related with hypertension.

## Methods

The sample of this case control design were all patients of Alas ethnic who seek treatment and get treatment at PHC Kutambaru with 59 patient for case group and 59 patient for control group, so the total sample of 118 respondents. The sample were selected through consecutive sampling technique with the process of matching gender.

The data collection consists of primary data and secondary data. Primary data were obtained by direct interviews and observations with patients with hypertension and not hypertensive based on the questionnaire.

Dietary patterns was measured using a Food Frequency Quationary (FFQ) and the Food Recall 24 hours, to see the frequency of meals, intake of energy, protein and fat intake. Blood pressure was measured using a sphygmomanometer. Data were analyzed by computerized using univariate and bivariate with chi square test.

## II. RESULT AND DISCUSSION

### 1. Characteristics Of Respondents

The results showed that, respondents who netted in the study the majority of

women in the case group and control as many as 35 people (59.3%).

Characteristics of respondents were age, education, occupation, income and marital status obtained mixed results. The distribution of respondent for hypertensive group 41-50 years old majority were 24 respondents (40.7%), while non-hypertensive group the majority were 25 respondents (42.4%). The distribution of respondents' education generally high school graduates each ie 25 respondents (42 , 4%), and 20 respondents (33.9%).

The majority of respondents for the hypertensive group was self-employed work by 15 respondents (25,4%), while for non hypertensive group most farmers are 20 people (33.9%). The majority of respondent's income for the hypertensive group was > Rp 2,000,000 by 25 respondents (42.4%), while for non hypertensive group most income < Rp 1,500,000 ie 24 respondents (40.7%). The majority of respondents are already married, which is 53 respondents (89.8%) for hypertensive group and 55 respondents for non hypertensive group (93.2%).

### 2. Association Between Dietary Pattern and Hypertension at Alas Ethnic Community

The association between dietary pattern and hypertension at Alas ethnic community can seen in Table 1.

Dietary pattern was measured by the frequency of meals, intake of energy, protein and fat consumed by the respondents. Table 1. shows the frequency distribution of consuming foods and beverages. The majority of consuming foods and beverage is at risk (86.4% for hypertensive group and 50.8% for non hypertensive group).

The majority of energy consumption intake is at risk (74,6% for hypertensive group and 83.1% for non hypertensive group). The majority of protein consumption intake from food and beverage is at risk (76.3% for hypertensive group and 66.1% for non hypertension group). The majority of fat consumption intake from food and beverage is at risk (61.0% for hypertensive group and 72.9% for non hypertensive group).

In the event festivity, meal presentation and devices on ethnic Alas

community was typical. As the first turn served dish of sticky rice that is eaten with a sauce. For this dish was served in a white sticky rice dishes (relatively large portion) and the sauce was served in a bowl. So everyone will get a plate of sticky rice, a bowl of sauce, a glass of water and hand washing bowl (no spoon).

As the next turn served a full meal. Rice called "nakan kepel" or warm rice wrapped in banana leaves, two packs were placed in a plate. One kind of side dish is placed in a bowl (small plate) glass of water and and hand washing bowl.

In the serve, the food is usually placed in a small bowl called "cawan". The type of food that is always served in every ceremony festivity ie "mutton curry" and "jackfruit curry". Both of these goulash in the presentation are separated on their own and do not mix. For customary head, "mutton curry" was served in large plate termed "pahar". "Pahar" serves as a dining table being served by young children [15].

Dietary pattern is basically a cultural concept of food-borne heavily influenced by social elements prevailing culture within community groups, such as social values, social norms, and cultural norms related to food, what is considered good and not good [14].

However, it's contrast to the results of this research. This research shows that eating frequency of ethnic Alas tends to be no difference between hypertensive and non-hypertensive. Eating frequency is influenced by incomes. Public revenue is directly proportional to the need of food. In other words, if high-income society, so the need of foodstuffs will increasingly diverse.

The increase in non-communicable diseases (NCDs) is caused of an unhealthy behavior. The unhealthy behaviors that smoking behavior, unbalanced dietary, low fruit and vegetable intake, alcohol drinking habits and lack of physical activity. All of this behaviors actually be changed in order to prevent the majority of non-communicable diseases [10].

Cultural communities have strengths that influence the selection of foodstuffs used for food consumption. Socio-cultural aspects

of food is the food function in a society develop in accordance with the environment, religion, customs, habits, and the public education [15].

Alas ethnic society prefers meat and river fish such as tilapia, carp, catfish than sea fish such as tuna, dencis, shrimp and other marine fish, because contain preservatives and also PHC Kutambaru is so far from the sea. People who eat fish less, when no other food compensated equal to the value contained in the nutritional status of the fish, it is likely to be malnutrition, especially the substances contained in the fish. Whereas marine fish contains more omega-3 which functions keep the blood thin, maintain the stability of the performance of the kidneys and inflammation caused by the infection and exposure to free radicals.

The results of chi square test showed association between food frequency and hypertension among Alas ethnic community ( $p = 0.000$ ,  $OR = 6.163$ ;  $95\%CI = 2.497-15.208$ ). It means that respondents with hypertension has 6.16 times more tendency to have risky dietary pattern compare with non risk dietary pattern.

Dietary factors as a major contributor to hypertension. Preserved foods and salt and seasoning in high quantities, such as monosodium glutamate (MSG), can raise blood pressure because they contain excessive amounts of sodium [14]. In community which is consume salt  $\leq 3$  grams usually has low blood pressure, while in the community which is consume salt about 7-8 grams usually has high blood pressure [5]. Alcohol can also increase blood pressure, drinking too much alcohol can raise blood pressure and risk of cardiovascular complications [17].

There is relation between meal frequency on the incidence of hypertension due to an unbalanced food habits along with a coffee and lack of exercise and consume less fiber foods such as vegetables and fruits. The result found majority respondents was housewives with less physical activity. It's related to increase hypertension risk.

Exercise regularly not only keeps the body shape and weight, but also can lower blood pressure. Moderate aerobic exercise for 30 minutes a day for a few days each week

can lower blood pressure. The type of exercise to control blood pressure are walking, cycling, swimming, and aerobics [17]

The results of chi square test showed association between energy intake and hypertension among Alas ethnic community ( $p = 0.000$ ,  $OR = 14.373$ ;  $95\%CI = 5.857-35.273$ ). It means that respondents with hypertension has 14.373 times more tendency to have risky energy intake compare with non risk energy intake.

Research in the United States by Jason (2006) who found that the consumption of energy-dense foods are associated with obesity and metabolic syndrome disorders.

There is association of energy intake on the incidence of hypertension due to the eating habits of animal food with coffee and a lack of exercise and eating less fiber foods such as vegetables and fruits. The majority of respondents are women who get less physical activity, which can increase the risk of hypertension.

The results of chi square test showed association between protein intake and hypertension among Alas ethnic community ( $p = 0.000$ ,  $OR = 6,268$ ;  $95\%CI = 2,798-14.039$ ). It means that respondents with hypertension has 6.268 times more tendency to have risky protein intake compare with non risk protein intake.

Source of animal protein generally contain 15-20 grams of protein such as beef, buffalo, goats, chickens, deer, sheep rabbits and so on. The amount of meat and fish are recommended for adults is 10 grams a day, when the food is dry enough two-thirds. Source of the vegetable protein are types of beans, such as soybeans, peanuts, beans, and other [2]. Some people consume meat contains high 'heme' iron that can increase blood pressure.

Protein intake related to the incidence of hypertension caused Alas ethnic community often follow traditional events (parties). They often consume foods made from beef, mutton, chicken, duck along with coconut milk and fried foods contain a type of saturated fat as a trigger hypertension.

The results of chi square test showed association between fat intake and hypertension among Alas ethnic community

( $p = 0.000$ ,  $OR = 4.207$ ;  $95\%CI = 1.935-9.146$ ). It means that respondents with hypertension has 4.207 times more tendency to have risky fat intake compare with non risk fat intake.

TABLE 1.  
Association Between Dietary Pattern and Hypertension at Alas Ethnic Community

Dietary Pattern	Incidence of Hypertension				N	p	OR (95% CI)
	Hypertension		Non Hypertension				
	n	%	n	%			
<b>Meal Frequency</b>							
Risky	51	63,0	30	37,0	100	0,000	6,163
Non Risky	8	21,6	29	78,4	100		(2,497-15,208)
<b>Energy Intake</b>							
Risky	44	81,5	10	18,5	100	0,000	14,373
Non Risky	15	23,4	49	76,6	100		(5,857-35,273)
<b>Protein Intake</b>							
Risky	45	69,2	20	30,8	100	0,000	6,268
Non Risky	14	26,4	39	73,6	100		(2,798-14,039)
<b>Fat Intake</b>							
Risky	36	69,2	16	30,8	100	0,000	4,207
Non Risky	23	34,8	43	65,2	100		(1,935-9,146)

Saturated fats can cause dyslipidemia. [3] said that dyslipidemia is one of the major risk factors of atherosclerosis. Atherosclerosis will increase the resistance of blood vessel walls that can trigger the heart to increase the pulse. Increased heart rate can increase blood flow volume effect on systolic and diastolic blood. Hull (1996) said that the decline in consumption of saturated fat, especially fat in the diet from animal and increased consumption of unsaturated fats polyvalent taste derived from vegetable oils, grains, and other foods from plant sources can lower blood pressure.

### III. CONCLUSION

The conclusion of this research are:

1. Incidence of hypertension is more common in women that housewives and entrepreneurs that has revenue > Rp2.000.000.

2. Incidence of hypertension is mostly occurs at age 41-50 years old by 40,7%, high school education (42,4%).
3. Dietary pattern in terms of meal frequency, energy intake, protein intake and fat intake in patients with hypertension tend to be more risky than non-hypertensive patients.
4. There is a significant relationship between dietary pattern (meal frequency, energy intake, protein intake and fat intake) and the incidence of hypertension among Alas ethnic community.

#### IV. RECOMMENDATION

Recommendation to health officials in PHC Kutambaru to provide health education to the community, especially traditional leaders through education about healthy diet without risk of hypertension. The health officials should give understanding to the head of customs in order to enter the menu of nutritious lower blood pressure, such as cucumbers, star fruit, coconut water, watermelon, as well as quitting smoking, exercising regularly such as walking, aerobic, and reduce the consumption of alcohol and coffee. Health officials encourage people to visit the health center to get information about health and monitor their health.

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