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Lifestyle as a Determinant of Stroke Incidence in Patients Treated at the Gunungsitoli Regional General Hospital (RSUD)

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ABSTRACT

Stroke is the leading cause of disability and death worldwide. Less than 9.5 percent of all causes of disability and death in adults. This is influenced by increased risk factors which include increased blood pressure, blood sugar, body mass index or obesity, unhealthy eating patterns, lack of physical activity, and smoking and alcohol consumption. The purpose of this study was to analyze the influence of lifestyle such as diet, physical activity, smoking habits, and alcohol consumption on stroke incidence in patients treated at the Gunungsitoli Regional General Hospital (RSUD). This type of research is an observational analytic with a case control matching study design. Subjects consisted of 48 stroke patients and 48 non-stroke control patients. The results of multivariate analysis using conditional logistic regression test showed that the variables that influenced the stroke incidence in patients treated at the Gunungsitoli RSUD were physical activity (OR=4.4; p=0.01; 95% CI 1.821-10.928), alcohol consumption (OR=3.6; p=0.012; 95% CI 1.334-9.978). The conclusion is that inadequate physical activity and habit of consuming alcohol as part of a lifestyle have an effect on the occurrence of stroke.

Keywords: Lifestyle, Diet, Physical Activity, Smoking Habits, Alcohol Consumption, Stroke Incidence

INTRODUCTION

Currently stroke is a world health problem, not only as a cause of death, stroke is also one of the main causes of disability. Stroke is a neurological emergency because it occurs suddenly (acutely) due to reduced cerebral blood flow (ischemic) or cerebral hemorrhage (Wiyono, 2016). Stroke is a non-communicable disease that occurs due to reduced flow of blood or oxygen to the brain due to blockage or rupture of blood vessels (Dewi, 2017). Global Burden data in 2017 shows that there are 15 million people having a stroke every year with 5 million (33%) people experiencing death and as many as 5 million (33%) experiencing permanent disabilities. The number of stroke sufferers is more in developing countries than in developed countries, the decrease in the incidence of stroke in developed countries is due to the control of blood pressure and a decrease in smoking rates. World Health Organization (WHO) data shows that as many as 30 percent of total deaths in the world are caused by by heart disease and stroke (World Health Organization, 2017).

In Indonesia, according to Riskesdas (2013), the prevalence of stroke incidence based on doctor's diagnosis is 7.0 permil, where the highest is in North Sulawesi at 10.8 permil, while for North Sumatra Province it is 6.0 per mil When compared with the results of Riskesdas (2018), there is an increase in the prevalence of stroke incidence where the prevalence of stroke incidence based on doctor's diagnosis is 10.9 peril, the highest in East Kalimantan is 14.7 peril, while for North Sumatra Province it is 9.3 peril. (Riskesdas, 2018). The prevalence of stroke increases with age,

the highest in the age group of over 75 years is 50.2 per mil, males are 11.0 per mil, while females are 10.9 permil. The prevalence of stroke in Indonesia is greater in urban areas compared to rural areas and the tendency is higher in people with low education and unemployment (Riskesdas, 2018).

The increase in the burden due to non-communicable Diseases is in line with the increase in risk factors which include increased blood pressure, blood sugar, body mass index or obesity, unhealthy diet, lack of physical activity, and smoking and alcohol consumption behavior (Kementerian Kesehatan, 2019).

The incidence of stroke in the Gunungsitoli Regional General Hospital (RSUD) has increased from year to year based on data obtained from the incidence of stroke in Gunungsitoli Regional Hospital in 2016 as many as 338 cases, in 2017 as many as 313 cases and in 2018 as many as 322 cases.

Stroke does not occur immediately without any triggering or causing factors, for example hypertension as the main cause of stroke. However, even though you don't have hypertension, you don't have enough regular and measurable exercise can easily experience an ischemic stroke. To prevent the occurrence of stroke, of course by minimizing various risk factors such as lifestyle (diet, physical activity, smoking habits, alcohol consumption) (Irianto, 2014)

The purpose of this study was to analyze the influence of lifestyle such as diet, physical activity, smoking habits, and alcohol consumption on stroke incidence in patients treated at the Gunungsitoli RSUD.

This study is expected to provide benefits as a source of information regarding risk factors that cause stroke events and become a reference or reference information for other researchers related to the incidence of stroke.

RESEARCH METHODS

This type of research is an observational analytic study with a case control design by matching age and gender. The study was conducted at Gunungsitoli RSUD, Nias Regency from January 2020 to September 2020.

The case population was all patients diagnosed by a doctor who had suffered a stroke who was treated at Gunungsitoli RSUD and the control population was all patients who were not diagnosed by a doctor with a stroke who were treated at Gunungsitoli RSUD. The sample of cases were new stroke patients who were hospitalized at the hospital and the control samples were new patients who were diagnosed by a doctor who had not suffered a stroke who was treated at Gunungsitoli RSUD. The sample size in this study was 48 cases and 48 controls. The sampling technique was carried out by purposive sampling.

Data were collected with medical records and questionnaires.

The method of data analysis was carried out by using the univariate analysis method, bivariate analysis using the McNemar test, and multivariate analysis using the conditional logistic regression test.

RESULT AND DISCUSSION

Univariate Analysis

Table 1: Frequency Distribution of Case and Control Based on Respondent Characteristics including Age, Gender, and Profession at Gunungsitoli RSUD

Variable	Stroke Incidence			
	Case		Control	
	n	%	n	%
Age				
>40 Years	35	72.9	35	72.9
≤40 Years	13	27.1	13	27.1
Gender				
Male	27	56.3	27	56.3
Female	21	43.8	21	43.8
Profession				
PNS/TNI/Polri	10	20.8	7	14.5
Private Employees/Entrepreneurs	9	18.8	10	20.8
Farmers/Laborers/Fishermen	12	25.0	23	47.9
IRT/Did Not	17	35.4	8	16.6
Total	**48**	**100**	**48**	**100**

Table 1 shows that in the case and control groups there were 35 (72.9%) respondents who had age >40 years and 13 (27.1%) respondents who had age ≤40 years respectively. In the case and control groups, respectively, there were 27 (56.3%) male

respondents and 21 (43.8%) female respondents. In the case group the majority of respondents were IRT/did not work as much as 17 (35.4%). And control, the majority of respondents worked as farmers/ laborers/fishermen as many as 23 (47.9%).

Table 2: Frequency Distribution of Case and Control Based on Diet, Physical Activity, Smoking Habits and Alcohol Consumption at Gunungsitoli RSUD

Variable	Stroke Incidence			
	Case		Control	
	n	%	n	%
Diet				
Risky	32	66.7	19	39.6
Not Risky	16	33.3	29	60.4
Physical Activity				
Risky	33	68.7	17	35.4
Not Risky	15	31.3	31	64.6
Smoking Habits				
Risky	25	52.1	15	31.2
Not Risky	23	47.9	33	68.7
Alcohol Consumption				
Risky	20	41.7	9	18.8
Not Risky	28	58.3	39	81.2
Total	**48**	**100**	**48**	**100**

Based on Table 2, it is found that out of 48 people with stroke, there were 32 people (66.7 percent) who had a risky diet and as many as 16 people (33.3) who did not have a risky diet, while in the control group there were 19 people (39.6 percent) who have a risky diet and 29 people (60.4 percent) who do not have a risky diet.

Based on Table 2, it is found that out of 48 people with stroke, there were 33 people (68.7 percent) who had risky physical activity and as many as 15 people (31.3) who did not have risky physical activity, while in the control group there were 19 people (35,4 percent) who have risky physical activity and 29 people (64.6 percent) who do not have risky physical activity.

Based on Table 2, it is found that of the 48 people with stroke, there were 25 people (52.1 percent) who had a risky smoking habits and 23 people (47.9) who did not have a risky smoking habits, while in the control group there were 15 people (31.2 percent) who have risky smoking habits and 33 people (68.7 percent) who do not have risky smoking habits.

Based on Table 2, it is found that out of 48 people with stroke, there were 20 people (41.7 percent) who had risky alcohol consumption behavior and as many as 28 people (58.3 percent) who did not have risky alcohol consumption behavior, while in the control group there were 9 people (18.8 percent) who have risky alcohol consumption behavior and 39 people (81.2 percent) who do not have risky alcohol consumption behavior.

Bivariate Analysis

Table 3: The Influence between Diet, Physical Activity, Smoking Habits, Alcohol Consumption on Stroke Incidence at Gunungsitoli RSUD

Variable		Control (n=48)				p value	OR	95% C.I	
		E+		E-				Lower	Upper
		n	%	n	%				
Case (N=48)	Diet								
	Risky (E+)	13	27.1	19	39.6	0.009	3.2	1.328	7.550
	Not Risky (E-)	6	12.5	10	20.8				
	Physical Activity								
	Risky (E+)	11	22.9	22	45.8	0.002	3.7	1.579	8.511
	Not Risky (E-)	6	12.5	9	18.8				
	Smoking Habits								
	Risky (E+)	12	25	13	27.1	0.012	4.3	1.372	13.679
	Not Risky (E-)	3	6.3	20	41.6				
	Alcohol Consumption								
	Risky (E+)	5	10.4	15	31.3	0.011	3.8	1.343	10.467
	Not Risky (E-)	4	8.3	24	50				

Information: E+: Exposed Variables
E-: Unexposed variables

Based on Table 3, it shows that there is an effect of diet on the incidence of stroke in patients treated at Gunungsitoli RSUD (p=0.009; OR=3.2 95% CI 1.328-7.550), there is an effect of physical activity on the incidence of stroke in patients treated at Gunungsitoli RSUD (p=0.002; OR=3.7 95% CI 1.579-8.511), there is an effect of

smoking on the incidence of stroke in patients treated at Gunungsitoli Regional Hospital (p=0.012; OR=4.3 95% CI 1.372-13.679), there is a behavioral influence alcohol consumption on the incidence of stroke in patients treated at Gunungsitoli RSUD (p=0.011; OR=3.8 95% CI 1.343-10.467) and the p results for each variable <0.25, indicating that all variables are included in the multivariate test stage.

Table 4 shows that the multivariate analysis with the conditional logistic regression test shows that in model 1 there is a variable with a p value >0.05 so that the multivariate analysis is continued by removing the largest p value by removing the smoking habits variable from the analysis model, then in model 2 the pattern variable meal also has p value >0.05 so that the multivariate test is continued. In model 3, it is found that there is an effect of physical activity variables on the incidence of stroke in patients treated at Gunungsitoli RSUD (OR=4.4; p=0.01; 95% CI 1,821-10,928) which means that respondents who have physical activity are at risk, 4.4 times more likely to suffer a stroke than those who do not have risky physical activity and there is a variable effect of alcohol consumption on the incidence of stroke in patients treated at Gunungsitoli RSUD (OR=3.6; (p=0.012; 95% CI 1.334-9.978) means that respondents who have a habit of consuming alcohol are 3.6 times more likely to suffer from stroke than those who do not consume alcohol.

Multivariate Analysis

Table 4: Results of Conditional Logistic Regression Analysis on Stroke Incidence in Patients Treated at Gunungsitoli RSUD

Variable	Model 1	Model 2	Model 3
	OR(p value ;95%CI)	OR(95%CI)	OR(95%CI)
Diet	1.79 (p=0.22; 0.699-4.614)	1.82 (p=0.21; 0.713-4.649	-
Physical Activity	3.82 (p=0.07; 1.443-10.141)	3.58 (p=0.09; 1.382-9.310)	4.4 (p=0.01; 1.821-10.928)
Smoking Habits	1.79 (p=0.36; 0.512-6.282)	-	-
Alcohol Consumption	2,20 (p=0.24; 0.576-8.437)	3.37 (p=0.017; 1.237-9.194)	3.6 (p=0.012; 1.334-9.978)

DISCUSSION

The results of statistical tests with bivariate analysis using the McNemar test showed that there was an effect of physical activity on the incidence of stroke in patients treated at Gunungsitoli RSUD, with a value of p=0.002; OR=3.7 95% CI 1.579-8.511 meaning that respondents who had activity those who were at risk were 3.7 times more likely to suffer a stroke than those who did not have risky physical activity.

The results of the multivariate analysis using the conditional logistic regression test showed that there was an effect of physical activity on the incidence of stroke in patients treated at Gunungsitoli RSUD (OR=4.4; 95% CI 1,821-10,928), meaning that respondents who had a history of physical activity were at risk 4, 4 times more likely to suffer a stroke than those who do not have physical activity at risk.

This study is also in line with Sarumpaet's 2019 research at Santa Elisabet Hospital Medan, it was found that physical activity had a significant effect on the incidence of stroke with an OR of 2.552, which means that people who have physical activity habits are 2.552 times less at risk of developing a stroke than people who have sufficient activity.

The results of the study also showed that the respondents on average did not do sports, either light or moderate sports, so that this resulted in less physical activity and of course it could lead to stroke.

Lack of exercise is an independent risk factor for stroke and heart disease. Enough exercise for an average of 30 minutes/day can reduce the risk of stroke (Yulianto, 2011). Lack of movement causes

stiffness of muscles and blood vessels. In addition, people who are sedentary will become overweight which causes deposits in fat which results in obstruction of blood flow by fat (atheroclerosis). As a result, there is congestion in blood flow which can lead to stroke (Dourman, 2013).

Lack of movement or not exercising is also one of the main risk factors for the incidence of non-communicable diseases where lack of exercise can carry various types of disease risks (Goldszmidth, 2011), sports activities are expected to be a protective factor against health disruption/disease by doing moderate aerobic exercise for 30 minutes of each day. If routine exercise is carried out for five days a week so that the total aerobic time is 150 minutes per week, it is considered to have exercised (Bustan, 2015).

The results of the bivariate analysis using the Mc Nemar test showed that there was an effect of alcohol consumption behavior on the incidence of stroke in the age group <50 years (p=0.011; OR=3.8 95% CI 1.343-10.467) means that respondents who have risky alcohol consumption have a chance 3.8 times more likely to suffer a stroke in patients treated at Gunungsitoli RSUD compared to those who did not have risky alcohol consumption behavior.

The results of the multivariate analysis using the conditional logistic regression test showed that there was an effect of alcohol consumption behavior on the incidence of stroke in patients treated at Gunungsitoli RSUD (OR=3.6; 95% CI 1,334-9,978) meaning that respondents who had risky alcohol consumption had a chance. 3.6 times more likely to suffer a stroke in patients treated at Gunungsitoli RSUD compared to those who did not have risky alcohol consumption behavior.

The results of the study also showed that the habit of consuming alcohol was mostly carried out by the male gender, while the female respondents did not find that they consumed alcohol. This is supported by the habit of men after finishing work to often gather or sit in stalls that provide alcohol that is available. Of course, it increases men's chances of consuming alcohol, the types of alcohol that are often consumed are tuak and distilled palm wine.

In the Nias community the types of alcohol that are of interest are Tuak and Tuo Nifaro or another term for distilled tuak whose alcohol content can reach 40 percent even the first distilled tuak extract can reach an alcohol content of 70 percent so it can burn like spirits, this type of alcoholic drink is almost available in all warungs in every village in the Nias Islands. The habit of consuming alcohol is something that is considered normal among men in the Nias community not to mention that in every traditional event, smoking and alcohol are mandatory as something that must be presented, so that without realizing it this has an impact on the health of the alcohol user if it continues to be consumed for a period of time. long and in large numbers.

Sumaryati's (2016) research at the Labuang Baji Makassar Hospital found that there was a relationship between alcohol consumption habits and the incidence of stroke (p<0.05). This is also in line with Khairatunissa's research in 2017 at the H. Sahudin Kutacane Hospital, Southeast Aceh Regency, it was found that there was a relationship between alcohol consumption habits and the incidence of stroke with an OR of 2.36 which means that people with alcohol consumption habits have a 2.36 times greater risk. suffer a stroke than those who do not have the habit of consuming alcohol.

Increased alcohol consumption over a long period of time will have an effect on increasing levels of cortisol in the blood so that the activity of the renin angiotensin aldosterone system (RAAS) will increase, namely a hormone system that regulates the balance of blood pressure and fluids in the body. In addition, if a person consumes alcohol, the volume in the red blood cells in the body will increase and this increases blood viscosity which will increase blood pressure which can lead to constriction and rupture of blood vessels, interfering with

blood flow to the brain and causing a stroke (Junaidi, 2011).

CONCLUSION

The conclusion in this study is that there is an effect of physical activity and habit of consuming alcohol with the incidence of stroke in patients treated at Gunungsitoli RSUD.

It is hoped that stroke sufferers should be diligent in exercising and routinely have their health checked by health services and avoid consuming alcohol and other risk factors for stroke.

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