

Analysis of Risk Factors for Stroke Patients Treated in the Neuro Room of Bangil General Hospital Pasuruan Regency

Marsaid¹ (CA), Supono², Abdul Hanan³, Sulastyawati⁴

^{1,2,3,4}Departementof Nursing,Politeknik Kesehatan Kemenkes Malang

Correspondence author's email (CA): nsmarsaid@poltekkes-malang.ac.id

ABSTRACT

Stroke is still a major health problem in both developed and developing countries, because in addition to causing high mortality rates, stroke is also a major cause of disability. In general, risk factors are divided into two, namely risk factors that cannot be changed, including age, gender, race or ethnicity, family history (heredity) and risk factors that can be changed, including hypertension, smoking, diabetes mellitus, heart defects, dyslipidemia, physical exercise, dietary patterns and excessive alcohol consumption. The aim of the study was to identify and explain the risk factors associated with stroke. This study used a cross-sectional study design, with a sample size of 88 respondents. The sampling technique was consecutive sampling. Data analysis used was multivariate analysis (logistic regression). The results of the analysis of the relationship between non-modifiable stroke risk factors and the incidence of haemorrhagic stroke that have a significant relationship are age risk factors (p value = 0.036) and hereditary history (p value = 0.045). While the results of the analysis of the relationship between modifiable stroke risk factors and the incidence of haemorrhagic stroke that have a significant relationship are risk factors for hypertension (p value = 0.027), DM (p value = 0.023), dyslipidemia (p value = 0.038) and dietary patterns (p value = 0.031). Hypertension was the most dominant risk factor with OR = 22.767. To prevent and reduce the incidence of stroke disease, various efforts are needed, including through promotive activities and research on the analysis of risk factors for stroke patients.

Key words: risk factors for stroke patients

INTRODUCTION

Until now, stroke is still a major health problem both in developed and developing countries, because besides causing a number of deaths, strokes are Also a reason for disability (Suyono, 2010). WHO predicts that death consequences strokes will increases along with deaths from heart disease and cancer by approximately 6 million in 2010 to 8 million in 2030 (American Heart Association , 2010). In the United States, stroke is the third leading cause of death disease heart disease and cancer in adults. Stroke is the leading cause of lost days work and poor quality of life. Disability due to stroke is not just impact for the sufferers, but also for their family members. Economic burden The result of a stroke is also the same weight (National Stroke Association, 2009).

The problem of stroke in Indonesia has become increasingly important and urgent now The number of stroke sufferers in Indonesia is the highest in Asia. Among stroke sufferers the average age 60 years and over is in second place most in Asia, mean while aged 15-59 years is in fifth place in Asia (Indonesian Stroke Foundation, 2010). Based on Basic Health Research In 2012, in Indonesia,

the prevalence of stroke reached 8.3 per 1000 population. Meanwhile, according to Basic Health Research In 2013, the prevalence of stroke increased to 12.1 per 100 population (Risksdas 2013). Amount sufferer strokes in Indonesia reach 500,000 resident every the year, around 2.5 % or 125,000 person die, And the rest disabled light nor severe (Indonesian Stroke Foundation, 2009). For every 7 people who die in Indonesia, 1 including stroke (Ministry of Health of the Republic of Indonesia, 2011). On group age 55-64 year, strokes become reason death highest Good in urban nor rural in Indonesia. Matter This related tightly with style Life and pattern Eat.

The number of stroke sufferers continues to increase every year, not just attacks the elderly population, but also experienced by those who are young and productive. Based on Research Health Base year 2013, prevalence sufferer strokes in Indonesia based on group age Which the highest is group age > 75 year (43, 1 per thousand) then followed by those aged 65-74 years (33.2 per thousand), aged 55-64 years (24 per thousand) thousand), age 45-54 years (10.4 per one thousand), age 35-44 years (2.5 per one thousand), age 25- 34 years (0.6 per thousand) and 15-24 years old (0.2 per thousand). The prevalence of sufferers of stroke in America in 2009 included stroke sufferers with complete recovery around 460 people out of 100,000 sufferers, 50-70% of stroke sufferers experience functional improvement, but 15-30% are permanently disabled, and 20% require treatment institutionalization at 3 months after onset. Most stroke patients experience disability still stable between 6-9 months and 5 years after stroke and one third require care and assistance in daily activities (Artal & Egidio, 2009). Enhancement in the number of stroke sufferers is synonymous with the epidemic of obesity due to rich diets of fat or cholesterol which has hit the whole world, including Indonesia. Amount sufferer strokes in America approximately 700,000 person every year, with 500,000 person suffering new And 200,000 person experience strokes repeated (AHA, 2010 in Smeltzer, et al., 2008).

According to World Health Organization (2010) strokes defined as disturbance brain function that occurs suddenly with focal clinical signs and symptoms or global that lasts more than 24 hours, or that causes death, which is caused solely by disorders of cerebral blood circulation. Two types distribution factor risk strokes is: factor risk strokes That not can be changed (non-modifiable) and stroke risk factors that can be changed (modifiable). Risk factor strokes That not can changed (non-modifiable) consist from age, type sex, descendants and race. Whereas factor risk strokes that can be changed (modifiable) includes: hypertension, heart disease, diabetes mellitus, dyslipidemia, smoking, drinking alcohol, asymptomatic carotid artery stenosis, history of stroke and TIA, infectious disease, history migraine, contraception oral, pattern Eat, not enough sport and obesity (Allah and Widjaja, 2010).

Research conducted by Aliah & Widjaja (2008) in Makasar with samples of as many as 100 people, showed that hypertension was the main risk factor for stroke at 89%, followed by smoking at 26%, heart disease at 23%, dyslipidemia at 23%, diabetes mellitus (DM) 15%, alcohol 4%, and oral contraceptives 1%. Other research conducted by Siregar (2001) at Haji Adam Malik General Hospital,

Medan, showed hypertension ranks as the highest risk factor for stroke (53.6%), followed by no habit exercise body 44.5%, smoking 43.6%, obesity 19.1%, alcohol 9%, and DM 5.45%.

According to AHA (American Heart Association) in 2020 factor risk, which no can change, plays an important role as a risk factor for stroke, namely age ≥ 55 years old, male man, resident African-American and Hispanic-American, as well as history descendants related to genetic, cultural/environmental factors, lifestyle, and interactions between genetic and factor environment. The study which done by Limbong, Sutarni, and Was'an (2009), shows that the most significant risk factor for ischemic stroke is age ≥ 65 years. Aliah and Widjaja (2010) in his research describe the proportion of age that happens in attack stroke, that age < 40 years 3%, 40 - 49 years 20%, 50 - 59 years 26%, 60 - 69 years 41%, and > 70 years 10%. The gender proportion is 58% male men and 42% women.

According to the Foundation Strokes Indonesia (2012), circumstances vulnerable to strokes in Indonesia keep increasing. A combination of physical changes, environment, habits, lifestyle and type of disease that continues to progress, causing risk to the public of being attacked. Strokes in Indonesia in a way cumulative can increase, becoming 10 until 15 times, or which is definitely much bigger than in previous times. Currently the risk of attack strokes increased 10-15 times, this situation is compared to only 1970 around 2.5 % clear. There is enhancement which is enough sharp. As for reason its height number incident strokes in Indonesia lately, this more caused because pattern life public which no healthy, like lazy move, pattern Eat which lots contains high fat and cholesterol, so many of them suffer from it disease which becomes trigger emergence attack strokes. The more Lots factors trigger risk in the body, an increasingly big possibility somebody caught heart coroner and strokes.

Stroke can attack anyone regardless of position or status socioeconomic level. In the last decade, according to observations and review of the Indonesian Stroke Foundation (Yastroki) in hospitals and those located in society, there is a tendency to increase the number of stroke sufferers in Indonesia on age who are still productive (Sudomo, 2012).

The danger that haunts stroke sufferers is repeated stroke attacks can lead to fatal and quality life, which is worse from attack First. Consequence which the sufferer must accept is, it is very difficult, namely a disability that will burden them for life, life, and even the threat of death. Research shows, among people who have had a stroke, around 40 percent of them will experience a stroke repeated in time five years (Misbach & Kalim, 2012). Strokes can happen due to inability to control and control risk factors or sufferers already feel satisfied after experiencing healing (past strokes which first), so no longer check yourself. Hudak & Gallo (2010) said that 50% death consequence strokes on sufferers in a lower 70 year can be prevented with applying existing knowledge. This indicates the occurrence of a stroke in principle can be prevented. Recognition of risk factors for stroke is very important, because there are many sufferers who have

more than one risk factor and are sometimes ignored, resulting in a stroke can not avoided.

METHODS

This research aims to analyze the relationship between risk factors for the incidence of stroke in patients treated in the Neuro Room RSUD Bangil Regency Pasuruan. This research is a type of analytical research using design Cross cross-sectional study. The population in this study were all stroke patients treated at Neuro Room at Bangil General Hospital, Pasuruan Regency. Big The sample in this research is 88 respondents.

This research uses non-probability sampling techniques that is consecutive sampling . Implementation taking sample in a way consecutive sampling , namely by identifying potential respondents according to the inclusion criteria, then given number sort based on order date and time moment enter House Sick, until amount sample fulfilled. As for criteria inclusion on the study, this is: suffering strokes, good hemorrhagic nor ischemia, consciousness composmentist, capable communication, status hemodynamics especially pressure blood stable after 24 hours and ready to be a respondent with sign informed consent.

The data used in this research are primary and secondary data obtained from results charging questionnaires, which are done responding to observation and studies documentation notes record medical. Interview Also done to family respondents who really know the respondent's daily conditions before being affected strokes.

Method analysis data in study this is done through a number of stages namely analysis univariate and multivariate analysis. The purpose of univariate analysis is to describe the distribution of each variable studied. In this study the variables are described through univariate analysis, which is the dependent variable namely stroke; and variables independent that is factor risk, which relates with incident stroke, good, which can be changed or cannot be changed. The data obtained later calculated the number and percentage of each group and presented with a use table as well interpreted. Analysis Multivariate is used for no influence in a way together - the same independent variable to the dependent variable, and which independent variable is the biggest influence on the dependent variable using a regression test logistics. Logistic regression analysis to explain the influence of several variables free in a way simultaneously with the dependent variable. Results data study will serve in form table distribution frequency and interpreted in a way narrative.

RESULTS AND DISCUSSION

Results Study

Table 1 Distribution of respondents based on demographic characteristics

No	Characteristics	Frequency	Percentage
1	Age		

	a. < 55 year	25	28.4
	b. ≥55 year	63	71.6
2	Type Sex		
	a. Man	63	71.6
	b. Woman	25	28.4
3	Education		
	a. No School	3	3.4
	b. No finished elementary school	9	10.2
	c. Elementary school	12	13.6
	d. Junior High School	13	14.8
	e. Senior High School	43	48.9
	f. College	8	9.1
4	Status Economy		
	a. Enough	60	68.2
	b. Not enough	28	31.8
5	Work		
	a. No Work	12	13.6
	b. Government employees	25	28.4
	c. Employee private	28	31.8
	d. Self-employed	12	13.6
	e. Farmer	11	12.5

The results of the analysis show that most of the respondents' ages are with the elderly category (≥ 55 years) namely 63 people (71.6%), and a male that is 63 people (71.6%). Level education respondents the most are finished 43 people (48.9%) had high school, respondents with moderate economic status, lots that are 60 people (68.2%). Work respondents part big is employee private as many as 28 respondents (31.8%).

Table 2 Distribution respondents based on characteristics factor risk

No	Risk factor	Frequency	Percentage
1	Hereditary history		
	a. Yes	70	79.5
	b. No	18	20.5
2	Hypertension		
	a. Yes	78	88.6
	b. No	10	11.4
3	Diabetes Mellitus (DM)		
	a. Yes	53	60.2
	b. No	35	39.8
5	Dyslipidemia		
	a. Yes	77	87.5
	b. No	11	12.5
6	Abnormalities heart		
	a. Yes	48	54.5
	b. No	40	45.5
7	Smoke		
	a. Smoke = 25 sticks per day	5	5.7
	b. Smoke 13 - 24 stem per day	9	10.2

	c. Smoke 1 - 12 sticks per day	23	26.1
	d. Once smoke, Already stop	21	23.9
	e. No ever smoked	30	34.1
8	Alcohol consumption		
	a. Every day	0	0.0
	b. 2 - 3 times per Sunday	8	9.1
	c. 1 times per Sunday	13	14.8
	d. < 1 time per week	14	15.9
	e. No Once	53	60.2
9	Exercise physique		
	a. No Once	34	38.6
	b. Once	54	61.4
10	Pattern diet		
	a. No Healthy	58	65.9
	b. Healthy	30	34.1
11	Type strokes		
	a. Hemorrhagic	49	55.7
	b. Non Hemorrhagic	39	44.3

The results of the analysis in Table 2 show that the risk factors are related with the incidence of stroke experienced by many respondents, the largest risk factors for hypertension were 78 people (88.6%), followed by dyslipidemia 77 person (87.5%), history family (descendants) 70 person (79.5%) and pattern that diet not healthy 58 person (65.9%).

Table 3 Relationship between risk factors and the incidence of stroke in Hospital General Bangil Pasuruan

No	Factor Risk	Stroke				Total		OR (95% CI)	p value
		Hemorrhagic		Non Hemorrhagic					
		N	%	N	%	N	%		
1	Age								
	a. ≥55 years old	41	65.1	22	34.9	63	100	2,977	0.036
	b. <55 years	10	40.0	15	60.0	25	100		
2	Type Sex							1,055	1,001
	a. Man	36	57.1	27	42.9	63	100		
	b. Woman	14	56.0	11	44.0	25	100		
3	History family							0.421	0.045
	a. Yes	40	57.1	30	42.9	70	100		
	b. No	13	72.2	5	27.8	18	100		
4	Hypertension							9,899	0.027
	a. Yes	48	61.5	30	38.5	78	100		
	b. No	4	40.0	6	60.0	10	100		
5	Diabetes Mellitus (DM)							2,663	0.023
	a. Yes	35	66.0	18	34.0	53	100		
	b. No	15	42.9	20	57.1	35	100		
6	Dyslipidemia							0.184	0.038
	a. Yes	43	55.1	35	44.9	78	100		
	b. No	8	80.0	2	20.0	10	100		
7	Abnormalities heart							2,218	0.160
	a. Yes	26	54.2	22	45.8	48	100		

	b. No	21	52.5	19	47.5	40	100		
8	Smoke								
	a. Smoke > 24 sticks per day	3	60.0	2	40.0	5	100	0.439	0.677
	b. Smoke 13 - 24 cigarettes per day	6	66.7	3	33.3	9	100	1,497	
	c. Smoke 1 - 12 cigarettes per day	17	73.9	6	26.1	23	100	1,022	
	d. Once smoke, Already stop	15	71.4	6	28.6	21	100	1,176	
	e. No Once smoke	13	43.3	17	56.7	30	100		
9	Consumption alcohol								
	a. Every day	0	0	0	0	0	100		0.956
	b. 2 - 3 times per week	5	62.5	3	37.5	8	100	0.511	
	c. 1 time per Sunday	8	61.5	5	38.5	13	100	0.786	
	d. < 1 time per week	8	57.1	6	42.9	14	100	0.756	
	e. No Once	25	47.2	28	52.8	53	100		
10	Exercise physique								
	a. No Once	25	73.5	9	26.5	34	100	2,243	0.142
	b. Once	24	44.4	30	55.6	54	100		
11	Diet pattern								
	a. No Healthy	38	65.5	20	34.5	58	100	2,121	0.031
	b. Healthy	12	40.0	18	60.0	30	100		

Results of analysis of the relationship between stroke risk factors that cannot be modified with the incidence of hemorrhagic stroke which has a significant relationship, namely risk factors: age (p value = 0.036) and hereditary history (p value = 0.045). Whereas results of analysis of the relationship between modifiable stroke risk factors with the incidence of hemorrhagic stroke that has a significant relationship is factor risk hypertension (mark p=0.027), DM (mark p=0.023), dyslipidemia (mark p=0.038) And pattern diet (p value=0.031).

Discussion

Factor risk strokes which can't modified.

1. Age

For stroke sufferers who were research respondents at Bangil Pasuruan Hospital the majority, namely 63 people (71.6%) were aged ≥ 55 years. Age is related significant impact on the incidence of stroke. This is by the research conducted by Sunarto (2000), age > 55 years has a significant relationship with incidence of stroke (p = 0.001; OR = 0.051; 95% CI 0.006 - 0.0426). Age is one of the main risk factors for stroke and increases two-fold in age ≥ 55 years (Sacco, Benjamin, Emelia, Broderick, Dyken, Easton, et al., 1997). The risk of having a stroke increases from the age of 45 years. After reaching 50 year, every additional age of three years increase risk of strokes as big as 11 - 20% (Feigin, 2010 in Astrid, 2008). The enhancement frequency of strokes along with The increase in age is related to the aging process in all body organs that experience setback function including vessels blood brain. Vessels blood becomes inelastic and especially the

endothelium thickens intima, causing the lumen of the blood vessels to become narrower And impact on decreased cerebral blood flow.

2. Gender

Respondent on study This 71.6% manifold sex man. Results This research is in accordance with what was stated by Sacco, et al. (2010) that the incident strokes on men 1.25 time more Lots compared to on Woman. Statement Sacco, et al. This supported by Americans Heart Association/ AHA (2010) Which disclose that attack strokes more Lots happen on man compared to Woman proven with results study Which show that incident strokes on man 81.7 per 100,000 And Woman 71.8 per 100,000. Condition This allegedly relate with lifestyle And related with factor risk Which other namely smoking, consumption alcohol and dyslipidemia.

3. History family (descendants)

Family history is one factor risk which are related with stroke events. This research shows that there is a relationship significant relationship between family history and the incidence of stroke. Increased risk of stroke on history family (descendants) obtained through a number of mechanism that is (1) genetic factors, (2) genetic sensitivity factors, (3) cultural/environmental factors and style life and (4) interactions between genetic and environmental factors (AHA, 2010). Results research conducted by Goldstein, Adams, Alberts, Appel, Brass, Bushnell, et al., (2010) in AHA (2010) regarding genetics shows that the prevalence of twins monozygotes increased 5 (five) times the risk of stroke compared with dizygotic twins. The influence of genetics on the incidence of stroke cannot be separated individual risk factors such as hypertension, diabetes mellitus, dyslipidemia and factors environment/behavior.

Factor risk strokes which can modified.

4. Hypertension

Study dominated by respondents Which suffer hypertension as much 78 people (88.6%). These results are not much different from research conducted by Aliah and Widjaja (2000) in Makasar who stated that the risk factors for hypertension occupy order top with 89%. Matter similar stated AHA (2012) that 62% of ischemic stroke sufferers experience hypertension. This research found that hypertension was the most dominant risk factor relate with incident strokes with OR = 22,767 (95% CI 2,324 - 222,983). Research conducted by Goldstein, et al. (2010) said that increasingly The higher the blood pressure, the higher the risk of stroke, increased blood pressure especially systolic pressure will increase with increasing age. proven In the Framingham study it was found that in normotensive individuals aged > 55 years, 90% risky experience hypertension And two from three individual aged > 65 year suffer hypertension. With say others can concluded that hypertension And age are interrelated in relation to the incidence of stroke. The blood pressure High levels can affect the auto regulation

of blood flow to the brain which has an impact on acceleration of the appearance and increasing severity of atherosclerosis and the appearance of lesions specific to intracerebral arteries. The factors that cause these lesions are symptoms difficult to understand, but stenosis >70% is linearly associated with risk cerebral infarction (Mohr, Albers, Amarenco, Babikian, Biller, Brey, et al., 2012,).

5. Dyslipidemia

Amount of respondents Which experience dyslipidemia in study This as many as 77 people (87.5%). Research conducted by Sunarto (2011) in Yogyakarta mention that dyslipidemia relate in a way significant with incident strokes And respondents with dyslipidemia risky 0.27 times suffered a stroke compared to respondents who did not experience it dyslipidemia Further analysis showed a significant relationship between dyslipidemia and the incidence of stroke and the risk of stroke in respondents experiencing dyslipidemia was very small, namely 0.172 times ($p = 0.036$; OR = 0.172; 95% CI 0.036 - 0.832). The condition of dyslipidemia causes deep plaque to form vessels blood. Deposition ion calcium, cause plaque become hard And rigid Which on Finally cause vessels blood become rigid And loses its elasticity. Another consequence of plaque is hardening of the walls part in vessels blood so that become narrow And No slippery Which caused on reduced supply blood to organ. If hardening happen in arteries Which supplies blood to brain then a stroke occurred.

6. Diabetes mellitus

There were 53 research respondents who suffered from diabetes mellitus (60.2%). Study study Which done Siregar (2011) show respondents Which suffer diabetes mellitus as much 5.45% from 110 case. Study This show diabetes mellitus relate in a way significant with incidence of stroke ($p = 0.003$; OR = 5.218; 95% CI 1.740 - 15.649). Research that done Goldstein, et al. (2010) mention that combination from hyperglycemia And hypertension believed increase frequency complications from diabetes mellitus, including stroke. Individuals with diabetes have a sensitivity Which tall to atherosclerosis And relate with factor risk other atherogenic, especially hypertension, obesity and dyslipidemia (AHA, 2010). Sacco, et al., (2012) in his research in Framingham say that individual with intolerance glucose have risk 2 (two) time fold experience infarction cerebral.

Diabetes mellitus causes changes in the vascular system, prompting happen atherosclerosis And increase happen hypertension. Combination hypertension And diabetes mellitus very potential increase complications diabetes including strokes (Feigin, 2010 in Pardede, 2015).

7. Abnormalities heart

Research conducted by Isparyanto (2013) reported that respondents People with heart defects (atrial fibrillation) have a 2.28 times risk of having a stroke compared to with respondents Which No caught atrial fibrillation (OR = 2.28; 95% CI 1.89 - 2.75). This research shows there is no significant relationship between disorders heart with stroke occurrence ($p = 0.160$). Heart disorders especially

those related to the emergence of embolism. Atrial fibrillation is a case which occurs most often and has a 3-4 risk of stroke. Atrial Non-valvular fibrillation is a cause of embolism (Anwar, 2014). Individuals who suffer atrial fibrillation, 2 - 4% experience attack strokes (AHA/ASA, 2010).

8. Smoke

Smoke is Wrong One factor risk happen disease cardiovascular disease and stroke. The incidence of stroke will increase when combined with other risk factors, especially hypertension. Research conducted by Rahayu (2010) mention that smoke relate in a way significant with the incidence of stroke and smokers have a 4.51 times risk of having a stroke compared to non-smokers ($p = 0.000$; OR = 4.51; 95% CI 2.107 - 9,669). Study time This show results Which different that is No There is significant relationship between smoking and the incidence of stroke ($p = 0.677$). Condition This influenced by characteristics type sex And location in study, Where specifically respondents Woman everything No smoke And Sampling was carried out at the hospital so it is not representative of the population sufferer strokes in a way whole.

Research conducted by Zhang, Shu, Yang, Li, Xiang, Gao, et al. (2011) concluded that heavy smokers (≥ 20 cigarettes per day) related significantly with the incidence of stroke and a 62% risk of having a stroke compared to non-smokers. Smoking increases the risk 2 times the occurrence of stroke, especially smokers who started smoking at an early age young And smoker heavy (Sacco, et al., 20010).

Cigarette relate tightly with inflammation And atherosclerosis early Which caused on emergence attack strokes. Condition This will accelerated when sufferer Also experience hypertension And diabetes mellitus (Cole, Brown, Giles, Stine, O'Connell, Mitchell, et al, 2008).

9. Alcohol

Research conducted by Bazzano (2010) reported that consumption alcohol in a way significant relate with enhancement incident stroke as much as 22% when compared with those who do not consume alcohol). Study This obtained No There is that relationship significant between consumption alcohol with incidence of stroke ($p = 0.956$) and respondents who consumed alcohol every day risky 1 time caught attack strokes compared to Which The same very No Once consuming alcohol. Specifically Reynolds, Lewis, Nolen, Kinney, Sathya, & He (2010) reported that alcohol consumption was more than 60 grams per day risky happen strokes ischemic 1.69 time And strokes hemorrhage 2.18 time when compared to respondents who did not consume alcohol at all. The more an individual consumes alcohol, the higher the risk of exposure strokes. Calculation of the amount of alcohol consumed is done by conversion that is 1 ml is the same as 0.785 grams.

Alcohol consumption is believed to increase the incidence of stroke, especially strokes hemorrhage. Condition This involve various mechanism, including Which associated with hypertension, cardiomyopathy, coagulation

disorders, atrial fibrillation and decreasing cerebral blood flow. Alcohol Also increase rate cholesterol highdensity lipoproteins, lower aggregation platelets And activity fibrinolytics (Hansagi, Romelsjo, De Verdier, Andreasson, & Leifman, 2015).

10. Exercise physique

Inactivity physique is factor risk main For happen heart attacks and strokes, which are characterized by the accumulation of fatty substances, cholesterol, calcium and other elements that supply blood to the heart muscle and brain, Which impact to decreasing Genre blood to brain nor heart. Heart attacks and strokes will occur more quickly if combined with factor risk other that is obesity, hypertension, dyslipidemia And diabetes mellitus (AHA,2010). AHA (2002) says that physical inactivity increases risk strokes And disease heart until 50%. Study meta analysis to 4700

subjects performed by Thompson, Buchner, Piña, Balady, Williams, Marcus, et al., (2013). indicates that physical exercise is carried out regularly during more from 12 Sunday can increase High Density Lipoproteins Cholesterol (HDL-C) 4.6%, lower triglycerides 3.7%, lower Low Density Lipoprotein Cholesterol (LDL-C) 5%. Subjects were normotensive, on average experienced a decrease in systolic and diastolic pressure by 2.6 mm Hg and 1.8 mmHg, while hypertensive subjects experienced a decrease in systolic pressure and average diastolic of 7.4 mmHg and 5.8 mmHg. Further said that physical exercise also has an effect on weight loss more than 10% and can reduce levels HbA1C is 0.5 - 1%.

10. Pattern diet

Low dietary intake of fruit and vegetables plays a 31% role in disease heart coroner And 11% to strokes in all over world; intake fat Which tallincreases the risk of heart disease and stroke as a result of blood lipids And thrombosis (AHA, 2010). Modification diet relate with decline pressure blood between other with reduce intake salt, reduce calories Whichinfluence decline heavy body, limit consumption alcohol, increase potassium intake and consume a healthy diet based on DASH (Dietary Approaches to Stop Hypertension).

Diet Which originate from fruits, vegetables, And product milk low fat, including whole grains, poultry, and fish, can lower blood pressure. Fruit and vegetables are rich in nutrients, low in calories and high in fiber. Therefore, diet Which Lots contain vegetables And fruit contain micronutrients, macronutrients And need fiber without need add something For get the right energy. A study revealed that individualsWhich in a way regular consume fruit And vegetables will lower riskdevelopment Cerebrovascular Disease (CVD) especially stroke (Lichtenstein, Appel, Brands, Carnethon, Daniels, Franch, et al., 20100. showed that fish oil consumption ≥ 3 g/day can reduce systolic pressure by 4 mm Hg and diastolic pressure 2.5 mmHg; consume fiber 14 gr/day can reduce pressure systolic 1.6 mmHg, pressure diastolic 2 mmHg; consumption calcium 400 - 2000 mg/day, reduces systolic pressure 0.9 - 1.2 mmHg and diastolic pressure 0.2 - 0.8 mmHg. Study during 14 day in RS Cipto Mangunkusumo Jakarta which

is conducted by Ranakusuma (in Goland, 2008) shows that it exists enhancement albumin And proteins, each 12 And 4.5 percent. This show signs recovery. Because, problem main on strokes is disturbance metabolism proteins, so that happen disintegration neuro-peptide, neuro-transmitter, and neuro-endocrine. Proteins is shaper third factor the, Which serve as means communication system organ and between neurons.

Providing medication and balanced nutrition can speed up system restoration brain And organ, maintain function neurological, hinder lost mass free of fat (muscle) and facilitates the return of optimal body function, so that the quality of life of post-stroke patients can be improved and reduced attack repeated. Study more carry on show giving food with Certain nutritional levels have been proven to reduce mortality from 40% to 20%.

CONCLUSION

This research has identified several characteristics of 88 respondents. The results of the analysis of the relationship between stroke risk factors that cannot be modified and the incidence of hemorrhagic stroke which have a significant relationship are the risk factors age (p value = 0.036) and hereditary history (p value = 0.045). Meanwhile, the results of the analysis of the relationship between stroke risk factors that can be modified and the incidence of hemorrhagic stroke that have a significant relationship are the risk factors for hypertension (p value = 0.027), DM (p value = 0.023), dyslipidemia (p value = 0.038) and diet patterns (p value = 0.031). The risk factor for hypertension is the most dominant risk factor with OR = 22.767.

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