Characteristics of Stroke Patients in Outpatient:
An Analytical Descriptive

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ABSTRACT

Keywords:
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Background: Characteristics of the population are influenced lifestyle due to changes in demographics, epidemiology, and local culture there is a risk of behavior that is detrimental to health. This study aims to determine the characteristics of stroke patients in outpatient settings.

Methods: The study using a descriptive-analytic. The population was patients diagnosed with stroke in the Outpatient Unit of RSUD dr. Soegiri Lamongan in June-July 2019. The sample size was 46 patients with consecutive sampling. Data was collected from interviews with patients or patient families and based on medical records. Patients criteria for interviewed have an MMSE score of 24-30. Analysis data used descriptive statistics and Logistic Regression tests.

Results: The results showed the characteristics of stroke patients 57.6% aged 40-59 years, 50% male patients, no education to school 30.4%, non-hemorrhagic stroke 83.7%, patients with left hemiparesis 51.1%, risk factors for hypertension 85.9%, and patients never been exposed to information about stroke as much as 79.6%. Patients with diabetes mellitus have a risk of 9.6 times, and patients with smoke habits had to risk of 3.9 times to occur a non-hemorrhagic stroke.

Conclusions: The concluding study is that non-hemorrhagic stroke is the dominant type of stroke in the Lamongan Regency. History of Diabetes Mellitus and smoking habits significantly influence the occurrence of non-hemorrhagic stroke.

I.   INTRODUCTION

A stroke is the vascularization of the brain's blood vessels that can cause physical problems, disability, and even death. The incidence of stroke reaches 40-300 cases per 100,000 population [1]. The World Health Organization (WHO) report states that 7.3 million people die from ischemic heart disease, and 6.2 million, caused by stroke and other cardiovascular diseases. Stroke is the sixth leading cause of death in low-income countries and the second leading cause of death in middle and high-income countries [2].

Characteristics of stroke patients in developing and developed countries are different. Characteristics of stroke patients in the Netherlands, which is one of the developed countries, namely aged 59-80 years (69%), male (54%), risk factors for cardiovascular disease (71%), hypertension (57%), hyperlipidemia (30%), diabetes (16%), myocardial infarction (13%), atrial fibrillation (13%), stroke patient duration before 3 hours of the initial attack in 60% of cases (Horsch et al., 2016). In Indonesia, prevalences of stroke sufferers continue to increase, in 2013 by 7%, increasing in 2018 to 10.9%. Prevalences of stroke in Indonesia increase with age. The number of stroke sufferers is 11.0% male and 10.9% female the highest case is over 75 years old 50.2%, lives in urban areas 12.6% and rural areas 8.0%, most out of school 21.2%, and also 21.8% more do not work. The risk factors for stroke are smoking habits 35.7%, hypertension 27.1%, and diabetes mellitus 2.4% [3].

Indonesia is a developing country and has many different cultural variations. Technological advances in developing and developed countries have led to epidemiological and demographic changes, namely changes in lifestyle and an increase in the prevalence of non-communicable diseases, one of which is stroke [4]. In addition, lifestyle and diet are also strongly influenced by varied local cultures [3].

Lamongan Regency is one of the regions in East Java located at the north coast area with a population of 1,360,987 people in 2020, the large number have junior high school education (24, 18%), with the Human Development Index (HDI) in 2019 reaching 72,57%. A total of 26.3% of the Lamongan Regency area uses agricultural land in the rice and aquaculture, and the rest is non-paddy land is most was used for the industrial sector. According to the health profile of East Java, the number of stroke sufferers is 1.24% per 1000 population, while in Lamongan Regency, 1.27% per 1000 population [5].

The data shows that Lamongan Regency was original an agricultural area to an industrial area. The existence of industrialization in an agrarian society can cause socio-economic changes in society, one of which is a change in the level of health [6]. The low level of public education is also at risk for behavior that is detrimental to health [7]. One of the efforts in planning health programs to reduce stroke prevalence prevent disability, and death, is more important to study the characteristics of stroke patients, especially for referral patients in primary care facilities. It aims to determine the risk factors for stroke in all referral patients focusing on sociodemographic factors and habit patterns.

II. METHOD

The research design used the descriptive-analytic method. The study population was patients diagnosed with stroke in the Outpatient Unit of RSUD dr. Soegiri Lamongan in June-July 2019. Sampling used a consecutive of 46 patients. The samples used were patients diagnosed with a stroke, based on the American Heart Association (AHA) Stroke 2013, with signs of acute central nervous system (CNS) neurologic deficit due to vascular disorders, cerebral infarction, intracerebral hemorrhagic (ICH), or subarachnoid hemorrhagic (SAH) as evidenced with the neuropathological examination, neuroimaging, and or permanent clinical injury (Sacco et al., 2013). The inclusion criteria for the study are stroke patients evidenced by the results of a CT scan by a radiologist. Assessment of patient characteristics used patients who did not experience aphasia or dysarthria with MMSE values of 24-30. Collect data from medical records and interviews with patients or families. This research obtained information on ethical suitability from the dr. Soegiri Hospital Lamongan, Number of Ethical Approval 88/KEPK/D.Kep/V/2019.

Researchers conducted an assessment of the patient's medical record, interviews with patients or their families, and also used a questionnaire containing patient demographic data (8 questions), patient examination data including risk factors, physical abnormalities experienced by the patient (4 questions), disease history and patient behavior as a risk factor for stroke (3 questions), as well as interviews about the patient's knowledge about stroke information and the chronology of the beginning of stroke until getting medical action (2 questions).

To determine the distribution of frequency, percentage, and cross-tabulation using the Chi-Square test. To determine the risk factors associated with stroke using the Haenszel Mantel test and analyze determining risk factors and the incidence of non-hemorrhagic stroke as the dominant type stroke used Logistics Regression test.

III. RESULTS AND DISCUSSION

a. Results

Table 1 Frequency Distribution of Respondent Characterictic (n=46)

Characterictic	SNH		SH	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Gender				
Male	20	87,0	3	13,0
Female	18	78,3	5	21,7
Total	38	82,6	8	17,4
Age (Year)				
≤ 39	1	100	0	0,0
40-59	21	80,8	5	19,2
≥ 60	16	84,2	3	15,8
Total	38	82,6	8	17,4

Table 1 shows that 87.0% of male patients had a non-hemorrhagic stroke, while 13.0% of hemorrhagic strokes had. Female patients who had a non-hemorrhagic stroke were 78.3%, and 21.7% had a hemorrhagic stroke. Patients experience is the majority of non-hemorrhagic stroke, namely at the age of > 60 years by 84.2% and at the age of 40-59 years by 80.8%.

Table 2 Frequency Distribution of Education, Knowledge Level about Stroke Information and Duration of Stroke Initial Handling (n=46)

Characterictic	Frequency	Percentage (%)
Education		
No School	14	30,4
Elementary	9	19,6
Middle School	12	26,1
High School	7	15,2
College	4	8,7
Knowledge level about stroke information		
Knowing	9	19,6
Unknowing	37	80,4
The duration of stroke initial handling (hours)		
< 4,5	26	56,5
> 4,5	20	43,5

The results in table 2 show that 30.4% of stroke patients never attended school, 80.4% of patients who never received information about stroke before the attack, and 56.5% of patients who received treatment before 4.5 hours since the stroke occurred.

Table 3 Frequency Distribution of Stroke Types and Clinical Manifestations (n=46)

Characterictic	Frequency	Percentage (%)
Stroke types		
SNH	38	82,6
SH	8	17,4
Clinical Manifestations		
1. Motor disorders		
Right hemiparesis	22	47,8
Left hemiparesis	24	52,2

Characterictic	Frequency	Percentage (%)
2. Communication disorders		
Yes	21	45,7
No	25	54,3
3. Decreased awareness		
Yes	6	13,0
No	40	87,0

The results of table 3 show that the type of stroke that often occurs is non-hemorrhagic stroke 82.6%, left hemiparesis occurs 52.2%, communication disorders occur (dysarthria or aphasia) 45.7% and decreased consciousness 12%

Table 4 Risk Factor Analysis Stroke (n=46)

Risk Factor	SNH		SH		p	OR	p	CI 95%
	n	%	n	%				
Gender								
Male	20	87,0	3	13,0	0,744[a]			
Female	18	78,3	5	21,7				
Age (Year)								
$\leq$ 39	1	100	0	0,0	0,420[a]	0,646[a]		
40-59	21	80,8	5	19,2				
$\geq$ 60	16	84,2	3	15,8				
Hypertension								
Yes	22	84,6	4	15,4	0,503[b]	0,646[c]	2,977[c]	0,642-13,809
No	16	80,0	4	20,0				
Diabetes Mellitus								
Yes	20	95,2	1	4,8	0,036[b]	9,609[c]	0,040[c]	1,104-83,666
No	19	76,0	6	24,0				
Hyperlipidemic								
Yes	22	81,5	5	18,5	0,260[a]	1,255[c]	0,712[c]	0,376-4,187
No	14	73,7	5	26,3				
Smoke								
Yes	19	86,4	3	13,6	0,045[a]	3,904[c]	0,049[c]	1,003-15,193
No	17	70,8	7	29,2				
Drinking alcohol habits								
Yes	20	60,6	13	39,4	0,274[b]	0,133[c]	0,104[c]	0,012-1,512
No	11	78,6	3	21,4				
Use of contraceptive pills								
Yes	10	76,9	3	23,1	0,550[b]	0,750[c]	0,701[c]	0,173-3,260
No	27	81,8	6	18,2				

[a]Chi-square, [b]Fisher exact, [c]Regresi Logistic

Table 4 explains that age and gender did not have significant relations with stroke (p=0.744) and (p=0.420). Hypertension does not have a relationship with stroke (p=0.503), but hypertension had a 2.97 times risk of non-hemorrhagic stroke to those without hypertension. Risk factors of hyperlipidemia did not have a relationship significant with the incidence of stroke (p = 0.260). Hyperlipidemia is 1.25 times the risk of non-hemorrhagic stroke. The habit of drinking alcohol was not associated with stroke (p=0,274). A history of alcohol consumption has 0.13 times the chance of having a stroke compared to people who never drink alcohol. The use of contraceptive pills also had a non-significant relationship (p=0.550). Patients who had used the contraceptive pill had a 0.8 times risk of having a stroke than patients who did not use the contraceptive pill.

The results showed that the factors of diabetes mellitus and smoking had a significant relationship to stroke. Diabetes mellitus has a relationship that causes stroke, especially non-hemorrhagic stroke (p = 0.040), with a risk of 9.6 times. Smoking habits had a relationship significant with stroke (p=0.045), especially non-hemorrhagic stroke (p=0.049), with a 3.9 times risk of having a stroke compared to patients who did not smoke.

b. Discussion

The results of the studies explained that gender did not have a significant relationship (p>0.005). Male or female stroke patients have the same number, which is 50%. Previous research explains that gender does not affect the incidence of stroke [4]. The results of other studies men are the majority of stroke (52%) are women the incidence of stroke increases at a certain age, namely after menopause because after menopause a experiences a decrease in the hormone estrogen. Estrogen is a hormone that acts as a blood vessel vasodilator [8]. The results of previous studies also found that men were 25% at risk of suffering from stroke, but 60% of deaths due to stroke incidence to women, and male patients often experienced smoking habits and high-stress levels in young men [9,10].

The results studies explain stroke patients are majority ranged between 40-59 years of 57.6%. The age factor did not have a relationship significant with type stroke (p>0.005). Previous results of study risk of non-hemorrhagic stroke increased after 45 years and will increase by 11-20% for every additional 3 years of age [11]. Increased age results in degenerative processes, especially in the blood vessels of the brain. Stroke attacks at a young age tend to be triggered by lifestyle and temperament [10].

The incidence of stroke at a young age influences risk factors as of trigger. Patients had smoking habits at risk of having a stroke at a younger age, and the prevalence will decrease at an older age (>75 years). Risk factors for diabetes mellitus and hyperlipidemia also increase at the age of 65-75 years. Hypertension often causes non-hemorrhagic stroke at the age of <55 years and causes hemorrhagic stroke in all age groups up to 75 years [12].). The age factor also causes the emergence of various blood vessel disorders and increases the severity in stroke patients. Increasing age causes the elasticity of the aortic blood vessels to decrease and causes an increase in systolic pressure. In addition, older stroke patients are also at risk for aphasia compared to younger patients [13,14].

The level of education of patients, the majority of whom never went to school, causing a lack of exposure to information about stroke. Education affects health status, level of knowledge, and healthy living behavior [15,16]. Education level and knowledge stroke will affect the length of time it takes to get help when you first experience an attack. Education and knowledge about stroke will affect the length of time to get help first incidence attack. Assistance to stroke patients before 4.5 hours is proven to be more effective in reducing the risk of disability or death due to stroke [17].

The results of previous studies explained that most stroke patients had a history of hypertension. However, hypertension was not significant for the incidence of both types of stroke. Previous studies describe hypertension as a factor that causes a hemorrhagic stroke and an important in the development of atherosclerosis which is one of the causes of non-hemorrhagic stroke [18]. The results showed that hypertension had a risk of experiencing a non-hemorrhagic stroke as much as 2.9 times. Their previous studies hypertension has 7.5 times the risk of having a hemorrhagic stroke to non-hemorrhagic stroke [4]. The results of a study in Japan explained that a history of hypertension was 7.6% at risk of having a non-hemorrhagic stroke and 1.3% at risk of having an intracerebral hemorrhage (Turin et al., 2016). Studies also show that good hypertension treatment can reduce the risk of stroke by 36-42% [9,19].

Hypertension is the leading cause of heart failure and accounts for half of all stroke deaths globally [20]. Continuous increases in blood pressure can cause damage to the endothelial lining of blood vessels and trigger the formation of aneurysms that cause a stroke [21]. The causes of hypertension include age, heredity, smoking habits, excessive sodium, and fat intake, and lack of physical activity. Consume habits foods high sodium, such as salted fish, and fatty foods such as fried foods a caused by hypertension [22,23]

The results showed a relationship significant between a history of DM and stroke, especially non-hemorrhagic stroke, with an increased risk of 9.6 times. The results of previous studies explained

that DM had a 2.96-time risk of having a stroke to people who did not suffer DM [3]. DM will disrupt the endothelial lining of blood vessels, arterial stiffness, and systemic infections that cause atherosclerosis to cause a stroke. Uncontrolled DM patients are more at risk of causing stroke, especially non-hemorrhagic stroke. Disorders that arise are usually limb weakness and dysarthria caused by cerebral lacunar infarction [24]. Stroke patients with diabetes mellitus have a 60% risk for recurrent stroke. Type 2 DM has a higher risk of causing stroke than type 1 DM [22,25].

The results of this study indicate that the majority of stroke patients have a history of hyperlipidemia. In previous studies, patients have high cholesterol levels above 200 mg/dl and is a risk factor for stroke [21]. However, the results of this study showed that hyperlipidemia had no association with stroke. Hyperlipidemia is not the only cause of stroke. Hyperlipidemia can cause stroke because it has caused cardiovascular disorders [26]. The population is 25% of low-income countries and 33% of middle-income countries, and 50% of high-income countries have high cholesterol levels [27]. Factors that affect the increase in blood cholesterol include diet and smoking. High cholesterol levels cause plaque formation in blood vessels and lead to atherosclerosis at times resulting in thromboembolism. If the blockage occurs in the blood vessels of the brain will cause a stroke. A history of hyperlipidemia has a risk of stroke by 2.856 times to other people who did not have hyperlipidemia [12,28].

The results showed a significant relationship between smoking and stroke, especially non-hemorrhagic stroke, with a risk of 3.9 times compared to non-smokers. Not only active smokers are at risk, but passive smokers also increase stroke risk factors by 30% [22]. Smoking is more in younger patients and tends to cause a subarachnoid hemorrhagic stroke. Smoking is more in younger patients and tends to cause a subarachnoid hemorrhagic stroke [12]. Smoking is more in younger patients and tends to cause a subarachnoid hemorrhagic stroke (Hauer et al., 2017). Smoking is a direct or indirect incidence of stroke, because smoking causes hypertension or COPD, and if not handled properly, it can lead to stroke [29]. Smoked increased the production of fibrinogen and the occurrence of atherosclerosis in the blood vessels of the brain. The nicotine in cigarettes increases adrenaline production and can increase blood pressure [30].

The results showed that a history of alcohol consumption was not associated with stroke. Following previous research that the habit of consuming alcohol is not associated with stroke [18]). The behavior of alcohol consumption and smoking can increase the hematocrit and blood viscosity, thus triggering the incidence of stroke at a young age, either in the form of thrombotic stroke or subarachnoid hemorrhage. The risk of stroke caused by alcohol depends on the amount and type of alcohol consumed Other studies have shown that consuming 1-2 glasses of alcohol per day can increase HDL levels in the blood, and the more alcohol you drink, the higher the risk of hemorrhagic stroke [31].

The results showed that the use of contraceptive pills did not have a relationship with stroke. The use of the contraceptive pill does not directly cause a stroke. Pill contraception is causes stroke because it can induce hypertension which is one of the risk factors for stroke [7]. Women who use oral contraceptives have 3,458 times the risk of developing hypertension than other women who do not use oral contraceptives. Adolescent girls have suffered a stroke if there is no evidence of other causative factors, can be suspect that contraceptive pills are the cause with a 10% prediction of causing a stroke [32].

The results of this study showed that the majority of patients had a non-hemorrhagic stroke. The risk of non-hemorrhagic stroke increased age of 45 years and will continue increased age [19]. Hypertension is a risk factor for hemorrhagic stroke, but long-term hypertension also causes atherosclerosis. In addition, smoking and hyperlipidemia are also important factors in the formation of atherosclerosis [18]. The habits of people who are mostly smokers and often consume fatty foods further increase the risk of atherosclerosis and trigger non-hemorrhagic strokes [33].

The results showed that 51.1% had left hemiparesis, and 48.9% had right hemiparesis. Stroke causes motor function disorders that arise due to lesions in the right or left hemisphere cortex. Left hemiparesis disorders are often caused by right brain damage because the right brain is rarely for activities compared to the left brain [8,9]. Almost 70-80% of stroke patients experience hemiparesis [34]. Patients who experience hemiparesis will have difficulty performing daily activities (ADL), causing the patient to be unable to perform ADL independently. The independence of stroke patients can cause post-stroke psychological disorders [16,35].

Stroke can also cause impaired verbal communication and decreased consciousness. Communication problems due to stroke include aphasia, dysarthria, and lisp. Aphasia will cause various communication disorders, namely comprehensive language disorders, language expression, reading, writing, attention, memory, and other cognitive domains [14]. The results of this study showed 46.7% of patients had aphasia. The consistent with previous studies that aphasia occurs in 20-40% of acute stroke patients. Aphasia is more common in non-hemorrhagic strokes than hemorrhagic strokes. everal previous studies have suggested that Broca's aphasia usually occurs in younger patients, whereas Wernicke's aphasia occurs in older patients. As a result of lesions in the left hemisphere causes speech disorders form of pronunciation of morphemes using inappropriate phonemes [18].

The results showed that 12% of stroke patients experienced a loss of consciousness. Decreased level of consciousness is caused lesion in the thalamus that causes damage to the rostral ARAS system [36]. Decreased level of consciousness in stroke-causing extensive bleeding volume results in increased ICP or direct compression of the thalamus and brain stem [37].

Stroke is a burden for patients and families because it reduces productivity and quality of life [38]. The government can make efforts to formulate policies for the treatment and prevention of stroke patients, increase public awareness about the impact and dangers of stroke through increased education and knowledge about stroke, develop promotive, preventive, curative, and rehabilitative efforts that are carried out holistically through services to the community in every health facility [39].

IV. CONCLUSION

The conclusion of the study showed that the dominant type of stroke was a non-hemorrhagic stroke. History of DM and smoking habits significantly affect the incidence of non-hemorrhagic stroke. DM patients risk 9.6 times, and smokers risk 3.9 times to suffer a non-hemorrhagic stroke. Results of the analysis found that several risk factors for stroke did not have a significant relationship, caused the incidence of stroke was not only caused by one factor but was the result of complications from several risk factors.

Changes in demographics, epidemiology, and local culture lead to changes in the characteristics of the community. The industrialization process in Lamongan Regency resulted in changes in the stroke characteristics of patients. This condition must get attention from local governments and health workers to improve health services through promotive, preventive, curative, and rehabilitative efforts carried out comprehensively based on the culture and characteristics of the community.

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