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Community Service

EARLY STROKE PREVENTION BY IMPROVING THE ROLE OF TEACHERS AND STUDENTS

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ABSTRACT

Background. Stroke is a disease of acute decreased nerve function caused by sudden disruption of the brain's blood vessels. Some efforts to prevent strokes need to be carried out at an early age by controlling risk factors for stroke, particularly stroke risk factors in high school adolescents. According to a local survey, almost 90% of teenagers or students of SMK 1 in the 2nd grade have smoking habits, and the number of teenagers who like fast food that is high in carbohydrates, high in fat, high in cholesterol, and do not do any physical exercises regularly. This empowerment aimed to increase the knowledge and skills of teachers and students regarding early stroke prevention.
Implementation Method. The Community Service was conducted in 2023. These empowerment methods used public education, counseling, workshops, and practicum. Partners in this empowerment were the teachers and students of SMKN 1 Suruh, Trenggalek, East Java, with 40 students and 6 teachers.
Findings. This study showed the increased knowledge of teachers and students about stroke risk factors and early stroke prevention, as well as increased skills in measuring blood pressure. There were 50% of students had sufficient knowledge about stroke risk factors, 50% had adequate skills in measuring BP, and 92.5% of students had a smoking history.
Conclusion. In conclusion, knowledge about stroke risk factors and early prevention of stroke must be carried out starting from an early age, because stroke strikes anyone and varied ages.

Keywords: Early Prevention, Knowledge, Stroke Risk Factors, Teenagers
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BACKGROUND

Stroke is a disease of acute decreased nerve function caused by sudden and quick disruption of the brain's blood vessels, causing symptoms and signs according to the area of the brain damage. Stroke often causes residual symptoms such as movement disorders, speech disorders, swallowing disorders. Efforts to prevent strokes need to be done early by preventing and controlling risk factors for strokes.

The number of stroke sufferers worldwide who are under 45 years old are increasing. At an international neurologist conference in England, it was reported that there were more than 1000 stroke sufferers under 30 years old. The world health agency predicts that deaths due to stroke will increase along with deaths of heart disease and cancer from approximately

6 million in 2010 to 8 million in 2030. In Indonesia, it is estimated that every year 500,000 people suffer a stroke, around 2.5% or 125,000 people die, and the rest have mild or severe disabilities. In general, it can be said that the incidence of stroke is 200 per 100,000 population. In one year, among 100,000 residents, 200 people will suffer a stroke. The incidence of ischemic stroke is around 80% of all stroke cases, while the incidence of hemorrhagic stroke is only around 20% of all stroke cases [1]. According to the results of Riskesda (2013), as many as 57.9 percent of strokes were diagnosed by health workers. The prevalence of coronary heart disease, heart failure and stroke appears to increase as the respondent's age increases. The prevalence of stroke is the same in men and women. A study at the Brawijaya Hospital in Surabaya in 2012-2013 saw stroke sufferers under 50 years old, 15 stroke sufferers ranging from 30-49 years old, with various factors causing the occurrence. Stroke, including early stroke, a risk that can influence the occurrence of stroke at a young age [2].

At productive age, stroke attacks are closely related to lifestyle and ambitious mindset. The lifestyles of young people that are thought to trigger strokes are fast food, alcoholic drinks, excessive work, lack of exercise and stress, use of stimulants, narcotics and smoking habits, consuming stimulants and narcotics causing the increasing of blood flow. Meanwhile, the smoking habit causes a pile of dirt in the inside of the blood vessels or atherosclerosis.

A result of the International Pediatric Stroke Study, a study conducted on 676 children aged 0-18 years, found that the incidence of stroke in children is related to several acute conditions that occur in the body system, including dehydration, sepsis, fever, acidosis, shock, asphyxia, gastroenteritis [3].

Even though stroke attacks are difficult to predict, by controlling risk factors, it can be said that we have made efforts to prevent stroke attacks. Efforts that can be made to implement healthy habits at an early age include stopping smoking, limiting and avoiding alcohol consumption, not consuming illegal drugs, exercising regularly, getting enough rest, and preventing obesity (overweight). Besides, risk factors that can be modified should be controlled, such as carrying out medical check-ups to monitor health conditions.

Health education is an important intervention for the wider community to prevent premature strokes. This health education is related to risk factors and controlling risk factors that cause stroke. Education is not only given to the age of elderly, but it is also important to teenagers because they have risky lifestyles leading to stroke, such as smoking, drinking alcohol, lack of activity, and eating instant food and fatties. Almost one-third of the

association between low education and severe stroke was explained by risk factors, and clinical effort should be taken to reduce these risk factors to decrease stroke severity [4].

METHOD OF ACTIVITIES

The Community service activities are alternatives of providing education to the community in an effort to prevent the emergence of disease and also prevent an increase of disease cases, including the service activities carried out with the aim of increasing the knowledge of teachers and students about preventing stroke at an early age by introducing risk factors of strokes. The method used in this community service were 3 methods, the first is measuring the health of the targets, namely students and teachers. The types of health measurements carried out were measuring blood pressure, blood sugar, cholesterol, uric acid and also identifying smoking activity in teenagers. The second activity was providing health education about stroke, recognition of stroke risk factors, early stroke prevention, as well as providing health education about the dangers of smoking for teenagers as a risk factor for stroke. The third activity is providing training to students on how to measure blood pressure.

RESULT OF ACTIVITIES

The findings showed the increasing knowledge and skills of the target. The results can be seen from the table below.

Table 1. Measurement of blood pressure, blood sugar, cholesterol
And uric acid of teachers and students

Type	Blood Pressure			Blood Sugar			Cholesterol			Uric Acid		
	Normal	More	F	Normal	More	F	Normal	More	F	Normal	More	F
Teacher	5	1	6	5	1	6	3	3	6	4	2	6
Students	35	5	40	38	2	40	-	-	-	-	-	-

According to Table 1, it was presented that five (5) out of forty (40) students (12.5%), and one (1) out of 6 teachers (16.6%) experienced high blood pressure. There is 1 teacher have abnormal blood glucose (16.6%). There is also 3 teacher have abnormal cholesterol (50%) and 2 teacher have abnormal uric acid (33.3%).

According to Table 2, it was found that 47.5% of students were active smokers, 30% of students were smoking around their circle, and 15% of students were occasional. It was concluded that 92.5% of students had a smoking history.

Table 2. Smoking Habit

Smoking Type	F	%
Active Smokers	19	47.5
When among other smokers	12	30
Once trial	6	15
No Smokers	3	7,5
Sum of	40	100

Table 3. Teachers' and Students' Knowledge of Stroke Risk Factors

Knowledge	Pre-test				Post-test			
	Good	Fair	Less	F	Good	Fair	Less	F
Teachers	2	3	1	6	3	3	0	6
Students	9	17	14	40	11	20	9	40

Based on Table 3, it was figured out that there was an improvement in teachers and students; knowledge before and after the education of stroke risk factors. Before community service activities, teachers had a fair knowledge of stroke risk factors as many as 3 respondents and 1 less knowledge. After community service activities, teachers had a good and fair knowledge of stroke risk factors as many as 3 respondents. Before community service activities, students had a fair knowledge of stroke risk factors as many as 17 respondents and 14 less knowledge. After community service activities, students had a good knowledge of stroke risk factors as many as 11 respondents and 20 respondents have fair knowledge.

Table 4. Students' Skills in Measuring Blood Pressure

Skill	Skills Observation Result			
	Good	Fair	Less	F
students	1	5	4	10

Training in taking blood pressure measurements was given to 10 students concerning hypertension. Training was only given to 10 students who were members of the stroke care youth group, and they were given training on how to measure blood pressure and how to interpret it. They were also given the opportunity to try taking measurements on their friends at school. 10 students were given blood pressure measuring devices and at the same time given training on how to take blood pressure measurements. As a result of the training, evaluations and observations were carried out regarding students' ability to take action

(blood pressure measurement) and from the evaluation results, most students had sufficient ability to take action. Figures 1 and 2 showed the implementation taken in community service.

Figure 1. Health education

Figure 2. Taking Blood Pressure

DISCUSSION

Based on the results of the activity, it was found that 47.5% of students actively smoked, only 7.5% of teenagers did not smoke, and the others only smoked when gathering or because their peers forced them. The results of measuring students' blood pressure and blood sugar, it was found that out of 40 teenagers there were 5 teenagers who had high blood pressure, and based on interviews, 2 of these 5 teenagers had parents with a history of high blood pressure. The results of blood sugar measurements from 40 teenagers showed that 2 teenagers had blood sugar levels higher than normal.

Stroke represents a major public health concern due to its association with high rates of hospitalization, long-term disabilities, and mortality. While stroke cases in older people appear to be declining, recent evidence suggests increasing cases of stroke in adults or under 50 years [5].

Risk factors for stroke are related to several things, including behavioral factors (obesity, smoking, physical activity), family history of stroke, and disease factors (hypertension, diabetes mellitus, dyslipidemia, atrial fibrillation). These eight risk factors can be defined as follows: Hypertension when the results of systolic pressure measurements are found to be more than 140 mmHg and diastole more than 90 mmHg. Diabetes Mellitus when FBG measurement results are found to be ≥7.0 mmol/L. Dyslipidaemia was defined as TG levels ≥ 1.70 mmol/L, cholesterol (TC) ≥ 5.18 mmol/L, and low-density lipoprotein cholesterol (LDL-C) ≥ 3.37 mmol/L. Atrial fibrillation is a heart rhythm disorder proven by an ECG examination. An active smoker if he smokes ≥1 cigarette a day. Obesity is a condition where the body mass index (BMI) is ≥26. Physical inactivity was defined as

physical exercise < 3 times a week for < 30 min each time. A family history of stroke is defined as a situation where an individual has a family history of stroke [6]. A history of stroke in the family is an independent risk factor for the emergence of ischemic or hemorrhagic stroke. The results of comparisons between family and non-family relationships on the emergence of stroke, it was found that stroke at a younger age occurred in those who had a history of stroke in the family [7].

Among younger stroke patients, some risk factors are either unique to women or more common among women. This includes the use of birth control containing estrogen, pregnancy, and migraine with aura. Migraine with aura is more prevalent among younger women compared with men, and the risk of stroke is more likely in the presence of tobacco use and use of combined oral contraceptives [8]. Meanwhile, in teenagers, one of the risk factors (which can be modified) that teenagers have is smoking, physical activity, and eating habits. The emergence of stroke in young people and adults is influenced by several risk factors that occur in teenagers, including obesity, the emergence of hypertension in teenagers, and also due to low cognitive function [5].

Hypertension is a disease that imposes risks of diseases on other systems including on CNS (Central Nervous system), renal system, and CVS (Cardiovascular diseases). Increased BP is one of the preventable causes of premature death. However, most people do not control their blood pressure optimally. Knowledge about increased BP contributes greatly to controlling and preventing complications that might result [9]. One of the complications of hypertension is stroke. The results of the study showed that there was a relationship between hypertension and the cases of ischemic stroke, where respondents with hypertension are 10.771 times more likely to suffer an ischemic stroke compared to respondents who do not have hypertension. This also showed that hypertension is a risk factor for ischemic stroke. High blood pressure can trigger atherosclerosis which can encourage Low Density Lipoprotein (LDL) cholesterol to enter the blood vessels more easily and reduce the elasticity of the blood vessels [10].

Several factors that cause strokes include lifestyle factors, diet, stress, and hypertension. Of the several factors above, the most common are lifestyle factors. A healthy lifestyle is an effort to implement good habits in carrying out a healthy lifestyle and avoid bad habits that can harm health. A healthy lifestyle includes regular exercise, avoiding alcohol, avoiding smoking, eating foods that are high in fat and low in cholesterol [11].

Smokers have a higher potential for having a stroke or experiencing a repeat stroke than someone who has had a stroke with symptoms that are more severe than the first

symptoms. Stopping smoking can reduce the risk of stroke, so stopping smoking is a highly recommended action to prevent stroke. Based on the research results, it was found that there is a positive relationship between smoking and the incidence of stroke [12].

Based on the results of a survey of 40 vocational school students, it was found that 92.5% were smokers, and only 7.5% of teenagers did not smoke. With these results, special attention is needed for adolescents, to prevent the risk of stroke at an early age. This is in line with research results that adult respondents (<55 years) have a 2.56 times higher risk of CVD-SH stroke than CVD-SNH stroke compared to elderly respondents (≥ 55 years). Significant results were obtained that there is an influence of lifestyle on the incidence of stroke at a young age. The factors that most influence stroke at a young age are lack of physical activity and smoking. The existence of lifestyle with the cases of stroke at a young age includes smoking, physical activity, and alcoholic drinks, this is related to lifestyle at a young age [13].

Diabetes mellitus is a risk factor for stroke as well as a risk factor for impaired cognitive function. A research result states that 30% of acute ischemic stroke patients suffer from diabetes mellitus. The risk of ischemic stroke in diabetes mellitus patients is two to six times compared to non-diabetic patients [14] [15]. Diabetes mellitus can appear at a productive age as a result of unhealthy habits from individuals, such as eating foods high in sugar and high in fat, lack of physical activity, and also poor stress management. Adolescence is a developmental stage where children are in the process of searching for their identity, moving, and gathering freely, so the risk of doing things that risk the emergence of diabetes mellitus is also high. Adolescents need appropriate information and education to prevent the emergence of risk factors for diabetes mellitus, which means there is also a risk of developing stroke at an early age

CONCLUSION & SUGGESTION

The role of the community and teachers in preventing early onset is very necessary. Adolescents need regular education about smoking activities, behavior/lifestyle, and alcohol use which are risk factors for stroke in adulthood. Healthcare providers of Government Institution, Health Vocational Institution, Healthcare Service, or others are expected to prove education, motivation to all levels of society to prevent stroke cases at early age.

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