



The Effect of Education on Self-Management and Stroke Prevention Behavior on Recurrence

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ABSTRACT: This study aimed to determine the provision of self-management education interventions to reduce recurrence in stroke patients. Method: research design experimental with intact group comparison design. The number of samples of 60 people was calculated using G power software, taken by purposive sampling technique, 29 intervention groups and 31 control groups. The research was conducted in poly stroke RSU Muhammadiyah Malang. The instrument used the Stroke Self-Management Questionnaire (SSMQ) for stroke prevention behavior. Chi-square and the Mann-Whitney test analyzed data. The statistical tests obtained a p-value for self-management behavior, and recurrence was not significant, while on stroke prevention behavior obtained a p-value of $0.034 < 0.05$. Self-management educational interventions give patients the ability to control behavior and emotional responses so that patients can prevent stroke.

Keywords: stroke, self-management, stroke recurrence, stroke prevention

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BACKGROUND

The incidence of stroke is increasing worldwide. Stroke recurrence rates are increasing, and this can become a significant cause of long-term disability and has a major emotional and socio-economic impact on patients, families, and health services. The irony is that public awareness of recurrent stroke's dangers is still low. At the same time, stroke recurrence can be fatal and worsen the patient's condition, a significant cause of disability and even death (Aslani et al., 2016; Suhardingsih et al., 2012).

According to Ramdani's study, respondents who experienced a second attack at 7-12 months and more than 12 months were not much different (41.10% vs 45.20) (Ramdani, 2018). Other studies have shown a recurrence rate of 7-20% at one year and 16-35% at five years (Khanevski et al., 2019). In a meta-analysis of 13 studies, 9,115 stroke survivors had a recurrence of 3.1% at the first 30 days, 11.1% at one year, 26.4% at five years and 39.2% at ten years after the initial stroke (Mohan et al., 2011). While the results of research conducted by researchers at UMM Hospital obtained 47 patients (73,43 %) had a stroke recurrence, and the majority had a second recurrence (51,06%). The main factor causing the recurrence is hypertension or uncontrolled blood pressure.

Blood pressure should be controlled at <150/90 mmHg and perfusion pressure at 61–80 mmHg to reduce the risk of stroke (Wajngarten & Silva, 2019). Other factors contributing to stroke recurrence are age, hypertension, obesity, and control irregularities. Patients who do not routinely control their condition after the first attack have a recurrence risk of 8.7 times (Trisetiawati et al., 2018). Grace Research, the dominant factor of stroke recurrence is obesity. In addition, there are also three other influencing factors, namely cardiovascular disorders, hypercholesterolemia and physical activity (Rahayu et al., 2019).

Nurses have an essential role in reducing stroke recurrence by intervening in stroke patients. One of the interventions that can be done is to improve self-management. In patients who require long-term care such as stroke, the ability to care for themselves and manage their disease (self-care) is an essential component. In other terms, self-care is also called self-management (Rahmawati et al., 2019). Self-management is defined as an individual's active management of medication, symptoms, lifestyle, and the physical and psychological consequences of his condition. This action has been shown to reduce morbidity and utilization of health care. In stroke survivors, self-management interventions aim to empower patients to have the ability to manage medical conditions, change behaviour and overcome emotional problems as a consequence of survival (Allegrante et al., 2019; Lennon et al., 2018). The purpose of the study was to apply an intervention in the form of a self-management program to reduce stroke recurrence. Researchers use self-management because it focuses more on disease management than self-care, which is often interpreted as doing tasks (activity daily living) at home

LITERATURE REVIEW

Stroke is a sudden neurological disorder that can appear because the blood flow to the brain is suddenly interrupted; it can occur due to blockage or rupture of blood vessels in the brain, causing bleeding (Pinzon & Asanti, 2010). Stroke is divided into two types, namely ischemic stroke, caused by embolic blockage, while haemorrhagic stroke is more often caused by bleeding due to rupture of blood vessels in a part of the brain (Wayunah & Saefulloh, 2016).

Stroke Recurrence

The occurrence of stroke is very diverse; there is complete recovery, recovering with mild to severe disability. There is also the possibility of stroke recurrence in mild to severe cases. After the first attack, sometimes the attack can come back with a more severe condition. The recurrence can happen to stroke patients who ignore the needs of self-control, knowledge, lifestyle and level of awareness which is still relatively low. It is feared that a recurrence of stroke will occur for the umpteenth time with such conditions. If the stroke occurs repeatedly, there will be heavier bleeding than before (Khanevski et al., 2019; Mohan et al., 2011).

Stroke Recurrence Management

Management in overcoming or reducing the risk of stroke recurrence can be done in various ways, such as controlling blood pressure, a good lifestyle, consuming recommended foods for stroke sufferers, exercising regularly, and not smoking. Prevention of stroke in healthy people and no history of stroke is called primary prevention. At the same time, preventing recurrence of attacks in people who have had a stroke is called secondary prevention (Pinzon & Asanti, 2010). Stroke recurrence has the same risk factors as the first stroke (Ramdani, 2018b). So, in this case, the understanding and awareness of stroke sufferers must be increased about what risks can cause a recurrence of attacks. Pinzon & Asanti (2010) state that stroke recurrence attacks can be prevented by "STROKE".

S = Balanced Nutrition

Maintain a balanced diet. Consuming excess oil can increase and cause the risk of hypercholesterolemia. Likewise, excessive salt consumption can increase blood pressure..

T = Lose Excess Weight

Obesity puts a heavy burden on the heart in carrying out its functions. In addition, obesity also predisposes to increased blood cholesterol levels, hypertension, and diabetes mellitus.

R = Diligently Measure Blood Pressure

Preventing a recurrence of stroke can be controlled by measuring blood pressure regularly. High blood pressure or hypertension is one of the most significant risk factors for stroke recurrence. So blood pressure

checks are carried out regularly to determine if there are signs of increased blood pressure in people with post-stroke.

O = Regular Exercise

Regular exercise can improve blood flow, lower blood pressure, lose weight, and lower bad cholesterol in the blood. Exercise proves that it can lower blood pressure by 4-9 mmHg. Various aerobic sports, such as brisk walking, jogging, running, swimming, cycling, are suitable for post-stroke patients for maximum recovery while helping to lose excess weight. Stiffness in muscles and joints can be helped by stretching various parts of the body regularly and periodically.

K = Reduce Stress

Stress is one of the risk factors for stroke by increasing blood pressure, inhibiting tissue regeneration, and lowering the body's immunity. So, in this case, stress is a trigger for stroke recurrence.

E = Get Rid of Cigarettes

If this is done continuously will cause a recurrence of stroke. Smoking is associated with increased blood pressure, heart disease, and reduced blood flow to the brain. So people with post-stroke should stop smoking to avoid the risk of recurrent strokes.

Self Management

The concept of self-management was described over 40 years ago and was first introduced to suggest that patients are active participants in their self-medication. However, self-management is often used interchangeably with self-care, self-regulation, patient education and patient counselling. However, self-management has evolved, not just providing information or increasing patient knowledge. Although the concepts above are interrelated, self-care is interpreted chiefly as doing chores at home to prevent disease, not to manage existing diseases (Grady & Gough, 2014).

Self-management, in general, is self-management related to life and illness, management of disease related to treatment and care, management of symptoms and physical, psychological consequences, and lifestyle changes in response to the chronic illness they are experiencing. Self-management can show behavioural changes in self-management to increase motivation to improve their health. Self-management support in the rehabilitation of stroke patients can lead to positive changes in daily activities, improve quality of life and reduce the risk of recurrence (Boger, Hankins, Demain, & Latter, 2015; Rahmawati et al., 2019).

Self-management consists of the domain of increasing patient confidence, motivation and ability. The domain of confidence in interacting as an indicator of self-confidence and the ability of individuals to communicate and respond to health workers in fulfilling self-management, the domain of strategy is the readiness and ability of individuals to play a

self-management strategy, and the domain of guidance by health professionals as an indicator of trust in the information provided by health workers (Boger et al., 2015).

Researchers used a Stroke Self-Management Questionnaire (SSMQ) which was adopted from Boger (Boger et al., 2015), consisting of 28 questions that have been tested psychometrically. Prior to the psychometric test, there were 44 questions. Research has been done using this questionnaire in the Indonesian version by Rahmawati (Rahmawati et al., 2019).

Indicators of self-management success are knowing the disease, being motivated, actively sharing in decision making with health care providers, monitoring and managing symptoms of illness, knowing how to solve problems or seeking help to manage the impact of the disease. Implementing a lifestyle that improves health status, have access to support health services (Rahmawati et al., 2019; Oktaviani.J, 2018).

Self-care or self-management in post-stroke patients, including medication adherence, maintaining physical health (diet, no smoking, alcohol consumption, consumption of high-cholesterol foods), managing stress, consulting with health professionals and providing social support for self-care. Self-management programs are designed to enable people to manage their health more effectively. This intervention is more often used in stroke patients to modify attitudes and behaviours, such as setting life goals and lifestyle changes (Boger et al., 2015; Puri & Setyawan, 2020).

METHODOLOGY

This type of research is pre-experimental with an intact (static) group comparison design. There are divided into two groups: the intervention and the control group. Measurement of data in both groups was only carried out at the post-test. The number of samples is 60 people, taken by purposive technique. The sample was divided into treatment and control groups, 29 and 31 patients, respectively (calculated by software G power, $\alpha=0.05$; $\beta=0.80$, effect size=0.8). Stroke recurrence is seen within one month; the determination of this time limit is following the study (Ramdani, 2018), which states that stroke recurrence can occur < 6 months from the first attack, 2). Self-management behavior, 3). Stroke prevention behavior. The research instrument used is the Stroke Self-Management Questionnaire (SSMQ) adopted from Boger and Rahmawati (Boger et al., 2015; Rahmawati et al., 2019). This questionnaire consists of 28 questions using a Likert scale with a range of 1 - 6 (always true = 6, consistently wrong = 1). Negative questions contain questions 1-8, 10, 23-28. The second questionnaire is stroke prevention behaviour. It consists of 16 questions with indicators: stopping smoking, maintaining body weight, consuming healthy

food/drinks, physical activity, pressure control, medication adherence and health checks. Questionnaire adapted from Anik (Supriani et al., 2020).

The research has conducted an ethical test on KEPK UMM.

The self-management program is given for four weeks, with a frequency of 4 times, with the following stages: a). Weeks 1 & 2: giving the material as much as 2x with a duration of 30-60 minutes. b). Weeks 3 & 4: there was no intervention, only follow-up by telephone, and at the fourth week, a questionnaire was administered. The materials presented include stroke prevention, emotion regulation, motivation, family and spiritual support. All material provided is related to the domain of self-management. Respondents will also be given the material in modules adopted from the research (Aini et al., 2019). Data analysis was carried out in a bivariate descriptive manner using the chi-square test and the Mann-Whitney.

RESEARCH RESULT

Characteristics of Respondents respondents are described in table 1, consisting of gender, age, type of stroke experienced, educational background, duration of a stroke, number of attacks experienced.

Table 1. Frequency Distribution Based on Characteristics of Respondents

Variable	Group	
	Intervention (N=29) n, %; m, SD	Controls (N=31) n, %; m, SD
Gender		
man	15 (51.72)	23 (74.19)
woman	14 (48.28 %)	8 (25.81)
age	58.69(+7.09)	62.19(+9.40)
Stroke Type		
Ischemic	26 (89.66)	29 (93.55)
Hemorrhagic	3 (10.34)	2 (6.45)
Level of education		
not education	1 (3.45)	0
SD	7 (24.14)	9 (29.03)
junior high school	3 (10.34)	3 (9.68)
high school seniors	10 (34.48)	9 (29.03)
College	8 (27.59)	10 (32.26)
Stroke duration (months)	38.68 (+43.75)	46.93 (+50.08)
Profession		
entrepreneur	10 (34.48)	11 (35.48)
Private sector employee	5 (17.24)	3 (9.68)
civil servant	3 (10.34)	5 (16.13)
Does not work	10 (34.48)	9 (29.03)
Other	1 (3.46)	3 (9.68)
Stroke Attack		
first	26 (89.66)	24 (77.43)
Second	3 (10.34)	4 (12.91)
Third	0	1 (3.22)
Fifth	0	1 (3.22)
Sixth	0	1 (3.22)

Table 1 shows that the respondents were divided into two intervention groups (n=29) and a control (31). The average age of respondents in the intervention group was 59 years, while the control group was 62 years, where they were the majority of men, both intervention and control (51.72%; 74.19). The type of stroke suffered was the Ischemic group of the two groups (89.66%; 93.55%). Most respondents had a high school background (34.48%) in the intervention group, and undergraduate graduates (32.26%) dominated the control group. The average respondent from both groups was the first stroke (intervention 89.66%; control 77.43%).

Table 2 describes the analysis of the results after the intervention providing self-management education in the educational intervention group stroke prevention, emotion regulation, motivation, family and spiritual support during four weeks.

Table 2. Comparison of the Results of The Analysis Between the Treatment and Control Groups

Variable	Group		p-value, ES
	Intervention (n, %; m, SD)	Control (n, %; m, SD)	
Self-management			
Overall	107.86 (+29.43)	108.90 (+30.84)	0.605 (0.0003%)
High	16 (55,17)	13 (44,83)	
Low	17 (54,84)	14 (45,16)	
Domain self-management			
Capacity	35.62 (+11.59)	34.71 (+12.12)	0.812
Confidence in interaction	29.59 (+8.57)	30.55 (+7.56)	0.568
Strategy	32.45 (+10.58)	32.29 (+10.83)	0.964
Guidance by professional officers	10.72 (+6.24)	11.81 (+8.17)	0.897
Stroke recurrence			
Yes	0	3 (9.68)	0.238 (4.83%)
No	29 (100%)	28 (90.32)	
Stroke prevention behavior			
good	21 (72.41)	13 (41.93)	0.034 (11.18%)
not good	8 (27.59%)	18 (58.07)	

*ES = effect size

Table 2 shows that there was no significant difference in self-management behavior between the intervention and control groups based on the study results, and descriptively, the percentage of self-management in the intervention group was more significant with the highest mean in the capacity and strategy domains. The self-management intervention also did not have a significant impact on recurrence. However, the effect size showed that this intervention could improve recurrence by 4.85% without recurrence in the intervention group. Nevertheless, in this study, there was a significant difference in stroke prevention behavior between the two groups and the effect size value showed a change in the effect of 11.18%.

DISCUSSION

The results of data analysis showed that the prevalence of stroke increases with age. Ageing is the most potent non-modifiable risk factor for incident stroke, doubling every ten years after age 55. Our findings corroborated previous findings that the age of stroke patients was predominantly aged 55-64 years. Stroke in patients aged > 65 years is dominated by ischemic stroke type (Agustiyaningsih et al., 2020; Benjamin et al., 2019; Setyowati et al., 2021). Ischemic stroke patients physiologically have a better prognosis than hemorrhagic stroke, so their physical condition is better (Rahmawati et al., 2019).

The study results showed no significant difference in self-management behavior between the intervention and control groups. However, the percentage of self-management in the intervention group descriptively was more significant, with the highest mean in the capacity and strategy domains. This result is in line with previous studies, self-management practices in the intervention and control groups did not differ significantly at baseline or follow-up (Damush et al., 2011). However, the results of this study contradict the research of Suzanne; the stroke self-management program improved survivors' self-efficacy, outcome expectation, quality of life and satisfaction with the performance of self-management behaviors (Lo et al., 2018). The self-management intervention also did not have a significant impact on recurrence. However, the effect size showed that this intervention could improve recurrence by 4.85% without recurrence in the intervention group.

Self-management is the ability to control a condition and affect cognitive, behavioral and emotional responses (Rahmawati et al., 2019). According to another opinion, self-management is the individual's ability to manage symptoms, treatment, physical, psychological consequences and lifestyle changes in response to a chronic illness (Rahmawati et al., 2019). The insignificant difference in self-management behavior and recurrence in this study may be caused by several factors such as too short follow-up time because previous studies carried out follow-up eight weeks after intervention (Damush et al., 2011). Another study evaluated stroke recurrence after nine weeks of intervention web-based stroke education program (Kim et al., 2013).

The results of this study show a significant difference in stroke prevention behavior between the two groups, and there is an increase in the effect size value. The majority of respondents in the intervention group had good stroke prevention behavior compared to the control group. Self-management intervention programs teach patients how they can identify changes and solve problems related to their disease. So that this intervention is effective for improving functional psychosocial outcomes among stroke patients and making patients apply stroke prevention (Grady & Gough, 2014; Permata & Irawati, 2019).

The strength of this study was that researchers explained the stages of intervention in detail, equipped with modules given to each participant. However, the study's limitations were the limited number of respondents, the baseline data were not analyzed, and the follow-up time was too short. The results were not significant for self-management behavior and recurrence variables. Suggestions for further research is to evaluate the results at several follow-up times so that adequate time can be known.

CONCLUSIONS AND RECOMMENDATIONS

Self-management interventions allow patients to have the ability to control behavior and emotional responses so that patients can prevent stroke, which will ultimately have an impact on reducing stroke recurrence. Stroke recurrence is very dangerous but can be prevented if the patient can control the condition regularly and perform preventive behavior. Nurses need to educate stroke patients through the application of this self-management intervention, preferably at the time of providing intervention by involving the family.

ADVANCED RESEARCH

This research is expected to be a reference for further research to make the research more perfect. Suggestions to further researchers: observation, especially blood pressure, should be done to determine the progress of the patient's condition.

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