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Improving Caregiver Competency in Families of Stroke Patients

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Abstract

Stroke patients generally need a long recovery because most individuals undergoing hospital treatment experience disabilities in several parts of the body. Therefore, survivors need the help of other people to live daily life; this role is taken on by caregivers. Caregivers play a crucial role for stroke survivors during the process of long-term rehabilitation and must assume many responsibilities. For this reason, knowledge and skills are needed in caring for post-stroke patients at home. One of the efforts that can be done is through education and training for caregivers and health cadres. This community service activity aimed to enhance cadres' and caregivers' knowledge and skill in providing care for families after a stroke. The target population comprised 16 caregivers and seven cadres who supported the families. The results of the community service activities demonstrated an increase in caregivers' knowledge by 32.8 points following the training activities, with a p-value of 0.001 (<α= 0.05), indicating that the difference between the pre- and post-values is statistically significant. The results of observations of cadre and caregiver skills regarding post-stroke care at home include Range of Motion (ROM) exercises, assistance with daily activities, and training in communication in the moderate category. Cadres are expected to continue supporting families as caregivers to be able to care for post-stroke patients at home.

A. Introduction

Stroke is one of the leading causes of death and disability in many countries. Globally, in 2013, approximately 25.7 million people suffered from stroke, with 6.5 million of them dying, while 113 million people had to live with disability due to stroke. In addition, there were 10.3 million new stroke cases that year. In 2019, the age-standardized stroke prevalence rate reached 1,240.3 per 100,000 population. From 1990 to 2019, the prevalence of stroke among the population aged 70 years and older increased by 22% globally (Jiang et al., 2023).

Stroke is one of the non-communicable diseases (NCDs) that causes hundreds of deaths, according to the Bengkulu City Health Office. They recorded 85 deaths and 115 cases of paralysis in 2018. This number increased to 115 deaths and 165 paralysis in 2019. In a preliminary survey conducted in the Lempuing Health Center Area of Bengkulu City in 2020, 54 people were surveyed, 16 of whom had hemorrhagic stroke, and the Kandang Emas ranked second with 2.5% of the population. Lempuing Health Center was the first to contribute to stroke disease in 2019, with 4.8% of the population (Dinas Kesehatan Kota Bengkulu, 2020).

Stroke is a non-communicable disease that disrupts brain function and can cause clinical symptoms of focal or global impairment that develop very quickly. Clinical symptoms of stroke include difficulty speaking, severe headache, vomiting, dizziness, and impaired consciousness that can last more than 24

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hours. In severe conditions, a stroke can be fatal due to vascular complications (Jessyca & Sasmita, 2021). Stroke is a blood circulation disorder in the brain or a blockage of blood flow to the brain that results in nerve dysfunction and usually occurs suddenly. Stroke survivors experience impairment in the body's movement system, both in the upper and lower extremities, making it difficult to move. This is caused by muscle and balance disorders. Stroke causes brain damage that occurs suddenly, progresses rapidly, and is caused by a circulatory disorder in the brain in the absence of trauma. This sudden disruption can cause a variety of symptoms, such as paralysis on one side of the face or limbs, difficulty speaking, slurred speech, changes in level of consciousness, and visual disturbances (Utama & Nainggolan, 2022).

The increase in stroke mortality and morbidity is largely due to factors such as cardiovascular disease, diabetes, smoking, uncontrolled hypertension, and left ventricular hypertrophy, as well as age, obesity (BMI > 30), and hypercholesterolemia (Dufouil et al., 2017). This aligns with the findings of Utama & Nainggolan (2022). Based on the analysis of risk factors for stroke, the main cause of stroke is hypertension, while other risk factors include smoking, diabetes mellitus, and dyslipidemia, which can trigger ischemic or hemorrhagic stroke. Therefore, it is important to improve the understanding of stroke risk factors to reduce the incidence of stroke. Stroke risk factors can be classified into two categories: modifiable and non-modifiable factors. Modifiable factors include hypertension, smoking, diet, and physical activity, while non-modifiable factors include age, gender, and race or ethnicity.

Data from the WHO reveal that Indonesia has the highest number of smokers aged 15 years and above in Asia, reaching 79.8% (Venketasubramanian et al., 2017). Other contributing factors include lack of physical activity, an unhealthy diet, and central obesity (excess fat in the abdominal area). Stroke is most often triggered by hypertension, known as the “silent killer,” as well as diabetes mellitus, impaired blood flow to the brain, and obesity. The continued increase in stroke prevalence may negatively impact both national economies and individuals, given the high cost of stroke treatment (Balqis et al., 2022).

Stroke survivors often experience musculoskeletal disorders, post-stroke neuropathic pain, and discomfort that can affect their functional abilities. The recovery process after a stroke can last for months to years, making it a difficult journey for survivors, with many unable to recover or return to their previous function fully. Decreased functional capacity, worsening cognitive impairment, and lack of family support can trigger anxiety and depression in stroke survivors (Hartley et al., 2022). For stroke survivors, preventing recurrent strokes and managing sequelae are very important aspects. The after-effects of a stroke can include depression, dementia, motor impairment, pain, epilepsy, osteoporosis, and difficulty swallowing (Taufixurohman et al., 2025).

Stroke patients generally require a long recovery time, as most experience disability in some part of the body after undergoing treatment in the hospital. The most common stroke companion is a spouse or family member, referred to as an informal caregiver (Alifudin & Ediati, 2019). Recovery after a stroke varies with each individual, with the duration that can last from a few weeks to months to years. Some people can fully recover, while others may experience a lifetime of permanent disability (Listari et al., 2023). Independence in carrying out daily activities after a stroke is very important, as individuals who can perform their tasks without relying on others tend to feel more valuable. Conversely, those who experience limited movement and depend on the assistance of others may feel useless, may experience feelings of uselessness, potentially affecting their overall life satisfaction.

Caregiving is a form of individual support in providing health care someone who is unable to care for themselves to care for themselves and needs help in managing the care and treatment of their illness. (Sihombing et al., 2024). Providing support and information to family caregivers is essential to reduce the burden they experience. Caregiver burden includes physical, psychological, emotional, and financial stresses that arise when caring for stroke patients. The severity and duration of the patient's illness contribute to the increased burden experienced by caregivers. Responsibilities can include financial, social, psychological, and physical aspects (Vianny et al., 2024).

Therefore, community empowerment at the neighbourhood (RT/RW) or village (kelurahan) level aims to optimize the potential of residents to participate in the care of stroke patients at home. Community empowerment is an involves building community capacity by encouraging, motivating, and increasing awareness of their potential, as well as trying to develop and strengthen existing capabilities in the

community (Mursalim & Ramdani, 2016). Community empowerment is an effort to build capacity by encouraging, motivating, and increasing awareness of their potential, as well as trying to develop and strengthen existing capabilities in the community (Hayati et al., 2024). The Lempuing Community Health Center area has active "posyandu" families and health workers who support the health center program and diligently provide counseling to the community. The Lempuing Community Health Center area is also assisted by the Bengkulu City Health Office in collaboration with the Polytechnic of the Health Ministry of Bengkulu. With the condition of the community that willingness to collaborate and supportive community leaders, it is hoped that the Lempuing health center area can become a model for other health center working areas in Bengkulu City. Thus, this community service activity was implemented to enhance cadres' and caregivers' knowledge and skills in providing care for families after a stroke at home.

B. Methods

The implementation of this community service is in the form of education and training activities for cadres and families of stroke patients, carried out in the working area of the Lempuing Community Health Center for four weeks in August 2023. The activity stages consist of preparation, implementation, and evaluation as well monitoring. The preparation stage begins with an assessment of the Lempuing Community Health Center. Direct exploration of the Lempuing Community Health Center puskesmas areas, coordinating with related parties, including the City Health Office, village officials, community leaders, and families. Preparation and development of instruments, including preparation of pretest and posttest instruments for families, teaching activity plans, educational materials (modules, leaflets, knowledge instruments, and caregiver application skills, simulation videos).

The implementation stage begins with the socialization of activities to religious and community leaders, families, and cadres, followed by providing education and training to 7 cadres and 16 family caregivers of stroke patients. The training method was conducted with lectures, questions and answers, and simulations on stroke patient care at home for two days. The training team consisted of three lecturers and five nursing students. Participants received materials in the form of modules and educational media. The training concluded with a signing of a commitment of support by the Community Health Center and cadres. On the third day, the team conducted the care of stroke patients for caregivers directly to the homes of families with stroke patients, accompanied by cadres. Furthermore, for three weeks, the cadres assisted caregivers in caring for stroke patients at home. Before providing training materials, cadres and caregivers measured their knowledge by giving questionnaires and observing simple skills in caring for stroke patients at home, especially in performing muscle exercises (*Range Of Motion*), communication, and helping with daily activities. In fourth week, the team conducted monitoring and evaluation to assess the improvement in knowledge and skills taught by the cadres. The implementation of activities can be seen in Table 1.

Table 1. Target of Community Service Activities of the Bengkulu Poltekkes Kemenkes Lecturer Team in the Lempuing Health Center Working Area, Bengkulu City in 2023.

No	Activity	Target	Person in charge	Role
1	Socialization	Family = 5 people, community leaders, cadres and religious leaders = 20 people	Team of lecturers and students Health workers from the community health center	Socialize the program that will be run Assist in the implementation of socialization activities
2	Caregiver education and training	Community members (Family), cadres	Lecturer team, Students, Health Office, Health Center, Family	Provide direct counseling material Assist in preparing media and learning materials, and become a master of training Assist in the implementation of

				counseling activities (media, etc.)
3	Family empowerment	Family, cadres	Lecturer team, Students, Health Office, Health Center,	Monitor the implementation Accompanying and monitoring Assisting and monitoring Monitoring implementation
4	Monitoring and evaluation	Family, cadres	Lecturer team, Students, Cadres	Monitoring and evaluating

Table 1 informs a series of community service activities that were attended by a team of lecturers and students from the Poltekkes Kemenkes Bengkulu, officers from the Lempuing Health Center, families of stroke patients (caregivers), cadres, community and religious leaders from socialization to monitoring and evaluation.

C. Results and Discussion

This community service activity is only carried out in one working area of the Lempuing Community Health Center. This area is the fostered area of the Health Polytechnic of the Ministry of Health, Bengkulu. Respondents taken were only one group of 23 people, consisting of 16 caregivers and 7 cadres. The selection of respondents is by the criteria, namely families and cadres who are willing and able to attend training activities at the Community Health Center. However, due to budget constraints, only a small number of respondents were selected. The results of the pre-knowledge and post-knowledge questionnaires are shown in Table 2.

Table 2. Overview of knowledge of family caregivers of stroke patients before and after training in the working area of the Lempuing Health Center in 2023

		Average Score	
		Pretest	**Posttest**
1	Paralysis or death due to circulatory disorders that cause the death of brain tissue is known as a stroke.	66.60	100.
2	Signs and symptoms of stroke are an asymmetrical smile, choking, and sudden difficulty in swallowing water.	53.30	100.
3	The signs and symptoms of stroke are called "**SEGERA KE RS,"** which stands for **R** is blindness	53.30	80.00
4	The signs and symptoms of a stroke are called "**SEGERA KE RS",** which stands for **SE** is asymmetrical smile.	66.60	66.60
5	The signs and symptoms of stroke are called "**SEGERA KE RS",** which stands for **GE,** which is the sudden weakening of half of the limbs.	60.00	93.30
6	When signs and symptoms of stroke are called "**SEGERA KE RS",** which stands for **KE,** it is numbness.	53.30	60.00
7	When signs and symptoms of stroke are called "**SEGERA KE RS",** which stands for **S** is difficulty speaking.	53,30	100
8	A person who helps a person or family affected by stroke and is unable to perform daily activities and fulfill their needs is known as a caregiver.	53.30	100.
9	There are two types of caregivers: formal caregivers and informal caregivers.	53.30	100.
10	People who care for family members or others with disabilities experience a burden called caregiver burden.	53.30	93.30

Table 2 describes the score for each question item assessing respondents' knowledge before and after the training activities. “SEGERA KE RS“ (Go to the hospital immediately) is an acronym introduced by the Ministry of Health to help the public easily remember the signs and symptoms of stroke. The question items that revealed the highest number of correct answers after the training were items 1,2,7,8, and 9.

Furthermore, the results of statistical analysis using paired t-tests indicated a significant difference in respondents' knowledge before and after being given the intervention. These results are presented in Table 3.

Table 3. Differences in caregiver knowledge before and after training activities

Variable	mean	min	max	Standar deviation	p value
Pre-knowledge	56.50	53	67	5.95	0.001
Post-knowledge	89.30	60	100	15.06	

The data above shows that there was an increase in respondents' knowledge by 32.8 and a p-value of 0.001(<α= 0.05), indicating that the difference between pre and post values is statistically significant.

The results showed that there was an effect of stroke program education on caregiver competence. The results of this study are in line with the results of research by Kosasih, C.E., T. Solehati., 2018 at the Al Islam Bandung hospital, which found that before and after health education intervention, there was a significant average difference in knowledge from 7.94 to 10.38 (p = 0.002). The results of Husni & Asmawati, (2024) study in Bengkulu showed that half of the caregivers (61.91%) had sufficient knowledge, and only 15.87% had good knowledge. Research conducted by Kosasih (2018) informs that health education affects increasing the level of knowledge of patients and their families about stroke, readiness, the role of family caregivers of stroke patients, psychological support, and preparation for stroke patient care at home. Knowledge is the result of human sensing, or the result of someone knowing objects through their senses (eyes, nose, ears, and so on). Most knowledge is gained through the senses of sight and hearing (Notoatmodjo, 2014). Knowledge is the most important domain in the formation of behavior. In line with research conducted, it also informs that there is an effect of providing a Stroke Education Program (SEP) on controlling health behavior in post-stroke lifestyle modification, with an average difference in pre-post lifestyle of 2.70 and p = 000. The results of this study are in accordance with research conducted (Fatmawati, 2020), which states that the level of knowledge of families in providing care for stroke survivors is sufficient (68%), and good knowledge is as much as 32% (Fatmawati, 2020). The results of the analysis of the research article are also supported by the results of other studies; namely, half (57%) of the level of knowledge of families of patients after stroke is low, and those with high knowledge are 42.6%. Other studies are also in line with the results of the article analysis, which indicates that the level of knowledge of families of post-stroke patients is low at 68.5% and sufficient knowledge at 31.5% (Adila, S. T. A., & Handayani, 2020).

The results of observations of cadres’ and caregivers' skills regarding post-stroke care at home include Range of Motion (ROM), assisting daily activities, and training communication in the moderate category. Research conducted by Pitthayapong et al., (2017) also informs that post-stroke care programs can improve the post-stroke care skills of family caregivers, who can improve functional status and reduce complications in stroke patients. This study is similar to the results of a study on family caregivers of stroke survivors at Prof. Dr. Aloei Saboe Hospital in 2023, which showed that family knowledge about stroke was in the sufficient category at 67.5%, and the good category at 20.9% (Nento et al., 2023).

The implications of this activity suggest that the government and health institutions need to formulate policies that support the training and welfare of caregivers and cadres, considering their vital role in the recovery process of stroke patients.

Figure 1. Socialization and training on improving caregiver competencies in post-stroke families in the Lempuing Health Center working area, Bengkulu City

Figure 2. Post-stroke Home Care Procedure Module

Figure 3. Caregiver assistance for post-stroke families in the PKM Lempuing working area, Bengkulu City.

Figure 4. Training banner and stroke awareness group

Figure 5. Raising the commitment of family caregivers of post-stroke patients and health cadres in the Lempuing Health Center working area of Bengkulu City

D. Conclusion

This study demonstrates a significant improvement in the knowledge and skills of family caregivers and cadres about caring for post-stroke patients (stroke disease, treatment, and disease prevention). The training program effectively enhanced caregivers' awareness and cadres of stroke-related issues, which is crucial for their role in patient care. Furthermore, caregivers' practical skills, especially in *Range of Motion (ROM)* exercises and assisting with daily activities, showed notable improvement, contributing to

the overall quality of care for post-stroke patients at home. The importance of structured caregiver training programs in improving the outcomes of post-stroke care. However, it is important to recognize the need for ongoing support for caregivers, as caring for post-stroke patients involves long-term physical, emotional, and psychological challenges.

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