Post-Stroke Care Education on Knowledge and Skills in Carrying Out Rom Using Audio-Visual Media

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Abstract

Stroke is the second leading cause of death and the third leading cause of disability. One in four people is at risk of stroke, there are more than 12.2 million new strokes every year. stroke in Indonesia was 10.9%, and in North Sulawesi province it was 14.2%, and the intervention used in this study was Range of motion (ROM). This research aims to determine the influence of post-stroke care education on the knowledge and range of motion skills of the Silian village community using audio-visual media. This research method is quantitative, with a pre-experimental one-group pre-test and post-test design. The 30 sample respondents used the Random Sampling Technique. The treatment was carried out with Post Stroke Care Education using audio-visual media, exercises were carried out in 30 minutes for 3 days. Skill observation sheet instruments and questionnaires regarding Stroke and ROM using the Paired T-test. The research conducted had significant results where sesewanua was more effective than water with a P value of 0.002. The data results mean that the pretest knowledge is 6.90 and the post-test is 15.50, the average increase in knowledge is 7.93. The pretest skills score is 0.00 and the posttest is 23.43. Further tests using the Paired T-test showed that there was a significant effect of post-stroke care education on a range of motion knowledge (P value 0.00; α 0.05) and there was a significant effect of post-stroke care education on a range of motion skills (P value 0.00; α 0.05). The conclusion is that post-stroke care education increases respondents' knowledge and skills regarding range of motion.

Keywords: *Stroke, ROM, Audio Visual, Silian Satu Village, Southeast Minahasa Regency.*

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A. INTRODUCTION

Stroke is a condition where the brain suffers damage that emerges suddenly, intensively, and rapidly as a result of non-traumatic disruptions in cerebral blood flow. This condition abruptly leads to symptoms such as paralysis of one side of the face or limbs, impaired speech, altered consciousness, vision difficulties, and more (Goldman et al., 2022). Post stroke is an event after experiencing a stroke, usually after a stroke, a person's level of dependence on other people increases. The potential consequences of a stroke include paralysis, communication issues, emotional disturbances, pain, sleep problems, depression, difficulty swallowing, and numerous other complications (Teasell et al., 2020).

Worldwide, stroke ranks as the second most common cause of death and the third most common cause of disability. One in four individuals is at risk of experiencing a stroke. Annually, there are over 12.2 million new cases of stroke. Stroke in Indonesia is 10.9%, and in North Sulawesi province it is 14.2%. Stroke risk factors can be categorized as modifiable and non-modifiable factors (Feigin et al., 2021).

Modifiable risk factors include hypertension, smoking, diet, and physical activity, while non-modifiable risk factors encompass age, gender, and race or ethnicity. Effective pre-hospital care is crucial for preventing stroke-related morbidity and disability. The Cincinnati Pre-hospital Stroke Scale (CPSS) is one method used for the early detection and prediction of stroke events (Kibria et al., 2023).

Range of Motion (ROM) is one of the interventions that can be given during rehabilitation, namely in the form of exercises with several movements that can be done by parts of the body. Mobilization for stroke sufferers aims to maintain range of motion (ROM), which is useful for improving respiratory function, and blood circulation, preventing complications, and maximizing self-care (Sjattar et al., 2022). Range of motion (ROM) training is an exercise regimen used in rehabilitation that is notably effective and beneficial for preventing disability in stroke patients. These exercises are designed to enhance flexibility and muscle strength (Gomez-Cuaresma et al., 2021). Knowledge means the result of a person's knowledge that arises after feeling a certain object through the sensing process. Most knowledge is obtained from the process of hearing and seeing. According to Notoadmojo, a person's knowledge can be influenced by several factors, including education. Research by Murtaqib and Sabanna has demonstrated that active range of motion (ROM) exercises can alter the joint mobility in individuals who have suffered a stroke (Dell, 2021).

One form of learning education is that is used to convey information to influence someone using visual, auditory, or audio-visual research methods which are learning tools through television, film, video, and sound slides. Audiovisuals can be used to influence someone to obtain information through films or videos that involve sight and hearing (Lampai & Sukying, 2023). Based on the brief explanation above, this research aims to determine the influence of post-stroke care education on the knowledge and ROM skills of the Silian Village community using audio-visual media.

B. LITERATURE REVIEW

1. Stroke

Stroke is a perfusion disorder of brain tissue caused by occlusion (blockage), embolism, and bleeding which results in permanent or temporary disorders. Likewise, the signs and symptoms also depend on which center experiences perfusion disorders, ischemia, or necrosis (Popiela et al., 2022). According to Wiwit Post, stroke is a disruption in brain function that occurs quickly (suddenly) and lasts more than 24 hours due to disruption of blood supply to the brain. Meanwhile, Nugroho also explained that post-stroke is a disruption in the function of the central nervous system which is caused by a disruption in the blood supply process to the brain (Bernando-Castro et al., 2020).

Blood circulation disorders in certain brain regions are the main problem in post-stroke. Disorders can be caused by blockage of the arteries that supply blood to the brain (ischemic/non-hemorrhagic stroke) or because of bleeding in the brain area (hemorrhagic stroke). Whatever the cause, it will cause the same problem, namely

ischemia or hypoxia which ultimately causes brain necrosis (infarction) (Murphy & Werring, 2020).

Smeltzer and Bare identified that strokes typically occur due to one of four incidents:

a. Thrombosis, which is a blood clot in the brain or neck blood vessels.
b. Cerebral embolism, where a blood clot or other material is carried to the brain from elsewhere in the body.
c. Ischemia, which refers to reduced blood flow to the brain.
d. Cerebral hemorrhage, involving the rupture of blood vessels in the brain, leading to bleeding into the brain tissue or surrounding areas (Thojampa et al., 2020).

These four triggers lead to the same issue: interruption of blood supply to the brain, which results in temporary or permanent impairments in movement, cognition, memory, speech, and sensation, depending on the affected brain region (Naz & Siddique, 2020).

2. Range of Motion

Range of Motion (ROM), is a standard term to express the limit/amount of good and normal joint movement. ROM is also used as a basis for determining the presence of abnormalities or stating the limits of abnormal joint movement. Potter describes Range of Motion as the fullest extent of movement achievable within a joint across one of three planes: sagittal, frontal, or transverse (Pettersson et al., 2021).

ROM is the movement that can be carried out normally by the joint in question. ROM is divided into two types, namely passive ROM and active ROM. According to Suratun, active ROM exercises are ROM exercises that are carried out by the patients themselves without the help of a nurse for every movement they do. The indication for active ROM is that all patients are treated and can carry out ROM independently and cooperatively (Wahyuni et al., 2022).

The aim of Range of Motion (ROM) training, according to Suratun:

a. Maintain or maintain muscle strength.
b. Maintain joint mobility.
c. Stimulates blood circulation.
d. Prevent deformity.

Meanwhile, according to Johnson, the objectives of Range of Motion (ROM) training are as follows:

a. Maintain the existing level of function and mobility of the affected extremity.
b. Prevents contractures and shortening of musculoskeletal structures.
c. Prevent vascular complications due to immobility.
d. Facilitate comfort.

Motion of Range has 2 types, namely passive ROM and active ROM.

a. Passive ROM

According to Suratun, the patient does ROM exercises with the help of a nurse for every movement. The nurse manipulates the client's joints through their

normal range of motion while the client remains passive. Muscle strength is at 50%. Passive exercises are indicated for patients who are semicomatose or unconscious, those with restricted mobility, and those who are confined to total bed rest. In passive ROM, the joints that are moved are all the joints of the body or only the extremities that are disturbed and the client is unable to do it independently (Wardhania & Tri, 2021).

b. Active ROM

According to Suratun, active ROM exercises are ROM exercises that are carried out by the patient without the help of a nurse. During each movement, the nurse motivates and instructs the client on how to perform joint movements independently, adhering to the joints' normal range of motion (active clients). Muscle strength 75%. In active ROM, the joints that are moved are the entire body from head to toe by the client himself actively (Sari et al., 2023).

3. Audio Visual Media

In the educational process, the role of media is critically important. This is because media serve as a useful intermediary when the clarity of teaching material is lacking. They simplify the complexity of the content presented to students. The term "media" originates from the Latin word "medius," which translates to 'middle,' 'intermediary,' or 'introduction.' In Arabic, media refers to a conduit or messenger that transmits messages from the sender to the receiver (Barbara & Bayu, 2022).

The Association of Education and Communication Technology (AECT) defines media as all forms and channels that facilitate the communication of messages or information. Similarly, the National Education Association (NEA) delineates media as various forms of communication, including printed materials, audio-visual content, or equipment (Yumnah, 2021).

Yudhi Munadi describes audio-visual media as a form of media that engages both the hearing and visual senses simultaneously. This type of media is capable of conveying both verbal and non-verbal messages, similar to the qualities of traditional audio media. Wina Sanjaya adds that audio-visual media not only includes sound but also visual components visible to the audience, such as video recordings, various film formats, and sound slides (Nicolaou, 2021).

Syaiful Bahri Djamarah points out that audio-visual media combines sound and image elements, enhancing its effectiveness compared to media that utilize sound or visuals alone. According to these perspectives, audio-visual media effectively uses sound and visual elements as tools to facilitate the transmission of educational content, aiming to fulfill specific learning objectives (Sarwinda et al., 2020).

Syaiful Bahri Djamarah categorizes audio-visual media used in educational contexts into two distinct types:

a. Audiovisual stills, which are media featuring sound accompanied by static images. Examples include sound frame films (sound slides), sound series films, and sound prints.

b. Motion audiovisual, which consists of media that display both sound and moving images, such as sound films and videocassettes.

Wina Sanjaya defines audio-visual media as a type of media that incorporates both auditory elements and visible image components, such as video recordings, films of various formats, sound slides, and similar materials (Azwar et al., 2022).

C. METHOD

This research is quantitative research, with the research design carried out, namely pre-experimental one-group pre-test and post-test design. The total sample was 30 people with purposive sampling and the sample size used the Slovin formula. Measuring knowledge and skills uses a standardized questionnaire. This research received ethical approval from the Manado Health Polytechnic Health Research Ethics Commission with number KEPK.01/08/138/2023.

D. RESULT AND DISCUSSION

1. Educational Test

The use of audio-visual media in educational activities has been proven to play an important role in increasing understanding of various health topics, including stroke. This research specifically examines the effects of implementing this media in stroke education in Silian Satu Village, Southeast Minahasa Regency. The following are findings from statistical analysis that demonstrate the effectiveness of this method.

Table 1. Paired T-Test Results for Knowledge About Stroke Before and After Being Given Education Using Audio Visual Media

Variable	N	Mean	P Value	Statistic test
Pre-Test Knowledge	30	6.90	0.00	Paired T Test
Post-Test Knowledge	30	15.50		

The table above shows the P value for the test on knowledge about stroke before and after being given education using Audio Visual media is 0.00 (<0.05) which means there is a difference in the level of knowledge before and after being given education. Education using audio visuals has proven effective in increasing knowledge about stroke among the community in Silian Satu Village, Southeast Minahasa Regency.

2. Skills Test

To improve Range of Motion (ROM) skills, the use of audio-visual media has been tested in a controlled study in Silian Satu Village, Southeast Minahasa Regency. The following are the results of statistical analysis which show significant differences between ROM skills before and after being given education using this method.

Table 2. Paired T-Test Results for Skills Before and After Being Given Education Using Audio-Visual Media

Variable	N	Mean	P Value	Statistic test
Pre-Test Skills	30	0.00	0.00	Paired T Test
Post-Test Skills	30	23.43		

The table above shows the p-value for the Range of Motion (ROM) Skills test before and after being given education using Audio Visual media is 0.00 (<0.05) which means there is a difference in skills before and after being given education. Education using audio visuals has proven effective in improving Range of Motion (ROM) skills for the community in Silian Satu Village, Southeast Minahasa Regency.

Range of motion (ROM) can be done after the post-stroke patient is stable and the patient's condition has improved. Improving nerve function is the goal of early supportive care through physical therapy and one way that can be done is with Range of motion (ROM) exercises. Range of motion (ROM) exercises can increase the patient's muscle strength as long as they are done with the right technique and done correctly.

Kristen's research, (2018) with the title "The Effect of Range of Motion (ROM) Exercise on muscle strength in Stroke Patients in the Sidotopo Surabaya Community Health Center Area" showed that there was an effect of Range of motion (ROM) training on muscle strength in stroke patients after 1 month of undergoing Range of motion (ROM) training. The results of this exercise show that there is an increase in muscle strength after Range of Motion (ROM) training.

In delivering education, media selection is very important so that the information conveyed can be understood by the recipient of the information. So far, education is most often carried out using Leafet, Lecture, and Presentation methods, however, the use of audio-visual media as a medium for providing education to the public is very rarely carried out even though several research results state that education using audio-visual media is effective in increasing knowledge and skills.

This study aligns with research conducted by Meidiana, which found that respondents' knowledge levels improved after exposure to audio-visual media. This was evidenced by the higher average scores recorded after the use of audio-visual media once a week, compared to scores before its application.

Audio-visual media combines elements of both sound and visual imagery, including video recordings, films, and slides. This type of media is often regarded as more engaging and effective because it stimulates both the auditory and visual senses, enhancing information retention. The findings clearly support the effectiveness of audio-visual media in education when it is appropriately selected and utilized.

The five senses play a crucial role in transmitting information to the brain, with the eyes responsible for approximately 75% to 87% of the knowledge we acquire. The remaining 13% to 25% is obtained through the other four senses. Effective media should engage multiple senses to facilitate information intake. The more senses that are stimulated, the more efficiently information can be absorbed. Specifically,

combining visual inputs, which account for up to 87% of our sensory input, with auditory inputs, which represent up to 25%, can optimize learning outcomes by providing more comprehensive stimulation.

Based on Siti Muhsinin's research (2020), a P value of 0.00 (<0.05) was obtained, which means that there is an influence of providing Audio Visual Education on skills in performing Range of Motion (ROM) in stroke patients. Marwanti's and Rahayuningsih's research (2021) shows the influence of education using audio-visual media on the range of motion (ROM) skills of families of stroke patients at RSI Klaten. Apart from that, there is also the influence of Range of Motion (ROM) education on the knowledge of the patient's family. The results of respondents' knowledge showed an increase before and after being educated on Range of Motion (ROM).

The researcher's assumption regarding post-stroke care education regarding knowledge and skills in carrying out ROM using audio-visual media, namely that education using audio-visual media is effective in increasing knowledge and skills in carrying out independent ROM exercises.

E. CONCLUSION

The results of research conducted in Silian Satu Village, Southeast Minahasa Regency showed that there were significant changes in community knowledge and skills after implementing education using audio-visual media. Data analysis shows that the P value for the test of knowledge about stroke and Range of Motion (ROM) skills is 0.00 (<0.05), which indicates a significant difference between conditions before and after being given education. This shows that the use of audio-visual media not only increases knowledge about stroke but also improves ROM skills which are an important part of post-stroke care. The conclusion of this research confirms that education using audio-visual media is effective in increasing knowledge and practical skills related to post-stroke care in the Silian Satu Village community. This effectiveness opens up wider opportunities for the implementation of similar educational strategies in other areas, which can contribute to improving the quality of life of stroke patients and speeding up their recovery process. This success also shows the potential for using technology in health education programs in Indonesia.

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