

Effect of AIUEO Vocal Therapy in Non-Hemorrhagic Stroke Patients with Verbal Communication Disorders: A Case Report

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Abstract:

Stroke is a disease that is a health problem throughout the world. Stroke can cause long-term damage to nerve function or brain damage, long-term disability, and even death. Stroke can cause sufferers to experience weakness due to damage to nerve function. If a stroke attacks the left brain and hits the speech center, it is likely that the patient will experience speech disorders or verbal communication disorders. One form of rehabilitation therapy to correct verbal communication disorders in someone who suffers from verbal communication disorders is "AIUEO" vocal therapy. The aim of this research is to obtain an overview of AIUEO vocal therapy for verbal communication disorders in non-hemorrhagic stroke patients. The method used is to collect the results of the analysis of the patient's verbal communication disorders on the first, second and third days after being given AIUEO vocal therapy using SOP and the Frenchay Aphasia Screening Test (FAST) instrument. The results obtained during the three days of implementation were that patients experienced an increase in verbal communication skills from an initial FAST score of 12 (severe category) to 19 (moderate category). The conclusion of this research is that giving AIUEO vocal therapy can reduce the score of verbal communication disorders in patients, can overcome the weakness of speech muscles in stroke patients, and can stimulate improvement in language skills in stroke patients.

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INTRODUCTION

Stroke is a disease that is a health problem throughout the world. This is because stroke is recorded as one of the causes of disability in various regions and can be experienced by various groups, not only the elderly but also young people. Stroke can cause long-term damage to nerve function or brain damage, long-term disability, and even death. The World Health Organization (WHO) revealed that the risk is now estimated at 1 in 4 people of having a stroke in their lifetime (World Health Organization, 2022).

Globally, in 2019, 7 out of 10 diseases that caused the largest number of deaths were non-communicable diseases, and stroke itself was the second cause of death in the world. In Indonesia, stroke cases based on clinical examination at the age of 15 years have increased from 7% in 2013 to 10% in 2018 to 10.9% (Syamima et al., 2022). According to Basic Health Research, in 2007, the prevalence of stroke in Indonesia was 8.3 per 1,000 population. In 2013, the prevalence of stroke in Indonesia was 12.1 per 1,000 population, and this figure increased from the previous 5 (five) years. Meanwhile, in 2018, the prevalence of stroke in Indonesia was 10.9 per

1,000 population; this figure has decreased over the last 5 (five) years. The prevalence of stroke in East Java in 2021 is 12.4‰ (Putri, 2023).

Ischemic stroke is the most common type of stroke, occurring when the blood supply to part of the brain is cut off or reduced significantly. This can be caused by blood vessels blocked by blood clots or atherosclerotic plaque. Areas of the brain that do not get enough oxygen and nutrients will experience damage. This damage mainly occurs in areas that regulate complex functions, such as language (World Health Organization, 2022).

Stroke can cause sufferers to experience weakness due to damage to nerve function. If a stroke attacks the left brain and affects the speech center, it is likely that the patient will experience speech disorders or verbal communication disorders (Yuliyanto et al., 2021; Mufidah et al., 2024). A study conducted in China stated that of 4,339,156 AIS (acute ischemic stroke) patients, 16.93% suffered from verbal communication disorders. Sufferers of verbal communication disorders increased from 13.34% in 2003 to 21.94% in 2014. The prevalence of verbal communication disorders in Indonesia shows that 60 (13.2%) of 455 stroke patients suffer from verbal communication disorders, and 395 (86, Another 8%) suffered a stroke without impaired verbal communication (Syamima et al., 2022).

One form of rehabilitation therapy to correct verbal communication disorders in someone who suffers from verbal communication disorders is "AIUEO" vowel pronunciation therapy (Yuliyanto et al., 2021). This therapy is carried out so that the client's speech ability, which is impaired due to stroke, can be improved, and this therapy is useful for improving unclear articulation (Djabar et al., 2022). Through this research, efforts were made to obtain an overview of AIUEO vocal therapy in stroke patients with verbal communication disorders.

STUDY DESIGN

The research design used experimental methods. The data collected was then analyzed by comparing verbal communication abilities on the first, second, and third days after administering AIUEO vocal therapy using SOP. The results of this implementation were evaluated using the Frenchay Aphasia Screening Test (FAST) instrument to measure the success of therapy for patients' verbal communication disorders with scores ranging from 0-30, categories severe (score <15), moderate (score 15-21), mild (score 22 -27), and normal (score 28-30).

PATIENT INFORMATION

The patient under this management is Mr. S a 71-year-old man. The family said that 10 days before entering the hospital, the patient suddenly fell at home feeling weak, suddenly sluggish, unable to connect when spoken to, and unable to walk on his own. Then, the patient was rushed to the nearest health service, the community health center, referred to RSUD Dr. Abdoer Rahem Situbondo on October 17, 2023, and advised to undergo inpatient treatment in the Raung Room. The family said the patient had a long history of hypertension and no previous history of stroke, no family history of similar illnesses to the patient, and the patient had no history of hospitalization.

CLINICAL FINDINGS

When the assessment was carried out, the patient's condition appeared to be bedridden and weak, with apathetic consciousness GCS E4V3M5, and a metacarpal infusion was installed in the

right hand. The results of the TTV examination showed that BP was 144/64 mmHg, pulse 65 x/minute, temperature 36.5 °C, SpO₂ 100%, RR 20 x/minute.

The first problem experienced by patients is difficulty communicating and forming words. In this condition, there are indications of damage or disruption of the XII nerve or hypoglossal nerve, namely the intracranial nerve, which functions to regulate tongue movements (motor), especially when speaking and swallowing. At the time of the assessment, the patient was unable to respond to the nurse's greetings. The patient only looks and appears to blink as if showing a signal (Black & Hawks, 2023).

The second problem is the patient's inability to express facial expressions. This condition also includes interference with nerve VII, or the facial nerve, which regulates facial expressions (motor) and carries sensation from the tongue to the brain (sensory). This was found when the patient appeared unable to turn his head or look up during the assessment, but the patient only showed signals through eye blinks to the nurse (Black & Hawks, 2023).

Laboratory test results show high neutrophil and monocyte values, indicating an indication of infection in the patient's body; there is a sign that the body is fighting something that causes inflammation. Low lymphocytes indicate a decrease in antibody production by the immune system. High triglyceride levels in the blood are the main component of cholesterol and increase the risk of heart disease and stroke.

THERAPEUTIC INTERVENTION

Nursing interventions used with "AIUEO" vowel pronunciation therapy. This therapy is carried out so that the client's speech ability, which is impaired due to stroke, can be improved, and this therapy is useful for improving unclear articulation (Djabar et al., 2022). The intervention was carried out for three days with two sessions per day using the AIUEO vocal therapy SOP and the Frenchay Aphasia Screening Test (FAST) research instrument.

Results of Implementation of AIUEO Vocal Therapy in Non-Hemorrhagic Stroke Patients

Results of the implementation of AIUEO Vocal Therapy on Mr. S are measured using the Frenchay Aphasia Screening Test (FAST) instrument, with the aim of detecting the severity of the patient's verbal communication disorders during the three days of implementation (17 October 2023 to 19 October 2023) whether it shows improvement or not. The implementation results are displayed in Table 1 using a FAST score with a score of less than 15 (Severe Aphasia), a total score of 15-21 (Moderate Aphasia), a total score of 22-27 (Mild Aphasia), and a total score of 28-30 (Normal).

Table 1. Results of AIUEO Vocal Therapy with FAST

No.	Date	Session	Result (Total Score)	Information
1.	17 October 2023	1	12	Severe
		2	12	
2.	18 October 2023	1	13	Severe
		2	13	
3.	19 October 2023	1	18	Moderate
		2	19	

The results of AIUEO vocal therapy in non-hemorrhagic stroke patients show an improvement in vocalization; namely, the patient can experience an increase in the ability to

pronounce vowels clearly and improves the patient's articulation. At the beginning of the assessment, the patient was found unable to respond vocally at all, but the patient appeared to be looking at the nurse and communicating through the eyes with blinks or glances, when asked "where is the picture of the rice fields?" The patient appears to blink and nod slightly, as do several other images. The FAST score on the first day of implementation was 12 points in both the first and second sessions.

On the second day of implementation, the patient showed improvement in his vocals, showing that he was able to pronounce the word 'A', although it was not clear. The patient can follow the nurse's orders when shown pictures of natural scenes or pictures of shapes with the patient's ability to answer "Yes" vaguely, with the score obtained in the first and second sessions being 13 points, or the patient is still classified as having severe aphasia.

On the third day of implementation, patients were able to answer nurses' questions with "Yes" and "No" answers more clearly compared to yesterday. The patient says "No dizziness" with a bit of a slur, can pick up drawing paper and pencils even if they throw them, but the patient cannot write or name objects with more than 3 words, such as the patient being able to say "rice fields, trees, mountains" in a slurred manner, but not can say "people in the middle of the rice fields". Likewise, when asked to name animals, the patient only wanted to answer 3 animal names, and the rest the patient refused. Apart from that, the patient seemed to respond with hand movements, was able to point to pictures, took paper and pencil, but then threw them away.

DISCUSSION

Data Assessment Focus on Nursing Problems Verbal Communication Disorders Assessment

The assessment was carried out on Mr. S on October 17, 2023, after comparing it with the following theory.

Table 2. Focused Data Assessment of Verbal Communication Disorders

Verbal Communication Disorders		
No.	Theory of SDKI	Mr. S's Causes
Major Signs and Symptoms		
1.	Unable to speak	Mr. S appeared unable to speak during the patient assessment, only looking at the nurse and blink as a signal.
Minor Signs and Symptoms		
1.	Aphasia	Mr. S had difficulty speaking, it appeared unable to form words.
2.	Dyspraxia	Mr. S seemed to stare expressionlessly, appearing to only be able to nod slightly, glance and blink.
Associated Clinical Conditions		
1.	Stroke	Mr. S was diagnosed medically as having a stroke Not Specified as Haemorrhage.

1. Stroke patients can experience various speech or language problems, including total or partial speaking inability. The patient had experienced this condition 10 days before the MRS. The patient was said to have suddenly fallen at home at home and was unable to talk and was unable to connect. This condition is in line with research results that stroke can cause a person to experience a decrease in movement function, can cause the mouth to tilt, and be unable to speak (Maqfirah et al., 2022).

2. Aphasia is one of the symptoms shown by patients who have difficulty speaking and are unable to form words since the stroke. During the assessment, the patient Mr. S was unable to form words, communicate, and answer when asked by the nurse. This condition is supported by the statement that stroke patients can experience aphasia due to damage to the part of the brain that regulates language. Areas of the brain involved in language processing, such as Broca's and Wernicke's areas. Damage to these areas can interfere with the patient's ability to understand language (sensory aphasia) or to produce coherent language (motor aphasia). A stroke occurs when the blood supply to part of the brain is disrupted, causing death or damage to brain cells, including those involved in language processing (Acharya and Wroten, 2023).
3. Dyspraxia also includes symptoms that appear in the patient's condition. During the assessment, Mr. S appeared unable to turn his head and move his tongue; the patient did not respond when asked to speak and was only able to blink as if giving a signal. This condition follows the statement that stroke patients can experience dysarthria due to impaired control of the muscles involved in the speech process, such as Broca's area in the left hemisphere of the brain. This disorder interferes with the ability of the muscles that control the tongue, lips and palate to move properly when speaking. In addition to the language area, a stroke can also disrupt the neural circuits that regulate the fine muscle movements needed to produce clear, articulate sounds. This includes coordination between the respiratory muscles, tongue, jaw, and lips (Acharya and Wroten, 2023).
4. Non-hemorrhagic stroke is the patient's medical diagnosis, Mr. S has been in place since he was first admitted to the hospital on October 17, 2024. The family said the patient had a long history of hypertension and no previous history of stroke.

Nursing Diagnosis of Verbal Communication Disorders in Stroke Patients

This research focuses on the diagnosis of verbal communication disorders experienced by Mr. S. This was because Mr. S had difficulty understanding or producing verbal language due to the stroke he experienced. This condition can affect his ability to speak, express thoughts and desires, and understand conversations with others. Communication therapies such as speech and language therapy, including AIUEO vocal therapy, can help Mr S recover or improve his verbal communication skills. This therapy can help improve articulation, speaking fluency, and language comprehension. This statement is in accordance with the results of research implemented 2 times a day for 7 days. Applying vocal therapy, A, I, U, E, and O, can improve verbal communication in hemorrhagic stroke patients by increasing the communication scale from 11 to 22. There is an increase in the communication scale that is significant in hemorrhagic stroke patients after being given vocal therapy A, I, U, E, O (Anggraini et al., 2023).

Communication Promotion Nursing Intervention: Speech Deficit

This research focuses on treating patients' verbal communication disorders with speech deficit communication promotion nursing interventions. This is very important and reasonable because it is an effort to restore or improve the patient's communication skills, facilitating the interaction process between patients and health workers or patients and their families. Apart from that, it is hoped that this intervention can improve the quality of life of patients so that it is more optimal so that patients can participate in interactions with their surroundings and live a satisfying social life.

Communication promotion interventions can be an integral part of post-stroke rehabilitation programs. This can help patients recover cognitive and motor functions and facilitate patient reintegration into daily life. This statement is in accordance with research that states that vocal

therapy intervention can improve patients' cognitive and motor function abilities. It was found that there was a significant difference in the functional communication abilities of stroke patients after being given AIUEO vocal therapy intervention (Wahyu et al, 2019).

Promotion of speech deficit communication is also one way to prevent psychosocial complications, where communication difficulties experienced by stroke patients can cause stress, frustration, and even social isolation. These interventions can help reduce negative psychosocial impacts and prevent the onset of depression or other mental health problems. Apart from that, patients can regain or increase their independence in daily communication through appropriate speech and language therapy. This helps patients to be more independent and feel more confident. This statement is supported by research that finds that strokes can cause sufferers not only physical changes but can cause insecurity in carrying out activities and can affect their psychological condition (Loupatty et al., 2019). Mr. S's care process involves collaboration with the family to maximize the achievability of interventions to help overcome the patient's problem of verbal communication disorders. This is supported by the statement that education and support for families are very important because the role of caregivers is a factor that can influence optimal patient recovery. This involves the family in understanding verbal communication disorders, how best to communicate with the patient, and providing emotional and practical support in caring for the patient (Fiscarina et al., 2023).

Regular evaluation and monitoring of Mr. S's communication skills should be carried out to monitor progress and adjust treatment interventions as needed.

With a nursing evaluation, the nurse can determine whether there is progress in the patient's health condition and can plan appropriate follow-up interventions to help Mr. S overcome his verbal communication disorders and improve his quality of life after the stroke.

After implementing vocal therapy 6 times for 3 days, the patient's communication skills improved from the FAST score in the severe category to the moderate category. Following the results of research conducted at Kertha Usada General Hospital to analyze the effect of AIUEO therapy on speech (motor aphasia) in stroke patients, the pre-average score was 3.61, and the post-average score was 5.21. The results show an effect of AIUEO therapy on speech (motor aphasia) in stroke patients (Astriani et al., 2019).

CONCLUSION

Based on the results of implementation and discussion in this research regarding AIUEO vocal therapy in patients Mr. S and his family, it can be concluded that the results of the verbal communication disorders experienced by the patient before implementing AIUEO verbal therapy were obtained with a FAST score of 12 or classified as severe. The results of the implementation of verbal communication disorders after AIUEO vocal therapy showed that the patient's ability to form vocal words and articulate words increased from a score of 12 (severe) to 19 (moderate). Providing AIUEO vocal therapy can reduce the patient's verbal communication disorder score. Vocal therapy can overcome the weakness of speech muscles in stroke patients and can stimulate improvement in stroke patients' language skills.

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