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Research Article

Effectiveness of Shaker Exercise (SE) on Dysphagia in Post Stroke Patients in Cianjur Hospital

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Abstract

Background: Stroke is a disease that causes the greatest death and disability every year. Symptoms of stroke that often occur include swallowing disorders or dysphagia. One form of intervention that can be done to speed healing and minimize complications due to dysphagia is to do swallowing exercises. One of the swallowing exercises that can improve swallowing function in stroke patients with dysphagia is the shaker exercise.

Purpose: The purpose of this study was to identify the effectiveness of shaker exercise on dysphagia in post-stroke patients and to identify features based on age, gender, education, occupation, on dysphagia in post-stroke patients.

Methods: The research design in this study used a quasy experimental design, patients were given intervention for 6 consecutive days of treatment sessions to measure swallowing ability using the GUSS (Gugging Swallowing Screen).

Results: After 6 days of treatment sessions, respondents showed a very significant increase in swallowing ability, the average value before treatment was 11.3 and after treatment was 16.5. The effect test results obtained a p-value <0.001 and the result of the effect size was -2.99. Where the intervention of shaker exercise therapy (SE) is effective in increasing the swallowing ability of post-stroke dysphagia patients.

Conclusion: The application of shaker exercise (SE) intervention in post-stroke dysphagia patients has significantly improved swallowing ability. It is hoped that those who experience dysphagia can be recommended to carry out shaker exercise independent nursing interventions in treating post-stroke patients with dysphagia.

Keywords: stroke, disfagia, shaker exercise

Introduction

Stroke is a disease that is the second main cause of death and disability. According to the World Stroke Organization (WSO), more than 13 million new cases are registered every year. Overall, the incidence rate of stroke from 1990-2016 has changed, this is due to prevention and control of risk factors carried out individually or in groups. However, the absolute number of people affected by a stroke has died or have permanent disability as a result of a stroke.[1] Stroke is a collection of signs and symptoms of loss of function of the focal or global central nervous system caused by a disturbance in blood circulation the brain suddenly flashes for more than 24 hours which can lead to inability.[1] Based on the results of Riskesdas 2013. The prevalence of stroke in Indonesia is based on diagnoses by health professionals of 7 per mile and those diagnosed by health professionals or symptoms of 12.1 per mile. Meanwhile, the highest prevalence of nake diagnoses was in Suilaweisi Uitara (10.8%), and in Yogyakarta (10.3%).[2]

A stroke is a collection of signs and symptoms of loss of function of the focal or global central nervous system caused by a sudden interruption of blood circulation to the brain lasting more than 24 hours which can cause paralysis.[3] Aside from that, post-stroke patients also often experience impaired motor function, namely dysphagia. Dysphagia is a problem that often arises in patients who have had a stroke. It is reported that 33% to 73% of stroke patients experience dysphagia. Dysphagia itself is a condition where there is difficulty or decreased ability to chew and swallow food.[4] Decreased ability to swallow can be very dangerous for sufferers, dysphagia can cause complications such as aspiration, pneumonia, dehydration, malnutrition, and even death.[5] The incidence of stroke continues to increase, so modality therapy is needed to recover post-stroke patients and improve patient rehabilitation.

Therapeutic modalities provided One type of exercise that can motivate the stimulation of the suprahyoid muscle and contribute to increasing the stimulation of the meineilan muscle is the shaker exercise.[6] The additional research carried out by Eiast-Eirling made the Shaker exercise effective in activating the suprahyoid muscles including the digastric, geniohyoid muscle, and mylohyoid muscles which are located in the front of the leather, SEi can increase anterior and superior movement along with beer. contribution to sphincter development Upper esophageal in elderly individuals and patients with various diseases.[7] Previous research stated that shaker exercise in post-stroke patients who experience dysphagia is proven to improve swallowing ability and can prevent direct or indirect complications due to dysphagia.[5] However, the results that have been done previously related to shaker exercise (SE) research cannot be generalized, especially in the community, especially the Indonesian people, because this research is rarely carried out on respondents in the Asian region, especially Indonesia. Therefore, clinical trials are needed to confirm the effectiveness of this shaker exercise for recovery of swallowing in dysphagia patients. Therefore, the purpose of this study was to determine the effectiveness of shaker exercise on dysphagia in post-stroke patients.

Methods

This research is a quasi-experimental design with 15 respondents in Cianjur Hospital, the sample was taken by purposive sampling based on the initial screening of the patient's swallowing ability. This research lasted for 6 consecutive days starting from 15 to 21 January 2023. The variables in this study were data on the characteristics of the respondents consisting of age, gender, education, occupation, and dysphagia as the dependent variable. This research was conducted from 15 to 21 January 2023 at Cianjur Hospital with a population of 50 post-stroke patients. The sample in this study were post-stroke patients who did a shaker exercise for dysphagia in post-stroke patients. The sampling technique in this study used purposive sampling which was adjusted to the inclusion criteria, namely post-stroke patients with dysphagia, compos mentis awareness,

and willingness to become respondents, and the exclusion criteria in this study were patients with acute stroke conditions, stroke patients with aphasia or unable to speak.

Based on the flow of research conducted by researchers, the first is the dysphagia screening process. After that, the second stage is the implementation of interventions and data collection. The intervention was carried out for 6 consecutive days, in the initial session the patients were measured pretest before therapy was given and post-test in the final session of the intervention. Implementation of the intervention lay the patient in a supine position on the floor or the bed, instruct the patient to place his chin down to touch the neck, then ask the patient to slowly raise their head towards their chest without moving their shoulders from the floor or bed then hold the time in this position to raise the head for 30 seconds or 1 minute then lower the patient's head and relax for 1 minute repeat up to 20 times.[5]

The instrument used in this study was GUSS (Gugging Swallowing Screen) GUSS is to the severity of dysphagia and the risk of aspiration in stroke patients, with a sensitivity level of 90.9% and a specificity of 69.2%.[8] GUSS assessment is done by making observations such as alertness, coughing, voice changes, and being able to swallow or not, the patient's lowest score is <10 which means the patient has severe dysphagia, 10-14 moderate dysphagia, and mild dysphagia >15. Data analysis in this study used univariate and bivariate analysis. The statistical analysis application used in this study is JAMOVI 2.3.18, an open-source application that can be downloaded for free via the official website. Univariate analysis used descriptive analysis, and bivariate analysis used paired t-test which previously carried out the normality test.

This research has passed the research ethics protocol test by the Research Ethics Commission of the University of Indonesia Maju with number: No.3985/Ka-Dept/RE/UIMA/III/2023. The implementation of research is voluntary and there is no coercion. Researchers used informed consent as proof of participation in the research process.

Result

The results of the research conducted are presented in the form of tables and graphs consisting of age, gender, education, and occupation characteristics. Bivariate analysis was used to see the effect of shaker exercise on dysphagia.

Table 1. Characteristics of Respondents by Age, Gender, Education, and Occupation.

Variable	Category	Mean (SD) n (%)
Age, Mean (SD	Age	53 (63.0)
GUSS, Mean (SD)	Shaker Exercise	11,3 (1,33)
Gender, n (%)	Man	8 (53,3)
	Women	7 (46,7)
Education, n (%)	Elementary School	n (%)
	Junior High School	11 (73,3)
	Senior High School	n (%)
	University/College	4 (26,7)
Work, n (%)	Working	9 (60.0)
	Not Working	6 (40.0)

Table 2. The Effect of Shaker Exercise on Dysphagia in Post-Stroke Patients

Variable	Measurement	Mean	SD	p-value[1]	p-value[2]
Shaker	Before	11,3	1,33	0,158	0,001
Exercise	After	16.5	1,25		

The results of the bivariate analysis were obtained using a paired test, this test was used because the results of the normality test obtained data that had a normal distribution with a p-value of 0.158. From the results of static analysis using paired tests, significant results were obtained with a p-value of 0.001.

Discussion

Distribution of Respondent Characteristics by Age, Occupation, Education, Gender

Based on the results of data on the age characteristics of the respondents with an average age of 54 years. This is slightly different from previous studies where almost all respondents were elderly, where the results of the study found that some elderly were in the early stages of aging. These results are consistent with data on the age prevalence of stroke in Indonesia, where the prevalence of stroke at a young age increases in proportion to age. In addition, the increase in risk factors for stroke with increasing age makes the incidence of stroke in this study mostly aged 54 years.[9,10] Stating that 34% of people who were hospitalized because of a stroke, most were aged <65 years. Non-bleeding (ischemic) strokes are more common in the elderly age group while bleeding strokes are more common in young people. It can be concluded that stroke in productive age often occurs due to busy work which causes a person to rarely exercise, lack of sleep, and severe stress and is also a factor causing stroke.

Based on gender characteristics, the majority were female, namely as many as 8 respondents. The incidence of stroke in men is less because men experience fewer stroke risk factors such as metabolic syndrome, men have better muscle strength and gross motor skills, the hormone testosterone as a vasoprotective is more dominant in men, as well as differences in micro vascularization and neuronal interactions between males and females. This study, which focused on young age, affected many female subjects who had not experienced menopause, where estrogen as a neuroprotectant would decrease during menopause so that the incidence of stroke was not too high, the difference in the incidence of stroke in men and women was not much different.[11] he results of this study also support the results of the 2013 Riskesdas which obtained the result that strokes in men are mainly caused by lifestyle including smoking habits, although strokes are no longer able to distinguish between men and women.[9]

Based on the educational characteristics of the respondents in this study, almost all of them had completed junior high school education totaling 11 or (73.3%). almost the same as previous research that all respondents had junior high school education.[12] Education is a very important component for an individual, education is an indicator of someone having taken formal education, a person's education can influence patients to obtain information related to their disease so that if the patient has a high level of education, the patient's self-efficacy will also be better.[13] It can be assumed that a person's level of education affects one's knowledge, the higher the level of education the higher the level of knowledge and the better.

Meanwhile, based on the job characteristics of the respondents, there were 9 people (60%) who worked, and the characteristics of the respondents who did not work, 6 people (40%). Characteristics of patients according to occupation show that the distribution starts from housewives, retirees, graduates, and entrepreneurs. Characteristics of work above most patients who work. Occupation is a risk factor that indirectly affects the incidence of stroke.[14] Respondents who initially worked suffered strokes due to work stress, feelings of fatigue, a history of hypertension and diabetes mellitus, and other problems both at work and in the family environment. It can be said that this work-related stress is a trigger factor for strokes, respondents who work are more likely to have strokes or other illnesses because they have more thoughts or stress due to work, in contrast to those who do not work because there is a tendency to live more relaxed, eat more regularly and regular exercise.[15]

Distribution of Pretest and Posttest Shaker Exercise Results on Dysphagia in Post-Stroke Patients

Based on the results of the research conducted by the researchers, it was found that the average swallowing ability of post-stroke patients was very low, and there was a risk of aspiration. After the intervention, the patient's ability to swallow was getting better and increased very significantly. in theory, the ability to swallow or dysphagia in post-stroke patients or stroke patients is something that often occurs, one of the interventions that is very useful to improve the recovery of patients' swallowing ability is with shaker exercise.[6] Shaker exercise has a good effect, especially for stroke patients, shaker exercise is effective in activating the suprahyoid muscles including the digastric muscles, geniohyoid muscles, and mylohyoid muscles which are located at the front of the neck, besides shaker exercise can increase anterior and superior movements and contribute to opening upper esophageal sphincter in elderly individuals and patients with various diseases.[7]

The results of the research by Renny Chaidir, et al. in 2020 stated that the results of this study concluded that swallowing exercises can improve the swallowing ability of stroke patients with dysphagia. Furthermore, it can be recommended as an independent nursing intervention in treating stroke patients with dysphagia. Shaker exercise intervention in stroke patients who experience dysphagia is proven to improve swallowing ability and can prevent complications directly or indirectly due to dysphagia. This statement is in line with (Ismansyah 2008), that if dysphagia is not treated immediately it will result in decreased consciousness, dehydration, and malnutrition.[16]

Shaker exercise is a form of isometric and isokinetic exercise that aims to strengthen the suprahyoid muscles in the neck, thereby increasing the upward and forward opening movements of the hyoid bone and larynx. This process will help open the upper esophageal sphincter, making it easier for food to enter the lower digestive tract.[17] herefore, based on the assumptions of the research results and judging from the theoretical concepts and results of previous studies, it was concluded that this intervention was very effective in restoring motor function, especially swallowing disorders in post-stroke patients with dysphagia. This therapy is recommended therapy to speed up the process of recovering the patient's ability to swallow, especially post-stroke patients.

Limitations

The limitations in this research are shortcomings in the research that will be carried out by researchers. One of them is the lack of personnel to assist with the implementation of shaker exercise therapy which has become a problem in providing the intervention.

Conclusion

Shaker exercise therapy is very significant in improving swallowing ability, especially in post-stroke patients with dysphagia, this research can be used as a reference, especially for nursing, and becomes an evidence base for nursing interventions that can be carried out by patients. For future research, it is hoped that they can conduct this research by comparing hospital standards with different types of exercises and a larger number of patients.

Conflict of Interest Declaration

The researcher declares that this research is free from conflicts of interest.

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