

An Experimental Study on Effectiveness of Shaker's Swallowing Exercises on Improving Swallowing Ability among Dysphagic Patients with Cerebrovascular Accident

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Abstract: **Background:** Dysphagia is one of the most frequent symptoms in patient with stroke paralysis of throat muscles. This condition can disrupt the swallowing process and make eating, drinking, taking medicine and breathing difficulty. **Objectives:** 1) To assess the swallowing ability before and after shaker's swallowing exercise among dysphagic patients with cerebrovascular accident. 2) To find out the effectiveness of shaker's swallowing exercise on improving swallowing ability among dysphagic patients with cerebrovascular accident. 3) To find out association between pre-test swallowing ability score with selected demographic variables among dysphagic patients with cerebrovascular accident. **Method:** A study was conducted in selected hospitals to assess the effectiveness of shaker's swallowing exercise in improving swallowing ability among dysphagic patients with cerebrovascular accident. The 30 samples was selected by using purposive sampling technique. The socio demographic data was collected by using questionnaire method on Age, Gender, Duration of illness in months and swallowing ability is assessed by using Modified Gugging Swallowing Screening Test. The pre-test was done by using liquid and post test was done after shaker's swallowing exercise. It was done for 3 times for 5 days. **Results:** For the variables like Age and the Duration of illness 'p' value of the association test with pre test score was less than 0.05. This concludes that, there was significant association of these demographic variables with pre-test score of swallowing ability test. For the variable the 'p' value of the association test with pre-test score was more than 0.05. Concludes that, there was significant association of these demographic variables with pre-test score of swallowing ability test. Hence the H2 hypothesis was accepted. The pre test average of day 1 was 11.73 with standard deviation of 1.36. The post test average score of the day 5 was 28.86 with standard deviation of 1.25. The statistic value of the paired t test was 271.42 with p value 0.000. Here p value less than 0.05, shows there was significant increase in the water intake capacity. The above findings reveals that H1 Hypothesis was accepted. The shaker's swallowing exercise was effective in improving swallowing ability among dysphagic subjects with cerebrovascular accident. **Conclusion:** Thus the study concludes that Shaker's swallowing exercise was effective on improving swallowing ability among dysphagic subject with cerebrovascular accident, thus the null hypothesis (Ho) is rejected and (H1) and (H2) was accepted. Shaker's swallowing exercise used in clinical settings for subjects from Medical wards and Neurological ward in selected hospitals was effective.

Keywords: Assess Effectiveness, Cerebrovascular accident, Swallowing ability, Swallowing exercises

1. Introduction

Cerebrovascular disorder is an umbrella term that refers to a functional abnormality of the central nervous system that occurs when the normal blood supply to the brain is disrupted. Dysphagia is one of the most frequent symptoms in patient with stroke paralysis of throat muscles. This condition can disrupt the swallowing process and make eating, drinking, taking medicine and breathing difficulty.

Stroke is a term used to describe neurologic changes caused by interruption in the blood supply to a part of the brain. The two major types of stroke are ischemic and hemorrhagic. Ischemic stroke is caused by a thrombotic or embolic blockage of blood flow to the brain. Bleeding into the brain tissue or the subarachnoid space causes a hemorrhagic stroke. Ischemic strokes account for about 83% of all strokes remaining 17% of strokes are hemorrhagic".

Worldwide, approximately 20 million people suffer from stroke each year; of them, only 15 million survive. Of those who survive, five million will be disabled by their stroke. 'An estimated 5.7 million people died from stroke in 2005, and 87% of these deaths were in low-income and middle-

income countries. Without effective interventions, the number of global deaths is projected to rise to 6.5 million in 2015.

The functional swallowing is necessary for survival. Safe and efficient swallowing requires an elaborate coordination of neuromuscular activity to allow for the swallowed material to pass from the oropharynx into the esophagus without aspiration occurring. Unfortunately, as a result of aging, Chemo radiotherapy for head and neck cancer, neural diseases and cardiovascular accidents, the coordination and strength of this system can be impaired, resulting in swallowing abnormalities. When disruption in this passage occurs, symptoms of dysphagia, coughing, and choking may result, leading to malnutrition, pneumonia and asphyxia.

2. Statement of the Problem

"A study to assess effectiveness of Shaker's swallowing exercises on improving swallowing ability among dysphagic patients with cerebrovascular accident in selected hospitals".

3. Objectives of the Study

- 1) To assess the swallowing ability before and after Shaker's swallowing exercises among dysphagic patients with cerebrovascular accident.
- 2) To find out the effectiveness of Shaker's swallowing exercises on improving swallowing ability among dysphagic patients with cerebrovascular accident.
- 3) To find out the association between pre-test swallowing ability score with selected Demographic variables among dysphagic patients with cerebrovascular accident.

Hypothesis

H0: There will be no significant effect of Shaker's swallowing exercise on improving swallowing ability among dysphagic patients with cerebrovascular accident.

H1: There will be a significant effect of Shaker's swallowing exercise on improving Swallowing ability among dysphagic patients with cerebrovascular accident.

H2: There will be a significant association between swallowing ability and selected Demographic variables among dysphagic patients with cerebrovascular accident.

4. Methodology

Research approach: Quantitative experimental approach

Research design: One group, Pre - Test Post- Test experimental time series design.

Setting of the study: Wanless Hospital Miraj and Government Civil Hospital Miraj.

Research variables

1. Dependent variables: In the present study, independent variable was shaker's swallowing Exercise.
2. Independent variables: In present study, dependent variables were dysphagic subjects with cerebrovascular accident.

Demographic variables: This included age, gender and duration of cerebrovascular accident in one year.

Target Population: The target population is aggregate of cases about which the researcher would like to generalize.

Accessible Population

The accessible population for this study were the subjects diagnosed with cerebrovascular accident having dysphagia admitted in Medical and Neurological wards of selected hospitals.

Sample Size

The sample size of the present study was 30 subjects diagnosed with cerebrovascular accident in Medical ward and Neurological ward of selected hospitals.

Sampling Technique

In this study purposive sampling technique was adopted to select the subjects. Purposive sampling is a non-probability sampling technique where subjects were chosen to be part of the sample with a specific purpose in mind and according to the study objectives.

Criteria for Samples Selection

A. Inclusion Criteria

Subjects who

- 1) Understand Marathi, Hindi and English
- 2) Are willing to participate in the study
- 3) Have Moderate swallowing difficulty (4-7) score
- 4) Have Glasgow coma scale (GCS) score of 13-15
- 5) Are on liquid diet.

B. Exclusion Criteria

- 1) Those having mild and severe swallowing difficulty
- 2) Those had surgery of the head and neck, congestive cardiac failure and end stage renal disease.
- 3) Unconscious, comatose, mentally impaired Subjects with CVA.

Description of Tool

Part I: Socio demographic variables.

Information on socio demographic variable of the subjects contains three items, which included Age, Gender and Duration of cerebrovascular accident in one year.

Part II: Modified Gugging Swallowing Screening Test

Assessment of liquid swallowing difficulty by using following test and scores

Sr.No	Test	Score
1	Indirect swallowing test	5
2	Direct swallowing test	5
3	Sum Total	10

SWALLOWING SCORE

SEVERE SCORE = 0 – 3
 MODERATE SCORE = 4 - 7
 MILD SCORE = 8 -10

Reliability

In order to establish the reliability of the tool it was administered to 8 CVA subjects with dysphagia. To establish reliability of, Modified Gugging Swallowing Screening Test. Karl Pearson's coefficient correlation formula test re-test method was used. The reliability coefficient obtained was $r = 0.95$, thus the tool was found reliable.

Data collection procedure

The present study was conducted in Wanless Hospital Miraj & Government civil Hospital miraj .Permission letter was obtained from the medical officer .30 samples of CVA were selected by Purposive sampling technique. Subjects were chosen with a specific purpose in mind and according to the study objectives. The study was explained and confidentiality was maintained .The purpose and procedure was explained and informed consent was obtained from the CVA patients .The demographic variables were obtained by interview method and swallowing ability is assessed by Modified Gugging Swallowing screening test.The pre-test was done by using liquid and post test was done after shaker's swallowing exercise. It was done for 3 times for 5 days.

Plan for data analysis:

The data obtained was analyzed using descriptive and inferential statistics based on objectives and hypothesis of the study.

Ethical consideration

The study was approved by research committee of the institution. Assurance was given to the subjects that anonymity of each individual would be maintained.

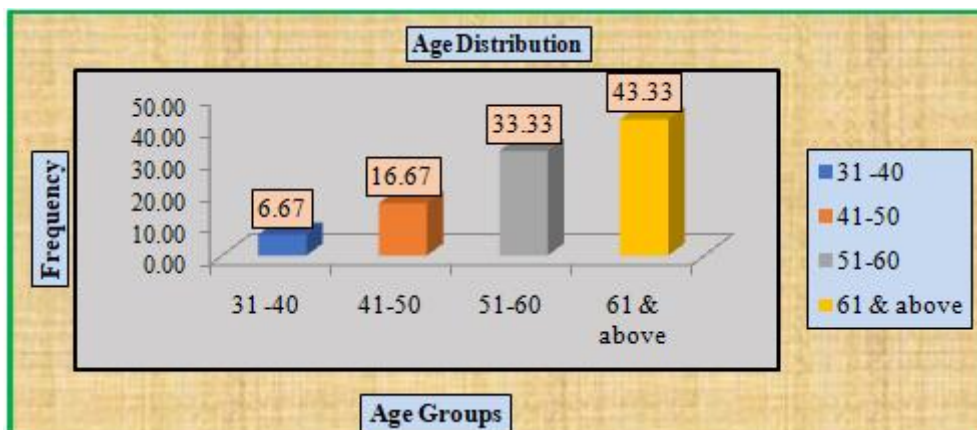
5. Result

Section- I

This section deals with analysis of demographic data, of the dysphagic patients with cerebrovascular accident under the study. It is analysed and presented in terms of frequency and percentage.

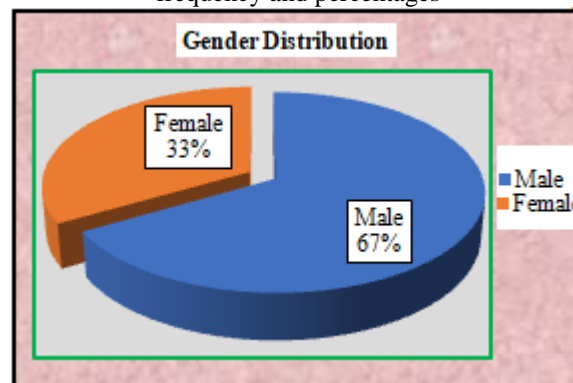
Table 1: Distribution of the dysphagic patients with cerebrovascular accident according to Age in terms of frequency and percentages

Sr. No.	Variables	Groups	Frequency	Percentage
1	Age	31 -40	2	6.67
		41-50	5	16.67
		51-60	10	33.33
		61 & above	13	43.33
2	Gender	Male	20	66.67
		Female	10	33.33
3	Duration of Illness in Months	1 months	4	13.33
		2-3 months	9	30.00
		4-5 months	12	40.00
		6 months	5	16.67



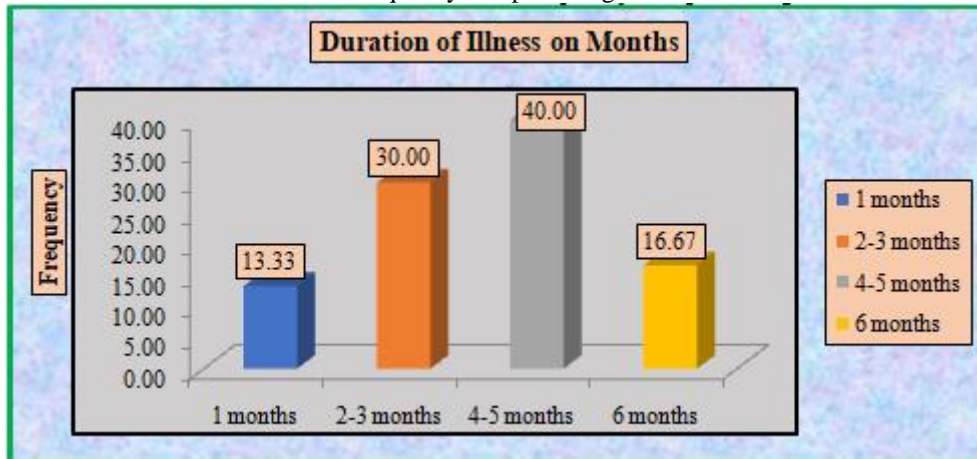
Above table and following figure depicts that, according to age in the study most of them 13 (43.33%) were 61 and above years of age group, 10 (33.33%) were between 51-60 years, 5 (16.67%) were between 41-50 years of age and remaining 2 (6.67%) in age group 31-40 years.

Table 2: Distribution of the dysphagic patients with cerebrovascular accident according to Gender in terms of frequency and percentages



Above table and following figure depicts that, according to Gender, 20 (66.67%) were Males and 10 (33.33%) were Females.

Table 3: Distribution of the dysphagic patients with cerebrovascular accident according to Duration of Illness in terms of frequency and percentages



Above table and following figure depicts that, 12 (40%) patients were ill since last 4-5 months, 9 (30%) patients were ill since last 2-3 months, 5 (16.67%) were from 6 months and remaining 4 (13.33%) were since last one month.

Section- II

1. To assess the swallowing ability before and after shaker’s swallowing exercise among dysphagic patient with cerebrovascular accident.

Student’s t test was used to find out the difference in the water intake level, to see the effectiveness of Shaker’s swallowing Exercise on improving swallowing ability among dysphagic patients with cerebrovascular accident.

Day Wise Comparison of Pre Test Scores (Water Intake)

PRE TEST	Day	Size	Mean	S.D.	t	p
	Day 1	30	11.73	1.36	121.00	0.00
Day 2	30	15.76	1.35			
PRE TEST	Day 2	30	15.76	1.35	119.00	0.00
	Day 3	30	19.73	1.36		
PRE TEST	Day 3	30	19.73	1.36	121.00	0.00
	Day 4	30	23.76	1.35		
PRE TEST	Day 4	30	23.76	1.35	119.00	0.00
	Day 5	30	27.73	1.36		

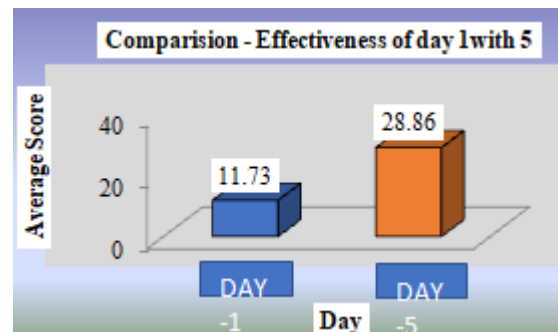
Day Wise Comparison of Post Test Scores (Water Intake)

Post Test	Day	Size	Mean	S.D.	t	P value
	Day 1	30	12.80	1.32	83.43	0.00
Day 2	30	16.80	1.32			
Post Test	Day 2	30	16.80	1.32	87.79	0.00
	Day 3	30	20.86	1.25		
Post Test	Day 3	30	20.86	1.25	121.00	0.00
	Day 4	30	24.90	1.21		
Post Test	Day 4	30	24.90	1.21	119.00	0.00
	Day 5	30	28.86	1.25		

Comparison of Day 1 Pre Test with Day 5 Post Test

2. To find out the effectiveness of shaker’s swallowing exercise on improving swallowing ability among dysphagic patients with cerebrovascular accident.

Test	Size	Mean	S.D.	t value	p value
Day 1 - Pre	30	11.73	1.36	271.42	0.000
Day 5 -Post	30	28.86	1.25		



The pre test average of day 1 was 11.73 with standard deviation of 1.36. The post test average score of day 5 was 28.86 with standard deviation of 1.25. The test statistics value of the paired t test was 271.42 with p value 0.000.

Here p value less than 0.05, shows there was significant increase in the water intake capacity, and concludes that Shaker’s swallowing Exercise effective.

Section III

3. To find out the association between pre-test swallowing ability score with selected

Demographic variables among dysphagic patients with cerebrovascular accident.

Association of Knowledge Score in Relation to Demographic Variables

This section deals with the association of knowledge scores with selected demographic variables of the study participants. Chi square test was used to find out the association.

Sr. No.	Variable	Groups	Pre Test		Chi-Square	d. f.	p value	Significance
			below Median	Above Median				
1	Age	31 -40	0	2	22.57	3	0.00	Significant
		41-50	0	5				
		51-60	1	9				
		61 & above	12	1				
2	Gender	Male	10	10	1.08	1	0.29	Not Significant
		Female	3	7				
3	Duration of Illness (in Month)	1 months	2	2	10.18	3	0.01	Significant
		2-3 months	0	9				
		4-5 months	8	4				
		6 months	3	2				

For the variables like Age and the Duration of illness the p value of the association test with pre test scores was less than 0.05. Concludes that, there was significant association of these demographic variables with pre test scores of swallowing ability test.

For the variable gender the p value of the association test with pre test scores was more than 0.05. Concludes that, there was no significant association of these demographic variables with pre test scores of swallowing ability test.

Nursing Implications

The result of the study have several implication for the nursing professionals including nursing education, nursing administration, nursing research and nursing practice

Nursing Education

- 1) This study serves as a base for the nurse educator to teach on the aspect of evidenced based practice.
- 2) The educator can take initiative to include the topic of effectiveness of swallowing exercises on improvement of swallowing ability among subjects with cerebrovascular accident.
- 3) Nurse educator must arrange facilities and opportunities for student nurses to attend workshops, conferences imparting their knowledge.
- 4) The nurse should be equipped with date knowledge on swallowing exercises. So they will be able to impart appropriate knowledge on improvement of swallowing ability.
- 5) The nurse educators should emphasize and encourage the student nurses to conduct periodic health education and in-service education programmes to create awareness on swallowing exercises in improvement of swallowing ability among the subjects with cerebrovascular

Nursing Administration

- 1) Nurse administrators should provide fund for conducting seminar, workshop and conferences regarding the benefits of swallowing exercises.
- 2) Nurse administrators should announce the importance of swallowing exercises through media, posters, pamphlets and handouts.
- 3) Nursing personnel on various health setting should be given in service education to update their knowledge.
- 4) Nurse administrator can encourage evidence based practice.

Nursing Research

- 1) The study finding can be utilized for literature review for researchers.
- 2) The study can be used for guidance of researcher to make their study more effective.
- 3) Researchers can gain knowledge regarding swallowing exercises.
- 4) Extensive research must be organized to identify more effective methods to improve swallowing ability.

Nursing Practice

- 1) The findings of this study enlighten the fact that swallowing exercises can be used to improve the swallowing ability among patients with cerebrovascular accident.
- 2) The study facilitates to educate regarding swallowing exercises to improve the swallowing ability.
- 3) Nursing personnel are in the best position to create awareness regarding swallowing exercises in improvement of swallowing ability.

6. Conclusion

The above interventional study was a good learning experience for the investigator. The result of this study showed that. Shaker's swallowing exercise was effective on improving swallowing ability among dysphagic subject with cerebrovascular accident, thus the null hypothesis (**H₀**) is rejected and (**H₁**) and (**H₂**) were accepted. Shaker's swallowing exercise used in clinical settings for subjects from Medical wards and Neurological ward in selected hospitals was effective.

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