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Efficacy of Dysphagia Exercise on Swallowing Ability of clients with Ischemic stroke

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ABSTRACT
Worldwide the mortality and morbidity rates are high for ischemic stroke. It is India's third leading cause of death; Ischemic stroke affects 20 million people. Dysphagia is one of the most common neurological disorders reported among Ischemic stroke patients. It has the potential to have a crucial collision on the heath and quality of life of ischemic stroke survivors. It has the potential to have a significant impact on the swallowing difficulties that are mild, moderate, or severe. An experimental pretest and posttest design was used as the research method for the investigation. The sample size was 24 Ischemic stroke clients with swallowing disabilities admitted to the Neurology wards of the selected hospital. Non- probability purposive sampling was used to choose the samples. A questionnaire was used to gather the data and swallowing ability was assessed by the Modified Mann Assessment of Swallowing Ability Scale. 10 types of Dysphagia exercises were demonstrated for 7 days for 10 – repetitions for duration of 30 minutes, 3 times a day, on the 20th day post interventional scores were collected. The results were organized which shows asof Ischemic clients with swallowing disability Majority of the respondents were between the age 51 – 75 years, Males, Christians and Illiterates. Regarding illness majority had duration of Illness from less than 1 month and duration of symptoms of Dysphagia from less than 2 weeks. Concern to GCS score 13 GCS score Trend was high in Moderate Dysphagia before intervention and declined with no Dysphagia after intervention Ischemic stroke mortality rates hike based on complications one among that is Dysphasia; There is a significant monetary cost to in addition to the impact on person's encounter. The most effective method for improving swallowing capacity is to exercise the Muscles for swallowing.
KEYWORDS: *Ischemic stroke, Dysphagia, Swallowing ability, Dysphagia exercises, Modified Mann Assessment of Swallowing Ability*

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INTRODUCTION

Hippocrates, the father of medicine, acknowledged stroke over 2,400 years ago. Stroke was termed apoplexy at the time, which means "to be struck down by violence" in Greek [1]. After ischemic heart disease, Stroke is the world's second leading cause of death, with an estimated 5.5 million fatalities, according to a global burden of disease study [2]. Stroke incidences was 13.7 million and prevalence was 80.1 million globally; Stroke was also the second-leading contributor to disability-adjusted life years(DALYs) globally, accounting for approximately 116.4 million cases; stroke prevalence was 41.1 million in women and 39.0 million in men [2].

Stroke is acknowledged as a series of medical complications that result in prolonged hospitalizations and high health-care costs; approximately 50-60% of those who have had a CVA have dysphagia symptoms, an estimated half of these patients have evidence of aspiration, and 20% of these patients develop aspiration pneumonia [3]. Every year, an estimated 4, 00,000 to 8,00,000 people develop neurogenic dysphagia, with dysphagia affecting 25-70 percent of stroke survivors, and dysphagia lowering the standard of living. Barely 45% of patients with dysphagia enjoy eating, and 41% experience anxiety or panic during mealtimes. More than one-third of patients with dysphagia avoid eating with others [4].

Dysphagia is caused by problems with nerve or muscle control that can happen as a consequence of a variety of ailments. In stroke patients, these conditions cause weakness and structural problems in the coordination of the mouth and throat muscles, causing food or liquids to travel down the trachea rather than the esophagus [5]. Dysphagia symptoms occur when a CVA causes damage to the brain stem, such as lacunar infarcts or hemorrhages, or when the cortex is damaged. Deglutition axes can cause neuromuscular apparatus malfunction, discoordination, or lack of function by damaging the nerves or muscles involved in swallowing [3].

Following a stroke, dysphagia is linked to worse long-term results, co-morbidities, dehydration, mortality, and a higher risk of complications such aspiration pneumonia. Clinical evaluation of dysphagia should be performed within 24 hours of stroke diagnosis to reduce these complications [2].

The telltale indicators of dysphagia include loss of saliva, dysphagia (or uncoordinated muscular movements), facial weakness, delayed pharyngeal laryngeal elevation, coughing or throat clearing, shortness of breath, and changes in voice quality after swallowing. The presence of dysphagia may be indicated by the preservation of any or all these features [6].

A careful history is taken to help define the cause of the patient's swallowing disorder, which is usually followed by a clinical evaluation. Antonio et al created the Modified Mann Assessment of Swallowing Ability (MMASA) scale to validate a physician-specific instrument for dysphagia screening. The MMASA is valid and reliable for screening stroke survivors, according to their preliminary findings [7].

Both compensatory and rehabilitative methods are employed in dysphagia therapy. In contrast to compensatory treatments, which aim to reduce symptoms without altering the physiology, rehabilitative strategies aim to enhance swallowing physiology and enable the safety and acceptance of the least restrictive diet [7].

Chin tucking is a compensatory exercise that narrows the entrance to the laryngeal vestibules and shortens the distance between the hyoid and the larynx. Head rotation reduces upper esophageal sphincter pressure on the opposite side of the head, allowing for more upper esophageal sphincter extension and duration. By tilting the head, the bolus is directed to the stronger side of the oral cavity [8].

Compensatory and rehabilitative exercises, such as effortful swallowing, improve bolus clearance from the vallecula and base of tongue retraction. By increasing the extent and duration of laryngeal elevation, the Mendelsohn maneuver lengthens and widens the cricopharyngeal opening. 8 Patients with reduced cricopharyngeal opening and pyriform sinus residue should perform a shaker (head lift) exercise. Supraglottic swallowing closes the vocal folds before swallowing and cleans the larynx of any residue. Super supraglottic safety swallow improves true and false vocal fold closure by bearing down. Tongue hold exercises help to strengthen the bond between the base of the tongue and the posterior pharyngeal wall. 8

A study was carried out to evaluate the effect of oro-facial physiotherapy on stroke patients with swallowing problems. Our facial physiotherapy includes dysphagia exercise. According to the study, food intake in dysphagia patients improved significantly after stroke [9].

The researcher observed 50 to 60 cases of Ischemic stroke admitted to neurology wards per month, of which 20 to 30 patients had dysphagia, which led to complications such as aspiration pneumonia, and they were found to be psychologically, physiologically, socially, and vocationally handicapped.

As a result, the researcher concluded that there is a need to evaluate the effectiveness of dysphagia exercise on the swallowing ability of clients with Ischemic stroke in order to prevent dysphagia complications and restore health. To assess the effectiveness of dysphagia exercise on swallowing ability of clients with Ischemic stroke.

HYPOTHESIS

H1: Asignificant difference will be there between swallowing ability before and after dysphagia exercise among patients with Ischemic stroke with 95% of class interval at ≤ = 0.05 level of significance.

H2: Association will be Significant between pre and post interventional scores of swallowing abilities with their selected variables with 95% of class interval at ≤ = 0.05 level of significance**.**

MATERIAL AND METHODS

An experimental pretest and posttest design was used as the research method for the investigation. The sample size was 24 Ischemic stroke clients with swallowing disabilities admitted to the Neurology wards of the selected hospital. Non- probability purposive sampling was used to choose the samples. A questionnaire was used to gather the data and swallowing ability was assessed by the Modified Mann Assessment of Swallowing Ability Scale. 10 types of Dysphagia exercises were demonstrated for 7 days for 10 – repetitions for a duration of 30 minutes, 3 times a day, on the 20th day post interventional scores were collected.

RESULTS

Description of socio demographic variables & clinical variables of Ischemic clients with swallowing disability

Out of 24 clients, Majority of the respondents 13(54.1%) were between the age 51 – 75 years, 17(70.83%) were Males, 9(37.5%) were Christians and 9 (37.5%) were Illiterates. Regarding illness 20(83.33%) of them had duration of Illness from less than 1 month and 16(66.66%) had duration of symptoms of

Dysphagia from less than 2 weeks. Concern to GCS score, 8(33.33%) had 13 GCS score and 16(66.66%) had no previous history of Dysphagia and 21(87.5%) had no previous history of Dysphagia.

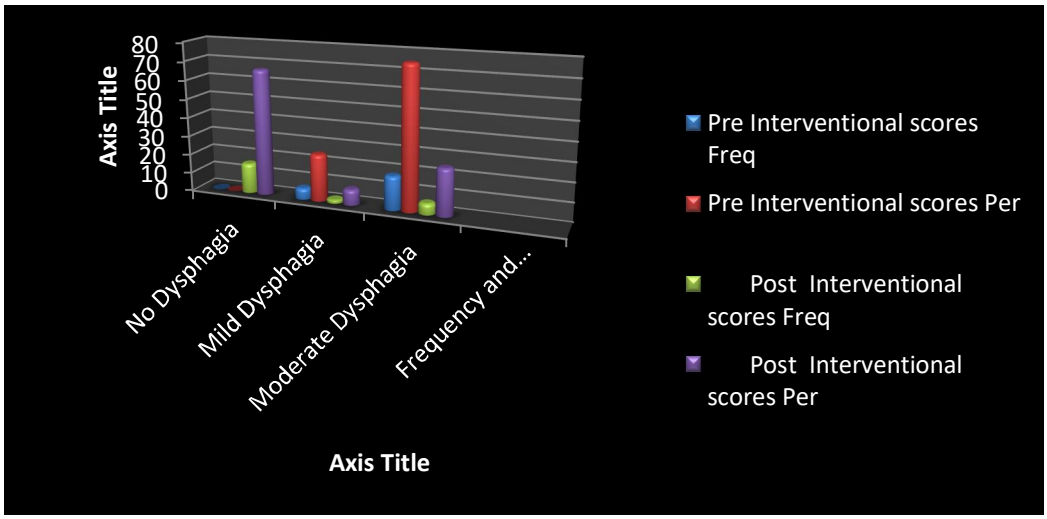

Fig:1 Frequency and Percentage distribution of Pre and Post Interventional swallowing ability among Ischemic stroke survivors

The Graph depicts that out of 24 Ischemic stroke patients, the trend is high 18(75%) among Moderate Dysphagia before intervention and declined by 16(66.66%) with no Dysphagia after intervention.

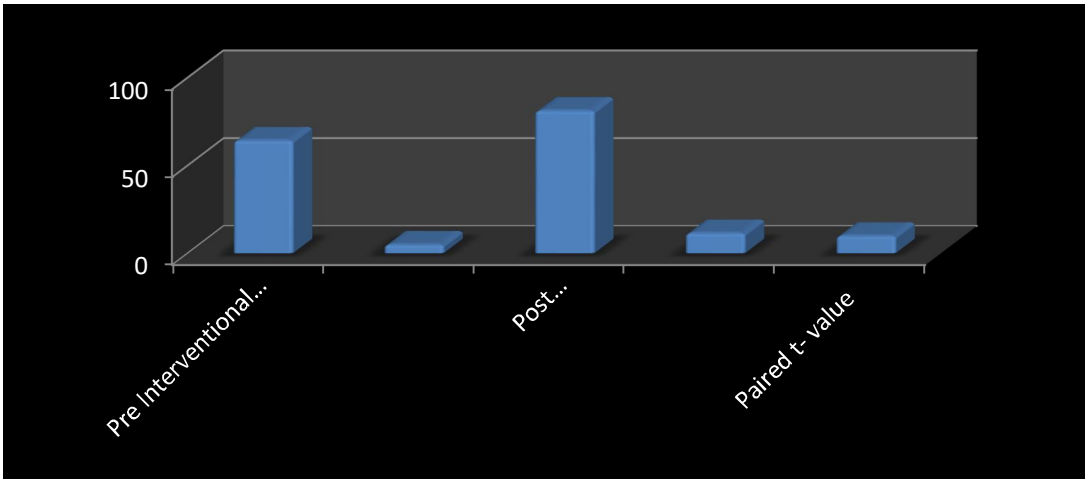

Fig:2 Comparison of Mean and Standard Deviations of swallowing ability among Ischemic stroke patients between Pre and Post Interventional Scores by using Paired 't' Test.

The bar graph depicts the inclination of the obtained mean values of swallowing ability of post interventional scores 81.25 ± 11.53 from the pre – interventional scores 64.3 ± 4.98. Whereas the obtained paired 't' value for swallowing ability was 9.96 which is greater than tabulated 't' value 2.06 at 0.05 level of significance with df = 23, which indicated that there is increase in swallowing ability. Hence, the Null Hypothesis (H01) was rejected at 95% of class interval i.e. ≤ = 0.05 level and researcher Hypothesis (H1) was accepted at 95% of class interval i.e. ≤ = 0.05 level.

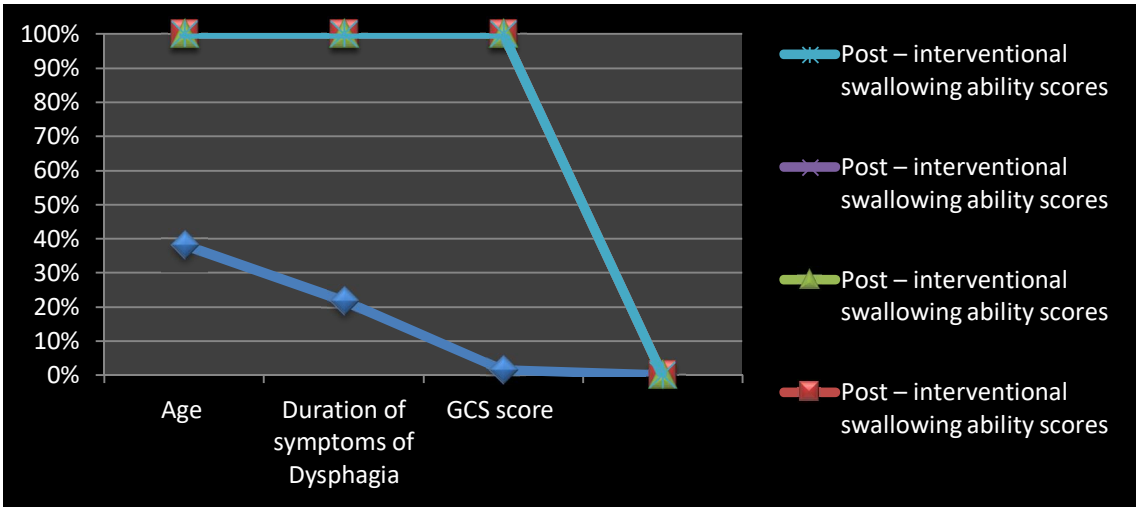

Fig:3 Association between the pre and post interventional swallowing ability scores of Ischemic stroke patients with their selected variables

The line graph depicts that, Chi – square values computed for the pre – interventional swallowing ability scores with their age was 7.23 inclining to 11.76 after intervention at 0.05 level of significance representing the association and as well as improvement of swallowing ability; Duration of symptoms of Dysphagia was 4 and trend raised to 14.4 at 0.05 level of significance indicating the association and as well as improvement of swallowing ability, GCS score was 16.6 in pre intervention which declined to 10.12 after intervention indicating the progress among ischemic clients level of consciousness. Hence, the Null Hypothesis (H02) was rejected at 95% of class interval i.e. ≤ = 0.05 level and researcher Hypothesis (H2) was accepted at 95% of class interval i.e. ≤ = 0.05 level.

DISCUSSION

Our study showed evidence of the efficacy of dysphagia exercises on the swallowing ability of clients with ischemic stroke, and an association was discovered between the swallowing ability before and after dysphagia exercises and their selected variables that showed significance, namely age, duration of dysphagia symptoms, and GCS score. Future research should look into the limitations and research gaps. According to a Swiss Cohort Study, dysphagia may have a significant impact on clinical outcome, mortality, and institutionalization [10]. According to a qualitative study conducted in Sweden, "Dysphagia wreaks havoc on people's lives and necessitates individually tailored, long-term support from skilled health care professionals," according to the study [11].A physician-administered screening tool for dysphagia in acute ischemic stroke, the MMASA may be valid and reliable, according to the findings of the A study [12]. The findings of a preliminary study concluded that Dysphagia practices were an effective, inexpensive, and simple measure for improving Swallowing ability in patients with Cerebrovascular accidents [13]. According to one study, there was a significant improvement in food intake in Dysphagia patients after stroke after 8 weeks of Orofacial physiotherapy with an emphasis on optimizing tongue and hyoid muscle function. [14] According to a randomized controlled trial, the Shaker exercise is useful for helping stroke survivors with dysphagia regain the ability to swallow [15]. An experimental study found that PNF-based short neck flexion exercises are as effective as the Shaker exercise in improving dietary changes and swallowing function. A randomized pilot study found that chin tuck against resistance is effective in improving pharyngeal swallowing function in patients with Dysphagia after stroke [16]. According to a Korean study, additional, intense bedside exercise would be needed to help stroke patients who have dysphagia improve their ability to swallow; however, bedside self-exercise has been shown to help stroke patients who have dysphagia after a stroke improve oropharyngeal swallowing function [17]. A study concluded that using the Mendels sohn maneuver as an exercise improves swallow physiology, with significant improvements in correlations between measures of hyoid movement, upper esophageal sphincter opening, and bolus flow observed after treatment [18, 19]. To help stroke patients with their tongue strength and oral swallowing function, an effortful swallowing exercise was suggested, based on the findings of a randomized control experiment that was double-blinded. The innovative head turn combined chin down maneuver may be a useful tactic for lowering chronic Vallecular residue, according to the results of one study [20]. According to the findings of a cross-sectional study, modified shaker exercise improves the amplitude of pharyngeal muscle contraction [21]. The study findings concluded that dysphagia

exercises were a successful strategy for treating patients with swallowing problems, and that these exercises would lessen issues and be easy to put into practice. However, several of the studies included in this study had methodological limitations. More RCTs can be conducted for precision. This is consistent with the results of our study.

LIMITATIONS

- The duration was set at 6 weeks.
- The sample size was restricted to 24 people.
- Lack of randomization and control.

CONCLUSION

Dysphagia exercises were an effective, low-cost, non-pharmacological measure for preventing aspiration pneumonia, improving swallowing ability, and achieving and maintaining the minimal ability of life among Ischemic stroke patients, thereby improving quality of life.

REFERENCES

1. Karenberg, A. (2020). Historic review: select chapters of a history of stroke. Neurol. Res. Pract. **2:**34
2. Global, regional, and national burden of Stroke, 1990 – 2016; a Systematic analysis for the Global Burden of Disease. Land Neurol. 2019; 18: 439-58.
3. Reza Shaker, MD, Joseph E. Geena, (2011). Management of Dysphagia in stroke Patients, Gastroenterol Hepatol. 7(5):308-382.
4. Pandian JD, Sudhan P. (2013). Stroke epidemiology and stroke care services in India. J Stroke. 15(3):128-34.
5. Paciaroni M, Mazzota G, Corex F. Dysphagia following stroke. Eur Neurol, 2004; 5:162-167
6. Amstrong Jr, Mosher BD. (2011). Aspiration Pneumonia After Stroke. Intervention and Prevention. The neurohospitalist, 1(2):85-93
7. Carnaby – Mann G, Lenius K, Cray M. (2007). Update on Assessment and Management of Dysphagia after stroke. Northeast Florida Medicine, 58(2): 31-34.
8. AlicizVose, Jodi Nonnenmacher, Michale L. Singer, Marlis Gonzalez ` Fernandez. (2014). Dysphagia Management in Acute and Sub-Acute stroke curr phys. Med Rehabil Rep. 2(4):197-206.
9. Peter Kenechy, Milan Elfmark, Petra Bastolua, Petra Gaul Alacova. (2017). New Orofacial Physiotherapy of Dysphagia after stroke. International Journal of Physical Medicine& Rehabilitation, 5(406).
10. Marcel Arnold, Kai Lieslova, Anne Bnoeg – Moruay. (2015). Dysphagia in Acute Stroke; Incidence, Burden and Impact on Clinical Outcome. PLOS.ONE. 11(2):1-11.
11. JosefinHellden, Liza Bergstrom, Staffan Karlsson, (2018). Experiences of Living with Persisting Post-stroke dysphagia and of dysphagia Management – a qualitative study. International Journal of Qualitative Studies on Health and Well-being. 13:1-10.
12. Nader Antonios MD, Giselle Carnaby – Mann. (2010). Analysis of Physician Tool for Evaluating Dysphagia or an Inpatient Stroke Unit; The modified Mann Assessment of Swallowing Ability. Journal of Stroke and Cerebrovascular Diseases. 19(1): 49-57.
13. Bhuvaneshwari G, Somiya c. (2020). Effectiveness of Dysphagia Exercises on Swallowing Ability among Patients with Cerebrovascular Accident. International Journal of Research in Pharmaceutical Sciences. 11(2) : 1515 – 1518.
14. PeterKenechy, Milan Elfmark, Petra Bastolua, Petra Gaul Alacova. (2017). New Orofacial Physiotherapy of Dysphagia after stroke. International Journal of Physical Medicine & Rehabilitation, 5(406).
15. Choi JB, Shim S, Yang JE, Kin HD, Lee DH. (2017). Effects of Shaker Exercise in Stroke Survivors with Oropharyngeal dysphagia. Neuro Rehabilitation. 41(4): 753-757.
16. D. Mania Diana, S.S. Sharmila Jansi Rani. A Study to Assess the Effectiveness of Swallowing Exercises on Swallowing Ability Among Patients with Cerebrovascular Accident in Selected Hospital AJNER, 2014; 4(4):429-435.
17. Young – Seok CHO, Dong-Hwan Oh, Young-Rim Paik. Effects of Bedside Self-Exercise on Oropharyngeal swallowing function in stroke patients with dysphagia. A pilot study. Journal of physical Therapy Science. 2017; 29: 1815-1816.
18. Gary H. Mc Cullough, Young Kin Effects of the Mendelsohn Maneuver on Extent of Hyoid Movement and UES opening Post Stroke. NIM public Access. 2013; 28(4):1-18.
19. ManiynaSaconato, Brasilia Mania Chiri, HennigueManoel Lederman, Mania LnesRebelo Goncalves. Effectiveness of Chin-tuck Maneuver to Facilitate Swallowing in Neurologic Dysphagia Otorhinolaryngol. 2016; 20: 13-17
20. Ahmed Nagy, Teresa J. Valazano. Ashwini M. Namasivayam. The effectiveness of the Head Turn Plus Chin Down Maneuver for eliminating vallecular residue – HMS. 2016; 28(2):113-117.
21. Jery A. Logeemann, Alfred Rademaker, Barbara RoaPauloski. (2009). A randomized study comparing the Shaker Exercise with Traditional Therapy; A preliminary study Dysphagia. 24(4): 403-411.

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