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Effect of chin tuck against resistance (CTAR) exercise in improving swallowing ability among neurological disorders patients with dysphagia at IMS and sum hospital, Bhubaneswar, Odisha

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Abstract

Dysphagia can adversely affect the quality of life and increases the risk of dehydration and aspiration. Many emotional and physical problems affect the performance and disability or limited activity and prevent social interaction. Dysphagia associated with morbidity and mortality. The main objective of the study was to evaluate the effectiveness of Chin Tuck against Resistance (CTAR) exercise in improvement of swallowing ability among neurological disorders patients with dysphagia at IMS SUM Hospital, Bhubaneswar Odisha. A experimental study was conducted 60 samples were selected by purposive sampling and were divided in to experimental 30 and control group 30. Used Gugging swallowing screen scale (GUSS) to observe dysphagia score. Pre-test data was collected from both the groups by interview and observation method. Then from next day onwards Chin Tuck against Resistance Exercise was administered for 8 consecutive days, 3 times per day, to with dysphagia in experimental group and control group received routine care. The study findings revealed that, in Experimental group, pre-test of mean score was 5.40 ± 0.814 , they progressed to no dysphagia at the end of 8th day with post mean score 15.23 ± 2.285 . Thus Chin Tuck against Resistance Exercise was helpful in improving the swallowing ability among neurological disorders patients with dysphagia.

Keywords: Chin tuck against resistance exercise, neurological disorders, dysphagia, GUSS

Introduction

The term "neurogenic dysphagia" refers to abnormalities of swallowing brought on by conditions affecting the muscles, the central nervous system, the peripheral nervous system, or neuromuscular transmission. Contrary to this uniformity-suggestive phrase, swallowing difficulties caused by certain diseases differ significantly in terms of their clinical presentation, the appropriate therapy options, and the prognosis [1]. Dysphagia is one of the most prevalent and hazardous signs of a variety of neurological illnesses [2]. Impaired deglutition is noted in at least 50% of all patients with ischemic or hemorrhagic stroke at the outset [3]. Affected patients have a fourfold increased risk of aspiration pneumonia, are more likely to have a long-term severe handicap, are more likely to be released to nursing homes, and have a much higher mortality rate [4]. Comparable figures for traumatic brain injury have been published, with a reported incidence of clinically significant dysphagia in approximately 60% of patients. 5 Neurogenic dysphagia is a key risk factor for pneumonia, which is the leading cause of death in all Parkinson disorders. Dysphagia affects more than one-third of people with multiple sclerosis [6].

Dysphagia can have a negative impact on a person's quality of life and raise their risk of dehydration and aspiration. Dysphagia causes malnutrition [7]. Numerous emotional and physical issues have a negative impact on performance, cause impairment or limited activity, and inhibit social engagement [8]. Dysphagia linked to morbidity and mortality. These issues can be avoided with a proper swallowing assessment and management strategy [9]. Compulsive tactics Exercise aids in the improvement of physical modifications to the laryngeal muscle function. Diagnosis of dysphagia can be supported not only by case history findings, but also by functional tests and instrumental tests such as a video fluoroscopic swallow study (VFSS) or a fiberoptic endoscopic examination of swallowing Chin tuck against resistance (CTAR) exercise is claimed to be effective in restoring oral feeding for patients with dysphagia.

The activation of the suprahyoid muscles was studied using the shaker exercise and the CTAR exercise [10].

Aim and Objective

The study's major objective was to assess the effectiveness of the Chin Tuck against Resistance (CTAR) exercise in improving swallowing skills in neurological diseases patients with dysphagia.

Materials and Procedures

Quantitative research approach, an experimental study. The study was conducted Neurology ward at IMS & SUM Hospital, Bhubaneswar, and Odisha. 60 patients with dysphagia, aged between 35-85 years were taken. The duration of the study was 2 weeks & data was collected on day zero and at the end of 2nd week. The subjects were divided into 2 groups control group and experimental group. 30 patients in each group were distributed by purposive sampling. Pre - test was done from each subject and assessed according to Gugging Swallowing Screen scale (GUSS) was developed by Trapl M and Michael Brainin was given to experimental group & the control group receive regular treatment. Post-test was done from each groups. Statistics were applied by using SPSS 20.0.0.

Procedure /Data gathering

On the basis of inclusion and exclusion criteria, the data collection process lasted for a month. Interview-based collection of demographic information and medical history, as well as record retrieval from medical files. Using the Gugging Swallowing Screen and the observation method, pre-test data on the ability of neurological impairment patients to swallow were gathered. Patients with dysphagia who had neurological disorders were given the Chin Tuck

against Resistance (CTAR) exercise three times a day for eight straight days while the control group received standard medical care.

Device needed

A rubber ball with 12 cm diameter.

Intervention

Administer the Chin Tuck Against Resistance Exercise.

- Sitting erect on a chair,
- A rubber ball 12 cm in diameter is inserted between the chin and the base of the neck to offer resistance.
- Tuck the chin against the ball and hold it for 10 seconds (iso meter)
- Perform 10 repetitions (isokinetic) three times a day for eight days.

Post-test assessment of Swallowing ability among dysphagia patients was done using GUSS (Gugging Swallowing Screen).

Consideration of ethics

The Institutional Ethics Committee (IEC) evaluated the benefits and risks examined in this work. Throughout the experiment, all subject gave their expressed permission. Maintained the confidentiality of information obtained through, as well as the privacy of patients.

IEC Registration Number –ECR/627/Inst/OR/2014/RR-20

Results

Age distribution by frequency and as a percentage in the experimental group and the control group. $N=n_1+n_2=30+30=60$

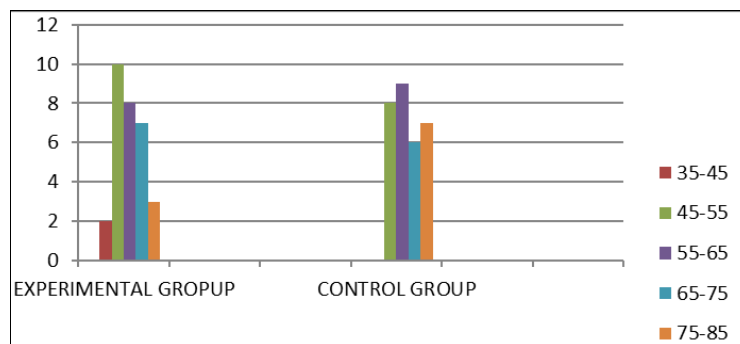


Fig 1: Frequency of distribution of demographic variable in terms gender

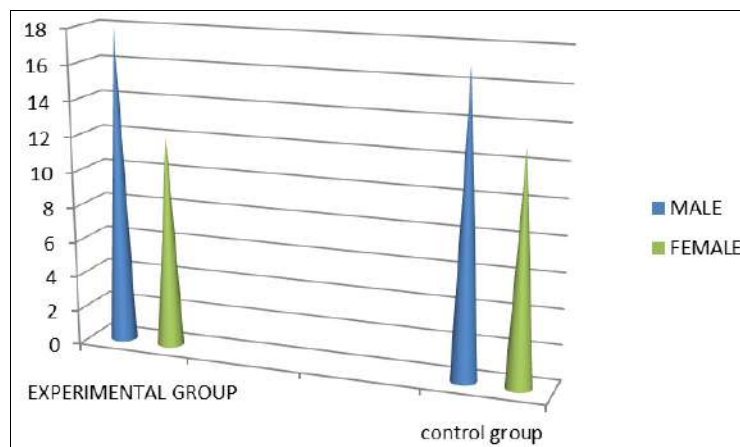


Fig 2: Frequency distribution of occupation in experimental group and control group

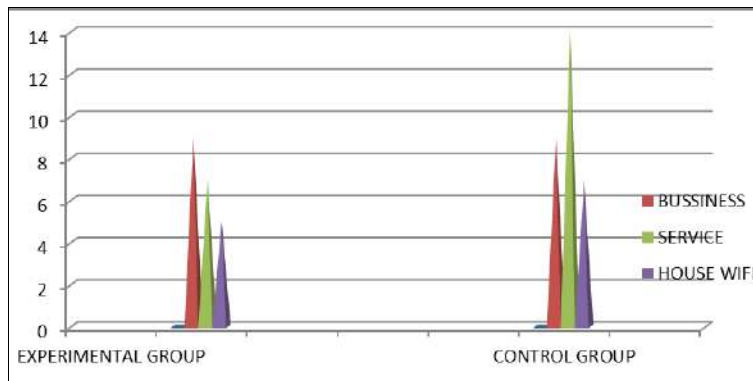


Fig 3: Frequency of distribution of demographic variable in terms of income.

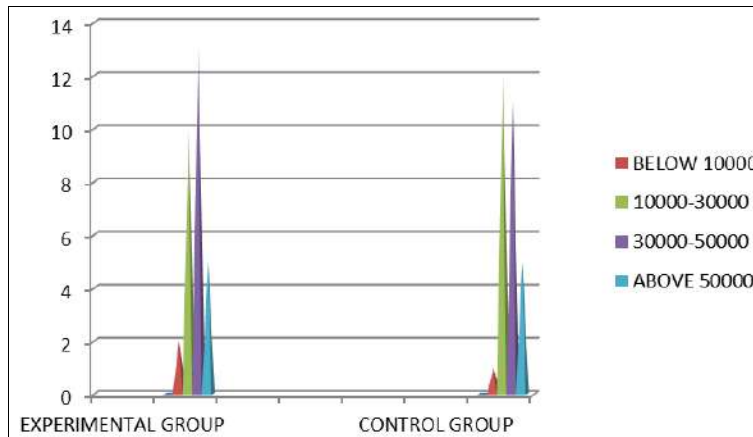


Table 2: Using the paired 't' test, the pretest and Post-test mean and standard deviation scores of dysphagia in both groups were compared. N=n1+n2= (30+30) =60

Items	Mean ±SD		SE	DF	Paired t-test value	P=value
	Pre-test	Post-test				
Guss experimental group	5.40±0.814	15.23±2.285	0.475	29	-20.708	< 0.001*
Guss control group	6.70±1.643	10.33±2.294	0.513	29	-7.082	< 0.001*

The data in Table 2. shows that mean score of post -test (15.23±2.285) was more than mean score of pre-test (5.40±0.814) of GUSS in experimental group, with the t value was -20.708 at DF=29 and p value 0.000, which was highly statistically significant, This shows that among patients with neurological illnesses who underwent CTAR exercise, there is a substantial difference between the pretest and the Post-test results of swallowing ability. At 0.05 level of significance hence the Null hypothesis (H01) was rejected and the research hypothesis was accepted (H1) as there was statistically significant difference in level of dysphagia in the Post-test from pre-test among experimental group.

- The pre-test assessment in the control group reveals that the patients had severe dysphagia with a mean score of (6.701±1.643) prior to receiving normal therapy. Even at the completion of therapy, they were still dysphagic, with a mean Post-test score of (10.332±2.294).
- The calculated t value is -7.082 at DF=29 and the level of p value <0.001.
- This shown that routine treatment improves the swallowing skills of patients in the comparison group, but the progress is slow because the mean value indicates that they still have dysphagia when compared to the experimental group who got CTAR exercise. As a result, CTAR exercises are more effective than conventional treatment.

Table 3: Chi-square analysis findings to determine the relationship between level of dysphagia and selected demographic characteristics in the experimental group.

Chi-square analysis represents that there was association between the level of the chi square value was lower than table value for demographic variables age, gender, education, occupation and income with Pre-test level of dysphagia among experimental groups at the level of $p < 0.05$. There was no significant association between Pre-test level of dysphagia and demographic variables such as age, gender, education, occupation and income among experimental group at the level of $p < 0.05$. Hence the research hypothesis was rejected.

Table 4, Chi-square analysis findings to determine the relationship between level of dysphagia and selected demographic characteristics in the control group.

Chi-square analysis represents that there was association between the level of the chi square value was lower than table value for demographic variables age, gender, education, income and occupation with Pre-test level of dysphagia among experimental groups at the level of $p < 0.05$. There was no significant association between Pre-test level of dysphagia and demographic variables such as age, gender, education, income, occupation among experimental group at the level of $p < 0.05$. Hence the research hypothesis was rejected.

Discussion

The present study was supported to the similar study conducted by Sujisusan James, *et al.*, (2015) conducted a study that age of the stroke patients ranged from a minimum of 35 years to a maximum of 85 years. The current study found that the majority of patients in the intervention group (8(50%) and comparison group (6(37.5%)) were between the ages of 45 and 55. This finding was verified by another study, which found that half of the subjects (50%) were between the ages of 50 and 70. The current finding revealed changes in the level of dysphagia among CVA patients. Initially, all 16 (100%) patients in the intervention group had severe dysphagia; however, by the conclusion of eight days of therapy, most (9 (56.25%) of them had advanced to mild dysphagia, and 5 (31.2%) had progressed to no dysphagia. This means that in the intervention group, 5 (31.2%) of them achieved ideal 65 swallowing state. In contrast, even after eight days of observation, 12 (75%) of the comparison group had severe dysphagia. v According to the results of another study in which they used shaker exercise and hyoid lift manoeuvre for 6 weeks for stroke patients with dysphagia, about 16.67% of the subjects had no dysphagia, 26.67% had mild dysphagia, 23.33% had moderate dysphagia, and 33.33% had severe dysphagia after the intervention (shaker exercise and hyoid lift maneuver). (Sujisusan James, *et al.*, (2015) ^[12].

Conclusion

The findings of the study suggest that the Chin Tuck against Resistance was an efficient, affordable method of enhancing dysphagia in patients with neurological problems. According to the study's findings, patients with neurological diseases who had dysphagia in the experimental group improved more quickly than those in the control group within 8 days.

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Author's Contribution

Not available

Conflict of Interest

Not available

Financial Support

Not available

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