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RESEARCH ARTICLE

# Effect of Oral Motor Interventions on Dysphagia Among Cerebral Palsy Children at Selected Centers of The City.

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**Abstract:** Cerebral palsy (CP) is a group of permanent movement disorders that appear in early childhood and affect muscle coordination, posture, and motor skills. It is caused by abnormal brain development or damage to the developing brain, which can occur before, during, or shortly after birth. CP may affect oral motor skills, leading to speech delay, drooling, and difficulties with sucking, swallowing, and chewing. A study was conducted to assess dysphagia among cerebral palsy children in experimental and control groups and to evaluate the effect of oral motor interventions on dysphagia in the experimental group. A quantitative approach was selected for the study. A quasi-experimental, non-randomized control group design was used. Ten children aged 4-12 years with cerebral palsy were taken as samples. A non-probability purposive sampling method was used. Children from different rehabilitation centers were selected for the study. A self-structured checklist for the assessment of dysphagia was used. Cohen's Kappa was used to check the reliability, which was found to be +0.90, confirming the tool's reliability. Results showed that in the experimental group, 20% of children had severe dysphagia, 20% had moderate dysphagia, and 60% had mild dysphagia. In the control group, 40% had severe dysphagia, 40% had moderate dysphagia, and 20% had mild dysphagia. The paired t-test showed a significant reduction in dysphagia scores post-intervention ($p < 0.05$), indicating that oral motor interventions effectively reduced dysphagia among cerebral palsy children.

**Keywords:** Cerebral Palsy, Dysphagia, Oral Motor Interventions, Swallowing Disorders, Rehabilitation.

## INTRODUCTION

Cerebral palsy (CP) is one of the most common neurological disorders affecting movement and muscle coordination. Dysphagia, or difficulty in swallowing, is a prevalent issue among children with CP, often leading to malnutrition, aspiration pneumonia, and decreased quality of life. Oral motor interventions are therapeutic exercises designed to enhance oral muscle function and improve feeding and swallowing abilities. This study aimed to assess the effectiveness of oral motor interventions in improving dysphagia among children with cerebral palsy.

**Objectives:**

- To assess dysphagia among cerebral palsy children in experimental and control group.
- To assess effect of oral motor interventions on dysphagia in experimental group.

**Hypothesis:**

- **$H_{01}$**- There is no effect of oral motor interventions on dysphagia among cerebral palsy children after administering oral motor interventions.

## METHODS

**Study Design & Setting**

A quasi-experimental, non-randomized control group study design was used. The study was conducted in selected rehabilitation centers.

**Participants & Sampling**

A total of 10 children aged 4-12 years diagnosed with CP were included in the study. Participants were selected using a non-probability purposive sampling technique.

**Inclusion Criteria: -**

- Children age group of 4-12 years.
- Children with all types of cerebral palsy affected with oral motor skills

**Exclusive Criteria: -**

- Children who are not able to cooperate.
- Children who are suffering from cerebral palsy with other neurological problems, congenital deformities like cleft lip and cleft palate and associated deafness or blindness.
- Children with any other associated critical condition.

**Ethical Considerations**

Ethical clearance was obtained from the Institutional Ethics Committee. Written informed consent was taken from parents/caregivers before participation.

**Assessment Tools & Reliability**

Self-structured checklist for assessment of Dysphagia was used for assessment of dysphagia. Cohen's Kappa is used to check the reliability. Reliability was assessed using inter-rater method Investigator calculated the r-value for Assessment of Dysphagia = +0.90. So Self-Structured Observation Checklist for Assessment of Dysphagia is reliable.

# RESULT:

| Demographic variable | Experimental | | Control | |
|---|---|---|---|---|
| | Freq | % | Freq | % |
| **Age** | | | | |
| 4 to 6 years | 3 | 60% | 1 | 20% |
| 7 to 9 years | 1 | 20% | 2 | 40% |
| 10 to 12 years | 1 | 20% | 2 | 40% |
| **Gender** | | | | |
| Male | 1 | 20% | 2 | 40% |
| Female | 4 | 80% | 3 | 60% |
| **Types of Cerebral Palsy** | | | | |
| Spastic Cerebral Palsy | 2 | 40% | 5 | 100% |
| Athetoid Cerebral Palsy | 2 | 40% | 0 | 0% |
| Mixed Cerebral Palsy | 1 | 20% | 0 | 0% |
| **Presence of Drooling** | | | | |
| Yes | 5 | 100% | 5 | 100% |
| **Education status of parents** | | | | |
| Literate | 5 | 100% | 5 | 100% |
| **Antenatal History for Disorder** | | | | |
| PIH | 0 | 0% | 1 | 20% |
| Pre-eclampsia, Eclampsia | 2 | 40% | 3 | 60% |
| Gestational Diabetes | 0 | 0% | 1 | 20% |
| No any antenatal History | 3 | 60% | 0 | 0% |
| **Types of delivery** | | | | |
| Vaginal normal delivery | 3 | 60% | 0 | 0% |
| Caesarean section | 2 | 40% | 5 | 100% |
| **Birth Weight** | | | | |
| < 2.5 kg | 1 | 20% | 3 | 60% |
| 2.5 to 3.5 kg | 4 | 80% | 2 | 40% |
| **Birth History** | | | | |
| Birth Asphyxia | 0 | 0% | 2 | 40% |
| Birth Asphyxia and prematurity | 1 | 20% | 0 | 0% |
| Prematurity | 1 | 20% | 1 | 20% |
| No any abnormality found | 2 | 40% | 2 | 40% |
| Any other | 1 | 20% | 0 | 0% |
| **Verbal Communication ability of the child** | | | | |
| Child able to speak | 0 | 0% | 1 | 20% |
| Child is not able to speak | 1 | 20% | 2 | 40% |
| Child able to speak/ express few words | 4 | 80% | 2 | 40% |

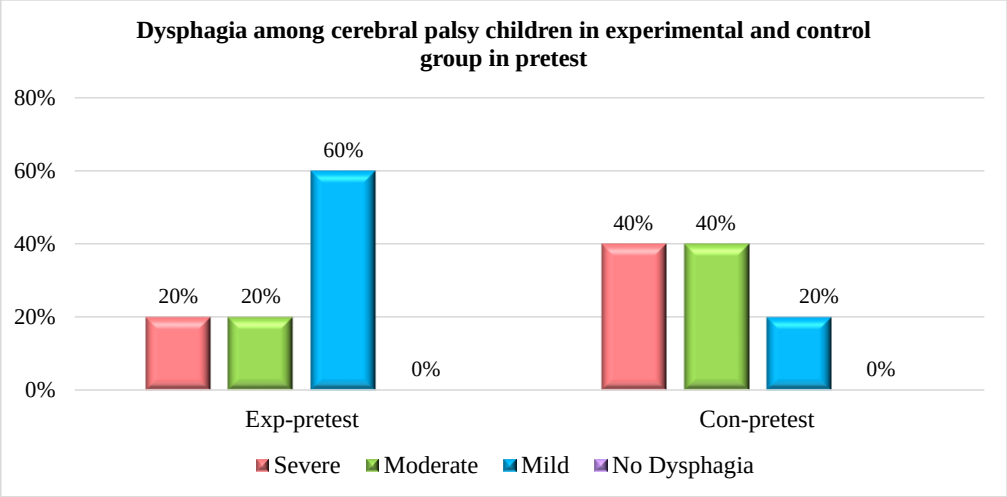
| | | | | |
|---|---|---|---|---|
| **Socioeconomic status of parents** | | | | |
| High socioeconomic status | 0 | 0% | 1 | 20% |
| Middle socioeconomic status | 0 | 0% | 4 | 80% |
| Low socioeconomic status | 5 | 100% | 0 | 0% |

- In experimental group, 60% of the cerebral palsy children had age 4 to 6 years, 20% of them had age 7 to 9 years and 20% of them had age 10 to 12 years. In control group, 20% of the cerebral palsy children had age 4 to 6 years, 40% of them had age 7 to 9 years and 40% of them had age 10 to 12 years.
- In experimental group, 20% of them were males and 80% of them were females. In control group, 40% of them were males and 60% of them were females.
- In experimental group, 40% of them had spastic cerebral palsy, 40% of them had athetoid cerebral palsy and 20% of them had mixed cerebral palsy. In control group, all of them had spastic cerebral palsy.
- In experimental and control group, all of them had drooling.
- In experimental and control group, all of them were literate.
- In experimental group, 40% of them had pre-eclampsia, eclampsia and 60% of them did not have any antenatal history of disorder. In control group, 20% of them had PIH, 60% of them had pre-eclampsia, eclampsia and 20% of them had Gestational Diabetes.
- In experimental group, 60% of them had vaginal normal delivery and 40% of them had caesarean section. In control group, all of them had caesarean section.
- In experimental group, 20% of them had birth weight less than 2.5kg and 80% of them had birth weight 2.5 to 3.5 kg. In control group, 60% of them had birth weight less than 2.5kg and 40% of them had birth weight 2.5 to 3.5 kg.
- In experimental group, 40% of them did not have any birth history 20% of them had Birth Asphyxia and prematurity, 20% of them had prematurity, 20% of them had some other birth history. In control group, 40% of them did not have any birth history, 40% of them had Birth Asphyxia and 20% of them had prematurity.
- In experimental group, 20% of them were not able to speak and 80% of them were able to speak/express few words. In control group, 20% of them were able to speak, 40% of them were not able to speak and 40% of them were able to speak/express few words.
- In experimental group, all of them were from low socioeconomic class. In control group, 20% of them were from high socioeconomic class and 80% of them were from middle socioeconomic class.

**Objective 1: To assess dysphagia among cerebral palsy children in experimental and control group**

| **Dysphagia** | **Experimental** | | **Control** | |
|---|---|---|---|---|
| | **Pretest** | | **Pretest** | |
| | **Freq** | **%** | **Freq** | **%** |
| Severe | 1 | 20% | 2 | 40% |
| Moderate | 1 | 20% | 2 | 40% |
| Mild | 3 | 60% | 1 | 20% |
| No Dysphagia | 0 | 0% | 0 | 0% |

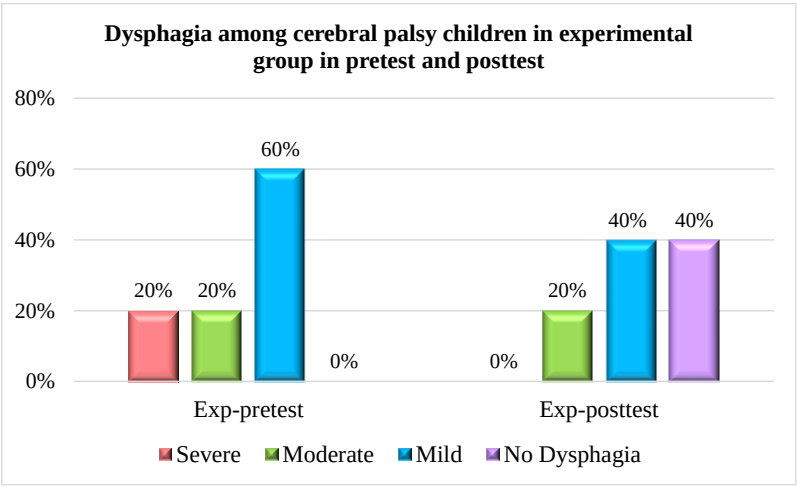
In experimental group, 20% of the cerebral palsy children had severe dysphagia, 20% of them had moderate dysphagia and 60% of them had mild dysphagia. In control group, 40% of the cerebral palsy children had severe dysphagia, 40% of them had moderate dysphagia and 20% of them had mild dysphagia.




**Objective 2: To assess effect of oral motor interventions on dysphagia in experimental group**

| Dysphagia | Experimental | | | |
|---|---|---|---|---|
| | Pretest | | Posttest | |
| | Freq | % | Freq | % |
| Severe | 1 | 20% | 0 | 0% |
| Moderate | 1 | 20% | 1 | 20% |
| Mild | 3 | 60% | 2 | 40% |
| No Dysphagia | 0 | 0% | 2 | 40% |

In experimental group, in pretest, 20% of the cerebral palsy children had severe dysphagia, 20% of them had moderate dysphagia and 60% of them had mild dysphagia. In posttest, 20% of the cerebral palsy children had moderate dysphagia, 40% of them had moderate dysphagia and 40% of them had mild dysphagia. This indicates that the dysphagia among cerebral palsy children improved remarkably after oral motor interventions.

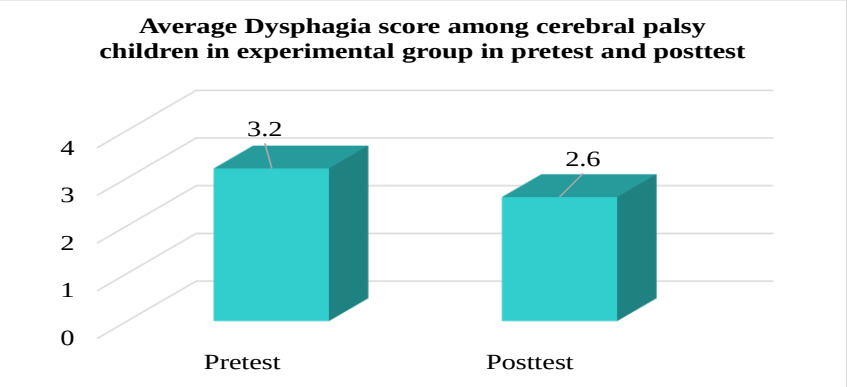



**Paired t-test for effectiveness of oral motor interventions on dysphagia among cerebral palsy children:**

| | Mean | SD | T | df | p-value |
|---|---|---|---|---|---|
| Pretest | 3.2 | 2.9 | 2.5 | 4 | 0.035 |
| Posttest | 2.6 | 3.2 | | | |

Researcher applied paired t-test for the effectiveness of oral motor interventions on dysphagia among cerebral palsy children. Average dysphagia score among cerebral palsy children in pretest was 3.2 which reduced 2.6 in posttest. T-value for this test was 2.5 with 4 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is

rejected. Average dysphagia score in pretest was significantly higher than that in posttest. It is evident that the oral motor interventions are significantly effective on reducing dysphagia among cerebral palsy children.




# DISCUSSION

The findings of this study suggest that oral motor interventions significantly improve swallowing function in children with cerebral palsy. The decrease in dysphagia severity post-intervention highlights the importance of early and structured oral motor therapy. Compared to previous studies, which have also emphasized the role of oral motor exercises in reducing dysphagia, our study reaffirms the positive impact of targeted interventions.

# CONCLUSION

Oral motor interventions were found to be significantly effective in reducing dysphagia among cerebral palsy children. The study emphasizes the need for integrating these interventions into routine rehabilitation programs for children with CP to enhance their swallowing abilities and overall quality of life.

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