



A STUDY TO ASSESS THE EFFECTIVENESS OF ORO-MOTOR AND BEHAVIORAL APPROACH TO REDUCE TONGUE THRUST IN CHILDREN WITH DOWN'S SYNDROME

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ABSTRACT

To evaluate the effectiveness of oral motor and behavioral approach to reduce tongue thrust in children with Down's syndrome. This study assesses the effectiveness of oro-motor approach and behavioral approach to reduce the tongue thrust in children with Down's syndrome. A Quasi-quantitative experimental design was conducted at Downs syndrome association, Mylapore (Chennai). Subjects consisted of 26 children with Down's syndrome both male and female between 6 to 10 years of age duly assess using children eating behavior inventory (CEBI). The outcome of the study shows significant improvement in tongue thrust reduction for children with downs syndrome. The results were obtained through an observation, parental interview, and statistical analysis in sample population. Oral-motor approach combined with behavioral approach will be effective in improving oral motor skills and feeding performance in children with Down's syndrome.

KEYWORDS: Down's syndrome, tongue-thrust, Oro-motor approach, behavioral approach.



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INTRODUCTION

Down's Syndrome is a developmental disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills.¹ The number of infants born with Down's syndrome was almost 5 times higher among births to older mothers (38.6 per 10,000) than among births to younger mothers (7.8 per 10,000). More male (prevalence 10.8) than female children and adolescents aged 0 to 19 (prevalence 9.7) had Down's syndrome in 2002.² Children with Down's syndrome have a variety of underlying factor contributing to feeding difficulties these includes Motor (muscle strength & coordination) Sensory (sight, taste, touch, etc.) Emotional/behavioral (avoidance, refusal, or "no off switch") Medical/health reasons (cardiac defects, reflux, seizures etc.)³ In addition to the common difficulties of feeding an infant or toddler, there are four complicating issues, the four problems includes low muscle tone, respiratory problems, gastrointestinal disorders and cardiac issues associated with Down syndrome that can significantly interfere with feeding development and feeding safety.⁴ Feeding disorders stem from multiple etiologies, and children with feeding problems often exhibit both oral-motor dysfunction and behavioral difficulties during Mealtimes.⁵ Down syndrome can be challenging and a source of stress for children and parents alike, Were the effect of tongue thrust or oral motor dysfunction is very common in children with Down's syndrome.⁶ Low muscle tone is a characteristic in these children, Irregularly shaped mouth and tongue, the child's tongue may partly stick out because the floppiness, combined with a thicker, enlarged tongue, makes sucking and swallowing difficult and the roof of the mouth (palate) may be narrow and high with a downward curve.⁷ Adverse oral habits as thumb, tongue thrust; lip and cheek biting may produce harmful effects on the development of maxillofacial complex, facial hyper divergence resulting in anterior open bites feeding problems.⁸ Tongue thrust is a common name used to describe oro-facial muscular imbalance. It may also be referred to as reverse swallow or immature swallow.⁹ Abnormal Swallow Pattern: Tongue usually found pushing through clenched teeth or pushed through upper/lower teeth, lips usually in grimace or pucker when swallowing. Air expelled from mouth during swallow.¹⁰ Normal Swallow Pattern: Tongue is pushed and anchored against the roof of mouth (alveolar ridge), teeth are closed, tongue moves in wave motion to back of throat during swallow. Air is inhaled, held during swallow, and exhaled after swallow these problems need to be thoroughly evaluated and managed to reduce further complications. So the children with low muscle tone can affect large muscles groups as well as the small muscle groups of the mouth, face and throat (muscles used for feeding, swallowing and speech development). Facilitating better muscle tone will reduce the risk of feeding and swallowing disorders and poor intelligibility of speech (articulation).¹¹ Efficient feeding/swallowing skills and clearer speech articulation, better muscle tone in a child's face and tongue can reduce the stereotypic open mouth anterior tongue rest position which is observed in many children with Down

syndrome Paucity of research examines the combination of oral-motor and behavioral procedures to treat childhood feeding problems.¹² It is recommended that an intensive feeding program model that combines oral motor and behavioral interventions may be used with children with severe feeding problems to increase intake. Overall this moderate level body of evidence supports the use of behavioral interventions as well as oral motor treatment to increase intake in children with feeding problems.¹³ These strategies can be applied in treatment and may be effective in a multi- component approach.

METHODOLOGY

This was a quasi-experimental study and the samples were selected based on non-probability convenient sampling. The samples were randomly assigned to both experimental group and control group. Sample size of 26 children with down syndrome were recruited based on the inclusion criteria(downs syndrome children with tongue thrust, both gender, having feeding difficulties, age between 6 to 10 years and parental compliance with the treatment) and exclusion criteria(children with multiple disabilities, children with tempo tantrum and children underwent oral surgeries). The subjects for this research were recruited from pediatric department in DOWN'S SYNDROME ASSOCIATION at Mylapore, Chennai. The researcher assessed each of them on the basis of both parental interview and on observation to determine their eligibility and to obtain their written informed consent from parents of all subjects who were included in the study. Before entering the program, children parents were been psycho-educated about oro motor deficits and elaborated about the therapy protocol through video. All sessions were carried out in a therapy room with required equipment's like high seat chair, Nuk brush, Infant spoon, Toddler spoon, Cutout cups, Video or toy, Digital timer. Duration For each individual around 15 to 20 minutes of time must be spared, of at least 5 sessions a day, for over 24 days, Total of 120sessions.

PROCEDURE

The parental interview and baseline assessment was done to carry on intervention, were the subjects seated in an upright highchair so that the child can maintain an erect posture and were visibility inside mouth is present and facilitates swallowing. BECKER'S ORO-MOTOR EXERCISE was done before NUK brush application. Wipe the face off with a face rag and pull the muscles gently but firmly towards midline. Rub the index finger along the gum ridge where the molars will develop and apply 20 to 25 strokes over the gums and hard palate, inner cheeks. Followed by that feeding is encouraged by INFANT/TODDLER SPOON to take a small amount of food on the spoon. Place the spoon in your child's mouth horizontally and at about the middle of the tongue push down quickly on the tongue. In the beginning you will have to assist with jaw closure using your other hand in order to teach the sequence: spoon in/jaw up/lips close. The reason you push down on the tongue muscle quickly, is to get the muscle to push back (the goal is upward movement, instead of a forward tongue thrust).

This exercise should be used beyond infancy and possibly even through preschool years to inhibit the strong tendency to tongue thrust. Try various feeding spoons until you find one that works best for you. If the child is having trouble gagging, then try placing the food along the inside cheek and gradually work toward the center of the tongue. CUTOOUT CUPS: (nosey cups) are good for cup drinking. They help control the flow of liquid and have a cut out section for your child's nose. In this way the head can remain flexed forward for drinking. THERAPY APPROACHES: Clap (applause), stars, video of oral exercise tapes, vibration, and games to play oral movements: playing horn, blowing bubbles.

RESULTS

This chapter deals with the statistical analyses of the data and the result obtained from the analysis of different variables research. The table reveals the comparison value between PRE and POST TEST in experimental group. The "p" value shows that it is statistically significant when comparing with PRE-TEST score. The participant in our study displaying the significant oral motor deficits but after intervention, these results suggest that the combination of oral-motor and behavioral techniques was responsible for this improvement.

TABLE 1
COMPARISON BETWEEN EXPERIMENTAL AND CONTROL GROUP THROUGH PRE-TEST AND POST TEST

TEST	GROUP	MEAN	STANDARD DEVIATION	"t" STATISTICS	P VALUE
PRE-TEST	EXPERIMENTAL	87.08	8.49	-3.319	0.003*
	CONTROL	96.15	5.01		
POST-TEST	EXPERIMENTAL	93.62	7.04	0.54	0.594
	CONTROL	92.31	5.15		

Using parametric test through SPSS version 19.0 done the statistical analysis. The result obtained proved that there was a significant difference between the pre test and post- test values. The mean value of pre-test and post-test showed that the oro motor intervention was effective for children with Down's syndrome.

DISCUSSION

The purpose of the current study was to assess the effectiveness of a treatment package that combined oral-motor and behavioral approaches to treat food refusal and tongue thrust in a child with Down syndrome. Samples of 26 children were taken as samples at Down's syndrome association mylapore, Chennai. The result demonstrates the effectiveness of a treatment package that combined oral-motor and behavior procedures in reducing tongue thrust. The probes conducted across the course of treatment that this treatment, rather than practice effect or increased compliance, was responsible for the changes in the primary dependent variables. Early in treatment, mouth cleans remained low even as the child's acceptance reached 100% demonstrating that, although food refusal was a component of the child's feeding difficulties, it was his/her tongue thrust that impaired his/her ability to eat. These results suggest that positive reinforcement and escape prevention alone would have been insufficient in eliminating the child's tongue thrust. The participant in our study displayed significant oral-motor deficits that impaired her ability to eat and drink, but in less than 1 month she could able to eat mashed table food and drinking from an open cup. TABLE 1 reveals the comparison value between PRE and POST TEST in experimental group. The "P" value shows that it is statistically significant when comparing with PRE-TEST score. The participant in our study displaying the significant oral motor deficits but after intervention, these results suggest that the combination of oral-motor and behavioral techniques was responsible for this improvement. By feeding the child with the Nuk brush and subsequently flattening her tongue, and by following this procedure with social praise and positive reinforcement, the treatment effectively retrained her

tongue to lay flat when the food was presented and to propel food backward when it was time to swallow. In a recent feeding review by Kerwin 2003' warned against gagging children to get them to swallow. Our results demonstrate that gagging was consistently low across the course of treatment. In this treatment, the Nuk brush did not induce a swallow, but in flattening the tongue, the Nuk brush simply inhibited the tongue thrust. Table and graph form the result signifies the comparison value of experimental group this proved that there is statistically significant in experimental group this result is parallel with the article of Calvert, S. D., Vivian, V. M., & Calvert, G. P.1976' Dietary adequacy, feeding practices, and eating behavior of children with Down's syndrome. Coe D. A. Babette et al 1997. Use of extinction and reinforcement to increase food consumption and reduce expulsion. Some of the parents reported that before treatment, mealtime behaviors such as food refusal, spitting of food, tantrums, and long meals were always a problem. Following treatment, those behaviors were reported as an occasional problem. This study demonstrated not only an effective intervention in decreasing tongue thrust for a child with Down syndrome but also the utility of combining oral-motor and behavioral procedures in the treatment of feeding disorders. Parent also reported that before treatment, mealtime behaviors such as food refusal, spitting of food, tantrums, and long meals were always a problem. Following treatment, those behaviors were reported as an occasional problem The child's mother reported that the child ate all meals with her family at the kitchen table and no longer required videos or toys to motivate her to eat or drink. She used age- appropriate utensils and self-fed. The child was reliably chewing dry, crisp foods such as crackers and cereals and was visibly lateralizing her tongue. Her mother reported no evidence of tongue thrust.

CONCLUSION

This study demonstrated not only an effective intervention for eliminating gastrostomy tube feedings and decreasing tongue thrust for a child with Down syndrome but also the utility of combining oral-motor and behavioral procedures in the treatment of feeding disorders. The study concludes that oral motor approach and activities are effective in enhancing the feeding performance among children with Down's syndrome. It was also found that the therapy protocol has a greater effect in reducing tongue thrust thereby improving oral functional skills. Parental interview and clinical observation were conducted to investigate the tongue thrust in children with Down's syndrome. Children eating behavior inventory was effective in the therapy protocol and does also reduce the parents stress during feeding session. This study therapy protocol over all effective in children with Down's syndrome has prevented Choking during eating. And parents reported that the intensity of severity issues was reduced were as they noticed very moderate improvement in feeding disorder.

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CONFLICTS OF INTEREST

Conflicts of interest declared none.

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