

Effectiveness of Sensory Motor Oral Stimulation for Reducing the Self Biting Behavior in Children with Autism

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Abstract: Aim: To investigate the effect of sensory motor oral stimulation in children with Autism Objectives: To evaluate the self-stimulatory and self injurious behaviors in the form of self-biting behavior in Autism, by using Repetitive behavior scale (RBS). To find out the effects of sensory motor oral stimulation on self-biting behaviors in Autism. Methodology: Totally 30 subjects (15 in the experimental group and 15 in the control group) of age group 6 to 10 years participated in this study. Results: Sensory motor oral stimulation is effective in reducing the self-biting behaviors in children with autism. Conclusion: Sensory motor oral stimulation in occupational therapy has significant role in reducing self-biting behaviors of the autistic child.

Keywords: Autism, Sensory motor oral stimulation, Occupational Therapy

1. Introduction

Autism spectrum disorders are characterized by a combination of destructive and repetitive behaviors and deficits in communication and social skills (American Psychological Association, 2001. Individuals with ASD appears to seek or avoid ordinary auditory, visual, tactile and oral stimuli (Benn-sasson et al., 2009)

In Tamilnadu, there has been an increased incidence in autism in past 2 years. The syndrome is more common in males and has a prevalence rate of 0.42- 0.5 per 10000 populations.

Self-injurious behaviors are defined as "actions that cause or have the potential to cause redness, bruising, or other injury to the body" (Lam & Aman, 2007).

Self-injurious, self-stimulating or stereotypical behaviors are commonly seen in children with ASD. The most common forms of these behaviors include: head-banging, hand-biting, and excessive self-rubbing and scratching, body rocking, jumping, running etc. There are many possible reasons why a person may engage in self-injurious behavior, ranging from biochemical to the social environment. Sensory stimulating activities are an appropriate treatment intervention for children on the autism spectrum, including those with sensory processing disorder, autism, Asperger's syndrome or pervasive developmental disorder. If we are looking for differences between self - harm in an individual with autism, and self - harm in an individual without these traits, the most notable once are in the type of harm and its perceived cause. The more classic harming behaviors within autism would include actions like hand-biting, head- banging, hitting fists on self or object excessive picking or scratching. The arousal theories of self-

harm are more unique to those with learning difficulties or autism.

Due to communication problems, it can be very hard for parents of a child with autism to know how to help their child, and it can take a long time for the right intervention to be found. Both autism and self-harm under-researched areas and are not fully understood, so facing the two together can feel scary and isolating. Families and individuals dealing with these issues need lots of support and encouragement and it's important they are supported to find it.

Many other behaviors that are characteristics of particular syndrome, often termed behavioral phenotypes, included hand-biting in autism. Individuals diagnosed with particular genetic syndromes appear to show higher level of these specific problems in behavior than would be expected in individuals matched for developmental age but without a diagnosis of a syndrome. Compulsive hand-biting in Lesch-Nyhan syndrome increased when social attention was presented contingently and decreased when the behavior is ignored. Sensory integration is the process of organizing sensory information in the brain to make an adaptive response [AYRES 1972].The sensory system includes vestibular, tactile, auditory, visual & proprioceptive system.

In 2005 in the American journal of occupational therapy, Smith et.al, finds that sensory diet is helpful for children with self stimulating behavior.

2. Literature Survey

Autism is a neuro developmental disorder characterized by qualitative impairment in verbal and non verbal

communication in imaginative activity and in reciprocal social interaction.

Autism as a diagnosis was first described by Leo Kanner in 1943. Kanner, a psychiatrist at Johns Hopkins, identified a group of all children's with a set of similar characteristics. These children seem to prefer being alone, demonstrated aloofness, and seemed to be obsessed with keeping routines.

Autism appears to result from developmental factors that affect many or all function in brain systems. Mechanism includes alteration of brain development soon after conception. This localized anomaly appears to start a cascade of pathological events in the brain that are significantly influenced by environmental factors. Many major structures of the human brain have been implicated. Consistent abnormalities have been found in the development of the cerebral cortex; and in the cerebellum and related inferior olive, which have a significant decrease in the number of Purkinje cells. Brain weight and volume and head circumference tend to be greater in autistic children.

The main causes of autism are Genetic factors, Medical causes, Immunological factors, Perinatal factors, Psychosocial and family factors and Other causes such as Digestive tract changes, Diet, Mercury poisoning, Vaccine sensitivity, Body inefficient use of vitamins and minerals.

The exact incidence of autism is not known. In Tamil Nadu 116 people in every 10,000 population are autistic (online edition of India's National News paper, Aug 31, 2009). The syndrome is more common in males and has a prevalence rate of 0.4-0.5 per 10000 populations.

The diagnosis can be done by DSM –IV Criteria for Autism Spectrum Disorders there are three criteria for diagnosis for autism that is Qualitative impairment in social interaction and Qualitative impairment in communication and Restricted repetitive and stereotyped patterns of behavior interest and activities.

Clinical features of autism includes Impairment in social and interpersonal interaction, Impairment in communication, Repetitive stereotyped behavior, Lack of playing skills and Sensory processing disorder.

Communication development as evidenced by understanding, expression, quantity, and quality of speech, sounds, or words, and communicative intent through gestures. Communication development includes the acquisition of communication skills during preverbal and verbal phases of development. Receptive and expressive language includes spoken, non-spoken, and sign language means of expression, oral motor development, auditory awareness skills and processing components include, Receptive language: understands comprehension, auditory awareness skill and processing. Expressive language: expression, production, social language (pragmatics). Speech, voice, fluency, quantity and quality speech sounds and words. Oral motor development: The structure and

function of speech mechanism for feeding and speech development.

Occupational therapy helps the children with autism spectrum disorders learn the skills they need for living. An Occupational Therapist may teach the kids basic self care skills such as getting dressed, brushing their teeth, or feeding themselves.

Occupational therapist also use to increase sensory integration in kids who under act or overact to stimuli such as noise or touch.

Applied Behavior Analysis or ABA involves the systematic evaluation of the environment to determine factors that causes undesirable behaviors from the child with autism. Positive rein forces are then used to produce behavioral improvement. ABA requires a trainer to work with the child one-on-one for 40 hours each week. The Lovaas model is a type of ABA developed by Ivar Lovaas, PhD.

Play therapy helps the individual with autism to express their feelings and to solve problems with the assistance of toys. They can learn social skills, communication techniques, and appropriate behavior through this autism therapy.

Auditory integration therapy is appropriate for individuals with autism who have good hearing, but have difficulty processing and understanding the sounds. This condition is called central auditory processing disorder; Dr. Alfred Tomatis originally pioneered this area of therapeutic listening. My children have successfully used these techniques with The Listening program.

Social skill training as autism therapy is vital. You can use social stories, story scripts, or social scripts. Social stories allow the child with autism to perform more appropriately in social interaction.

Speech and language therapy is appropriate for individuals with autism who have difficulties speaking appropriately. However if your autistic child already knows how to speak properly, then he may need to understand how to communicate effectively using eye contact, facial expression, and body language.

3. Methods

The study setting of the research is PRISHA, REHABILITATION CENTER Thirupur, Tamilnadu. Total number of 30 subjects was taken in this study. The control group consists of 15 subjects & experimental group consist of 15 subjects. Convenience sampling procedure was adopted.

3.1 Materials

Repetitive Behavior Scale Revised-RBS

RBS is a 43 items used to measure the breadth of repetitive behavior in children's, adolescents and adults with autism spectrum disorder. It has six sub scales including stereotyped

behaviors, Self injurious behavior, Compulsive behavior, Routines behavior, Sameness behavior, Restricted behavior. Behavior are rated on 4 point scale that is classifies as 0,1,2,3 behavior does not occur, behavior occurs mild problem, behavior occurs and is a moderate problem, behaviors occurs and is a severe problem respectively. The scale scoring is from 1-129 that is score 1 refers - not a problem at all and 129- as bad. RBS does have good psychometric properties. The reliability of RBS is 0.88 & also having good validity too.

3.2 Procedure

The sample size of 30 subjects was taken in this study. The subject was selected from age group between 6 to 10 years. The all subject had a self- biting behavior. The subjects are divided in to two groups a controlled group & and experimental group. Each group consisted of 15 subjects. The subjects were assessed for their stereotyped behavior by using repetitive behavioral scale. The controlled group received only OT activities of sensory integration therapy, but not sensory motor oral stimulation. The treatment was given in 1 month. In which it was extended up to 20 to 25 minutes' duration in 5 days in a week. Total 20 treatment sessions were given to the child. The pre data is collected from both groups at entry level with Repetitive stereotyped behavior scale revised. Post data were collected after the treatment with Repetitive behavior scale revised.

3.3 Intervention

Sensory motor oral stimulation was provided for 1 month using nuk brushes and gloves for individual tooth compression. Digital pressures and strokes were provided on various parts of face. It was extended up to 20 to 25 minutes duration for 5 days in a week. Total 20 treatment sessions were given to every child.

4. Data Analysis and Results

Table 1: Comparison between pre-test values of control group and experimental group of REPETITIVE BEHAVIOR SCALE REVISED-RBS

Group	Test	Mean	S.D value	t' value	p' value
Control group	Pre test	29.73	1.33	1.4160	0.1678
Experimental group	Pre test	28.87	1.99		

Table 1: shows the comparison of control group and experimental group pre-test mean value of RBS is, 29.73, 28.87 and "t" value is 1.4160, "p" value is 0.1678, which shows it is not statistically significant.

Table 2: Comparison between pre and post test values of control group REPETITIVE BEHAVIOR SCALE REVISED - RBS

Group	Test	Mean	S.D value	t' value	p' value
Control group	Pre test	29.73	1.33	1.8294	0.0894
Control group	Post test	30.20	0.94		

Table 2: Shows the comparison of control group pre and post test mean value of RBS is 29.73, 30.20 and "t" value is 1.8294 "p" value is <0.0001, which shows it is not statistically significant.

Table 3: Comparison between pre and post test values of experimental group - of REPETITIVE BEHAVIOR SCALE REVISED - RBS

Group	Test	Mean	S.D value	t' value	p' value
Control group	Post test	30.20	0.94	11.4508	0.001
Experimental group	Post test	23.80	2.34		

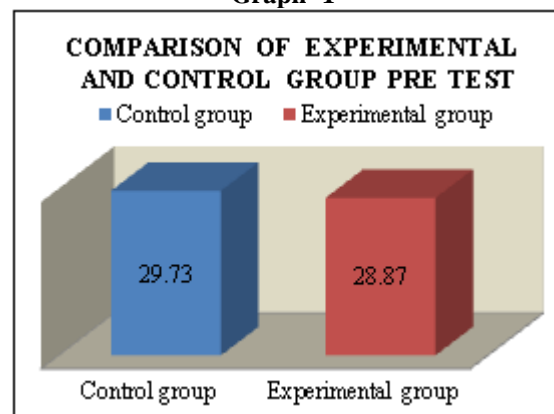
Table 3; shows that comparative analysis of Experimental group pre-test and post test mean values of RBS is 28.87, 23.80 and "t" value is 6.7326 and "p" value is 0.0001. which shows it is statistically significant

Table 4: shows comparison between post test values of control group and Experimental group REPETITIVE BEHAVIOR SCALE REVISED-RBS

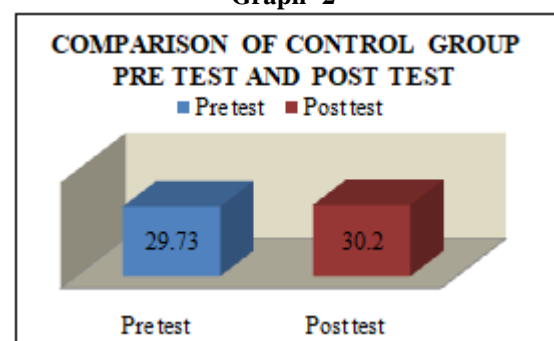
Group	Test	Mean	S.D value	t' value	p' value
Experimental group	Pre test	28.87	1.96	6.7326	0.0001
Experimental group	Post test	23.80	2.34		

Table 4: Shows comparison of control group and Experimental group post test mean value of RBS is 30.20, 23.80 and "t" value is 11.4508 "P" value is 0.0001, which shows it is statistically significant.

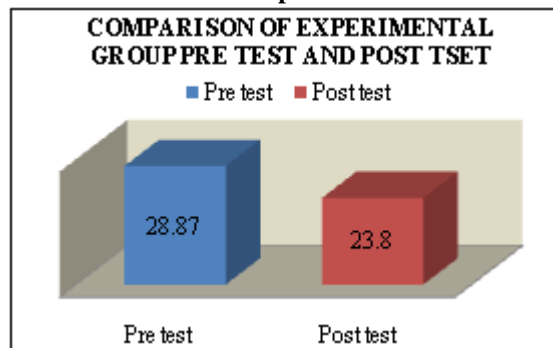
Graph- 1



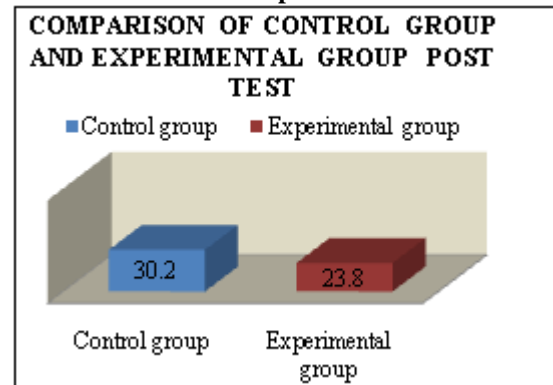
Graph- 2



Graph- 3



Graph- 4



5. Discussion

The present study was conducted on self-biting autistic children to understand the effects after the performing sensory motor oral stimulation. The sensory motor oral stimulation is considerate in the self-biting behaviors as well as brings minor changes in the stereotyped behavior.

As we all know self-biting is the way of seeking stimulus and exiting the emotions for an autistic child. This strange behavior at times can grows self-injuries and repetitive. There are various other behavioral issues which can erupt out in the course of time like irritativeness, anger and tantrums very typical callus and cosmetically poor appearing spot are seen over the dorsum of the hands

In sensory motor oral stimulation the main role is played by the therapist. These activities were provided for 20-25 minutes for the period of 5 days per week extending of up to 4 weeks. The sensory motor oral stimulation could be given for maximum 20 minutes as it is target specific and concentrate only.

The vocal cavity and some parts of face were provided with various gingival massages, pressure over tooth with the nuk brushes and gloves. The tongue was also stimulated appropriately, according to the child seeking and tolerance.

It was very important to understand each and every subject as an individual because each child required not the same but different and appropriate stimulus.

As we can see there is statically significantly scores obtain after putting the free and post test score in to test with the paired “t”- test.

Table 1: shows the comparison of control group and experimental group pre-test mean value of RBS mean value, 29.73, 28.87 and “t” value is 1.4160, “p” value is 0.1678, which shows it is not statistically significant and there is no difference between pretest values of control and experimental group. It denotes the subjects in control and experimental group shows same level of self-stimulatory and self injurious behaviors.

Table 2: shows the comparison of control group pre and post test mean value of RBS is 29.73, 30.20 and “t” value is 1.8294 “p” value is <0.0001, which shows it is not statistically significant.

Table 3: shows that comparative analysis of Experimental group pre-test and post test mean values of RBS is 28.87, 23.80 and “t” value is 6.7326 and “p” value is 0.0001. which shows it is statistically significant. So the experimental group has significant improvement. Since the experimental group post test value is lesser than pretest value it shows self-stimulatory and self injurious behavior is reduced in experimental group after intervention. That is sensory motor oral stimulation is effective in reducing the self-stimulatory and self injurious behavior among Autistic children.

These results are supported by the study done by MELISSA D.BAYSINGER (2009)

She conducted and evaluated the "Effect of sensory integration intervention on the reduction of maladaptive behavior in high school students with autism. She selected a 16 years old student. Sensory integration intervention was administered 20 to 60 minutes, 3 times a week in 2 weeks intervention phases. The result suggests that there is a reduction in maladaptive behavior through sensory integration intervention.

Table 4: Shows comparison of control group and Experimental group post test mean value of RBS is 30.20, 23.80 and “t” value is 11.4508 “p” value is 0.0001, which shows it is statistically significant.

6. Result

Statistical analysis of data shows that there is significant change in self biting behavior in autistic children after giving sensory motor oral stimulation.

7. Conclusion

From this study, it is concluded that sensory motor oral stimulation is effective in reducing the self biting behavior in children with autism.

8. Limitation and Recommendations

A limitation such as the study was done on a small sample and it was done on age group having 6 -10 years and done on subject with self-biting behaviors. And Study was done for shorter duration of time

Recommendations such as Study can be done on larger sample size and it can be done on different age groups and study can be done for longer duration and it can be measured by other assessment tools.

References

- [1] Baranek, G.T. (2002). Efficacy of sensory and motor interventions for children with autism. *Journal of Autism and Developmental Disorders*, 32,397-422.
- [2] Bundy, A.C. & Murray, E.A. (2002). Sensory Integration: A. Jean Ayre's Theory Revisited. In A.C. Bundy, E.A. Murray & S. Lane (Eds.), *Sensory Integration: Theory and Practice*. Philadelphia: F.A. Davis.
- [3] Dunn, E.J. (1998). The sensory profile: a discriminant analysis of children with and without disabilities. *American Journal of Occupational Therapy*, 52, 283-290.
- [4] Edelson, S.M., Rimland, B., & Grandin, T. (2003). Response to Goldstein's Commentary: Interventions, to Facilitate Auditory, Visual, and Motor Integration: "Show Me the Data". *Journal of Autism and Developmental Disorders*, 33, 551-552.
- [5] Goldsetin, H. (2000). Commentary: Interventions to Facilitate
- [6] Auditory, Visual, and Motor Integration: "Show Me the Data". *Journal of Autism and Developmental Disorders*, 30, 423-425.
- [7] Wata, B. & Mason, S. A. (1990). Artificial Effects of Sensory-Integrative Therapy on Self-Injurious Behavior. *Journal of Applied Behavior Analysis*, 23, 361-370.
- [8] Miller, L.J. (2003). Empirical evidence related to therapies for sensory processing impairments. *NASP Communiqué*, 31.
- [9] Schaaf, Roseann C., & Miller, Lucy Jane. (2005). Occupational Therapy Using A Sensory Integrative Approach for Children with Developmental Disabilities. *Mental Retardation and Developmental Disabilities Research Reviews*, 11, 143-148
- [10] Smith, T., Mruzek, D.W., & Mazingo, D. (2005). Sensory Integrative Therapy. In J.W. Jacobson, R.M. Foxx, & J.A. Mulick, (Eds.), *Controversial Therapies for Developmental Disabilities*. Mahwah, N.J.: Lawrence Erlbaum Associates.
- [11] Rita L, Bailey and Maureen E. Angell. Effects of an oral – sensory, oral-motor stimulation, positive reinforcement program on the acceptance of non prepared foods by youth with physical and multiple disabilities.

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