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Effect of Behavioral and Oral Motor Training in Eating Behavior of Mentally Retarded Children

R. Renuchitra .M.O.T.[1], Dr. P. Nagalakshmi .PhD[2]

[1]PhD Research Scholar, Department of Rehabilitation sciences, Holycross College, Trichy

PhD, H.O.D, Department of Rehabilitation sciences, Holycross College, Trichy

Abstract: ***Aim: To determine the effect of behaviour and oral motor training in eating behaviour of mentally retarded children. Objective: The purpose of the study was to evaluate the effect of behavioural and oral motor intervention in eating behaviour of mentally retarded children. Methodology: Total 30 subjects, 15 in experimental group and 15 in control group with age group of 6 to 12 years participated in the current study. The experimental group underwent behavioural and oral motor intervention in eating behaviour. Pre and post test have been conducted with Children's eating behavior inventory. Result: Statistical significance is present in experimental group than in control group with regard to effect of behavioural and oral motor intervention with Occupational Therapy intervention. Conclusion: Behavioural and oral motor intervention has significant effect on improving eating behaviour.***

Keywords: Mental retardation, oral motor training, behavioural intervention, Occupational Therapy intervention

1. Introduction

Mental retardation is defined as the significantly sub-average general intellectual functioning, associated with significant deficit or impairment in adaptive function, which manifest during the developmental period.

For a typically developing individual, progression through the normal stages of feeding requires the attainment of physical abilities such as postural stability, oral motor co-ordination and sensory awareness. In addition, factors such as emergency cognitive skill and socialization play an important role in an effective feeding interaction. When one or more of these variable are not intact, individual can develop feeding problem.

Crist and Napier-Phillips (2001) reported that the problems associated with the feeding and meal where reported 12-21%of typically developing children .Reports of feeding and meal time behavior problems with mental retardation have generally been higher, including estimate of approximately one third of children with developmental disabilities and as high as 80%among individual with severe profound and moderate intellectual disability

Crist and Naiper –Philips (2001) reported that food refusal and selectivity behviours were reported in 12-19% of same typically developing children 30% reported by Thommusem Heibry, Kari,Larsen among children with intellectual disability Gravestock (2000) reported that both pica and rumination are more prevalent among individual functioning in a severe to profund level of intellectuall disability

Behaviour Difficulties at Meal Time

- Refuse to eat
- Selective eating / food faddiness
- Eating a limited number of food or only certain colours/flavours/textures(tough this may also be due to sensory difficulties in children.
- Bad table manners.
- Refusing to come to dinner table.
- Tantrums at meal time
- Eating too fast or too slow
- Regurgitation, vomiting, spitting out food during eating.

Furthermore, difficulties in social interaction that are the characteristics of childrens with mental retardation may lead them to have problem in learning behaviour needed for daily activities such as eating behaviour

Therefore this study is intended to find effect of behavioural and oral motor training in eating behaviour of mentally retarded children.

2. Need of the Study

Eating is an important aspect in childhood it is related to growth and development process 25% of children experience eating problem in early years of life. Many mentally retarded children will have eating problems in their early life's its reported that 30% of children with mental retardation have eating behavioural problems. Limited researches are available to manage oral motor and behavioural issue related to eating behaviour among mentally retarded hence an attempt has been made in this study to find the solution of eating behaviour of mentally retarded children.

3. Aim and Objectives

Aim: The aim of the study is to find out the effect of behavioural and oral motor training in eating behaviour of mentally retarded children.

Objective

- To assess the abnormal eating behaviour of mentally retarded children by using Children`s Eating Behaviour Inventory.
- To evaluate effect of behavioural and oral motor training in eating behaviour of mentally retarded children.

4. Hypothesis

Alternative Hypothesis
Effect of behavioural and oral motor training will have significant effect on eating behaviour among mentally retarded children.

Null Hypothesis
Effect of behavioural and oral motor training will have no significant effect on eating behaviour among mentally retarded children, associated with significant deficit or impairment in adaptive functioning ,which manifest during the development period (before 18 years of age)

Mental retardation is a generalized neurodevelopment disorder characterized by significantly impaired intellectual and adaptive functioning .It is defined by an IQ score under 70 in addition to deficit in two or more adaptive behaviour.

5. Review of Literature

MAULINA HANDAYANI ET AL (2012)
They conducted a study about the eating behaviour of autistic children. This study examined eating behaviour of 39 japanese and 13 indonesian parents of autistic children was evaluated by using BAMBI completed by parents of 3-6 years children. The study provide information that the children have promblem in eating behaviour

Mohammed Rezaei (2011)
They conducted a study about prevalence of feeding problem in children with intellectual disability. The study examine the eating problem of 144 individual with intellectual disability and was evaluated by screening tool of eating behaviour. This study indicate that in children with intellectual disability, eating problem are more prevalent.

Valerie M.Volkert and petula C.M.vaz(2010)
They conducted study **"**resent studies on feeding problems in children with autism**"** to reviews resents studies on behavioural intervention for children with autism and feeding problems. The result showed that early intervention effective in ameliorating the symptoms of autism.

Rinita B. Laud et al (2009)
They conducted study about the **'**treatment outcome for sever feeding problem in children with autism spectrum disorder**'**. Study done with the age group of 3 years with autism there were 46 children (40 males and 6 females). Children was evaluated by CEBI. Children received behaviour therapy 3 hours a day and oral motor therapy 1 hours a day. Result showed that average caregiver satisfaction ranked between very satisfied and extremely satisfied.

Bridget G. Gibbons et al (2007)
They conducted study of **'**reducing tube feeds and tongue thrust combining an oral motor and behavioural approach to feeding**'**. They selected 6 year old girl with Downs syndrome who was enrolled in an intensive day treatment feeding behaviour . The treatment include 24 treatment days of 175 feeding session, received 5-11 session daily. This intervention demonstrated the successful combination of oral motor and behavioural components in the treatment of severe feeding problem.

Helse Fonna (2007)
She conducted study on prevalence of dysfunctional eating behavior with 311 person with mental retardation living in west cost of Norway. The main finding was that 64.3 3% of client indices of dysfunctional eating behavior.The five most frequent dysfunctional behavior was eating too fast [27.7%]followed by bolting ones food[25.1%],refusal of food [19.9%] , excessive eating [18.3%]and non-co-operative during meal time [17.0%] This study indicate that dysfunctional eating behavior is present in mental retardation.

Scott d.Buckley and Debra k. New Chock(2005)
They conducted study of an evaluation of simultaneous presentation differential reinforcement with response cost reduce packing. They evaluated the effect of multiple treatment procedure including simultaneous presentation preferred food on the packing behaviour of a 9 years old girl with autism. A reversal design was used to assess the effect of differential reinforcement with simultaneous presentation. The results are discussed in term of the use of simultaneous presentation for packing as an alternative to consequent manipulation.

James H. Boscoe and Shannon Byrne(2003)
They conducted study of **'**the use of an escape contingency and a token economy to increase food acceptance**"** they selected 4 years old girls who have been admitted to an inpatient unit for the treatment of food refusal possible pervasive developmental disorder using a changing criterion, the number of bites accepted and consumed was gradually increased to 15 bites per meal. Thus date suggest that in some case escape may be a potent reinforce for food acceptance.

Lee kern and Tamara J.Marder (1996)
They conduced study about **"**a comparison of simultaneous and delayed reinforcement as treatment for food selectivity**"**. The participant was a 7 years old boy with pervasive development disorder and history of food selectivity. Result indicated that both procedure were affective in increasing acceptance, however the simultaneous, reinforcement procedure produced more raped behavior chance and a higher overall percentange of food acceptance.

6. Methodology

The purpose of the study is to determine the effect of behavioural and oral motor training in eating behaviour of mentally retarded children.

Research Design
The study was done with quasi experimental design.
Control group = pre-test (OT intervention) post- test
Experimental group = Pre-test (behavioural and oral motor intervention + OT intervention)Post-test

Sample Size
- 30 Subjects

- 15 subject for control group
- 15 subject for experimental group

Age
The sample consist of boys and girls who were diagnosed as mild or moderate level of mental retardation with age group 6 to 12 years.

Sampling Technique
Convenient sampling technique was adopted

Variable under the Study
- Independent variable - Behavioural and oral motor training
- Dependent variable - Eating behaviour of mental retardation

Duration of the Study
- The duration of the study was 6 months.
- The intervention was conducted for the duration of 1 month.

Study Setting
The study was conducted in Occupational Therapy Foundation, Tiruchengode

Selection Criteria

Inclusion criteria
- Children are between the ages of 6 to 12.
- Both boy and girls
- Children are diagnosed as mild and moderate mental retardation, diagnosed by psychiatrist.

Exclusion criteria
- Children's with problem of visual and hearing impairment.
- Children with age group below 6 and above 12 years.
- Children with other level of mental retardation.
- Children with severe physical disability.

Measurement Tools
The tool used for this study was children's eating behaviour inventory (CEBI).

7. Children's Eating

Behaviour Inventry

The CEBI is a parent- report instrument that contains 40 items addressing various eating and meal time problem commonly described in the literature in this areas and was designed to be used with individuals ranging in age and mental and developmental disability.

The items are divided in to two domains :(1)those pertaining to the child,(2)those pertaining to the parent and family system. The items in the first domains address such problems as compliance with meals, vomiting or chocking during the meal, food preference and developmental feeding skills. The second domain targets issues such as caregiver thoughts and perception about the meals.

Items are scored across two dimensions. The frequency of the behaviour is scored on a five-point Likert scale ranging from 'Never' to 'Always'. Following a rating of frequency, caregivers are prompted to indicate whether or not the corresponding behavior is a problem for him/her. Furthermore ,based on a comparison of the mean number of the item identified to be problematic by caregivers between clinical and non clinical samples , the author indicate that the cutoff for identifying the presence of a feeding problem is 16%of item scores as problematic for caregiver.

Reliability
Test-retest correlation across a 4 to 6 week interval were 0.87 from the total eating problem score and 0.84 for the percentage of items perceived to be a problem in a group of clinical children and normal children.

Cronbach's alpha ranged from 0.57 to 0.76 in four subgroups of children.

Validity:
Total eating problem scores were significantly higher for a clinical group than for non-clinical group. The proportion of the items that was perceived to be a problem was also higher for the clinical group than for the non clinical group.

Materials Used
- Pori
- Sundal
- Potato chips
- Apple
- Banana
- Millets (biscuits, muruku,chips)
- Eating table
- Brush (finger brush, vibrating brush)
- Balloon
- Straws
- Large plates
- Lunch towel
- Gloves
- Apron

Procedure
Convenience sample of 30 subjecs were selected from the age group between 6 to 12 years. The 30 subject were divided in to two groups, a control group and an experimental group .The control group and experimental group consist of 15 subject each which was taken from OCCUPATIONAL THERAPY FOUNDATION, Erode and OCCUPATIONAL THERAPY FOUNDATION, Tiruchengode.

The control group only receives Occupational Therapy intervention and the experimental group receives behavioural and oral motor intervention with regular occupational therapy sessions.

The therapy was given for 1 month duration comprising 12 sessions, 3 sessions weekly

During the intervention phase the student engaged in

behavioural and oral motor intervention during the mealtime for 40 minutes time by therapist.

Training Session

- Per session- 40 minutes
- Weekly - 3 sessions
- Monthly - 12 sessions

Behavioural Techniques

- Differential attention: Positive attention for appropriate feeding behaviour and ignoring in appropriate behaviour. Also known as differential reinforcement for target behaviour.
- Positive reinforcement: Use of enjoyable objects, food or activities (specific to individual) as reinforcement.
- Escape extinction/Escape prevention: Placing child's mealtime escape behaviour on extinction; including either use of physical or manual guidance.
- Stimulus fading: Involving systematic changes in the stimulus, adjusting the amount of food/liquid offered, systematically increasing the texture of food.
- Simultaneous presentation: Preferred food presented at the same time as non-preferred food.
- Differential reinforcement of alternative behaviour : Systamatic reinforcement of an alternative behaviour which varies depend up on the child's response (eg: providing access to preferred toys for desired behaviour)

Oral Motor Intervention

Preparation:

- Instead, work our way from more distal and less personal body areas. For example: we can start by slightly squeezing their hands rhythmically, and then squeeze arms, shoulder, and cheeks.
- You need to do a bit of this every time we start working around the mouth.
- Make it playful approach to increase comfort.
- Before putting our hands on or round the child's mouth, let them bite down on the washcloth and play 'tug-off war' with it, where we try to pull it out of their teeth.

Stage 1:

Massage around the mouth area. Rub firmly 3-4 times with pads of the thumb and fingers from cheeks towards lips, then from nose and chin towards lips.

Stage 2:

Gum massage. Use index and thumb finger, starting in a pincer position. Start above front teeth.

Quickly, firmly but carefully slide index finger back along the upper gum on that side.

Then move index finger down to the bottom gum and slide back to the front.

Now use the thumb to do the same thing along the upper and then the lower gums on the other side.

If you are brave about not getting bitten, press the pad of your thumb against the palate, right behind the front teeth, and push up firmly but gently 3 times.

Stage 3

First method: with index and middle finger at opposite sides of bottom teeth (one finger outside of back teeth on one side , the other outside back teeth on opposite side) hook fingers right over the very back teeth and briefly and firmly tug downwards and slightly forward 2-3 times, its hard to describe in words. Try it first on someone you trust and who dosen't have an overly sensitive mouth.

Second method: just hook index finger over the ront bottom teeth and tug forward 3 times.

8. Data Analysis and Interpretation

Table 1: Comparison between pre test values of control group and experimental group

Group	Test	Mean	SD value	t value	p value
control	pre	89.7	6.1.8	0.3502	0.7314
experimental	pre	88.7	9.03		

Table : 1 : Shows the comparison of control and experimental group pre-test mean value of CEBI mean value 89.07, 88.07 and 't' value 0.3502, 'p' value 0.7314, which shows it is not statistically significant.

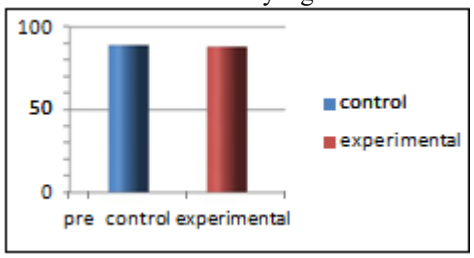


Table 2: Comparison between pre test and post test values of control group

Group	Test	Mean	SD value	t value	p value
control	pre	89.7	6.1.8	4.03	0.0012
control	pre	88.33	6.26		

control group pre test and post. Mean value 89.07,88.33 'p' value 0.0012 and 't' value 4.03. It shows that it is not significant.

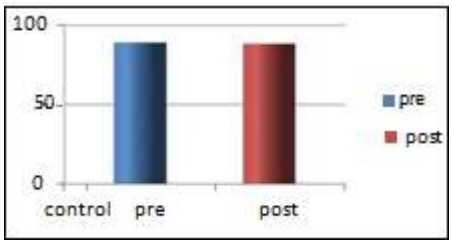


Table 3: Comparison between pre and post test values of experimental group

Group	Test	Mean	SD value	t value	p value
Experimental	pre	88.07	9.02	8.7985	0.001
experimental	pre	79.87	8.85		

Table 3; shows that comparison between experimental group pre test and post test. Mean valu8e 88.07, 79.87 'p' value 0.0001 and 't' value 8.79. It shows that it is statistically significant.

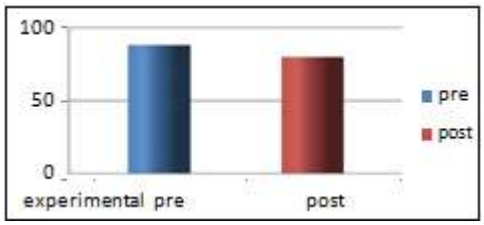
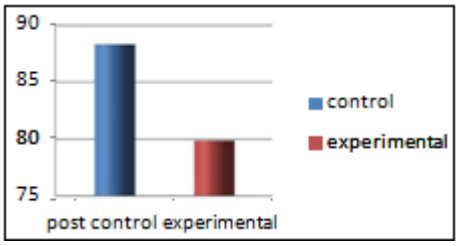


Table 4: Comparison between post test values of control and experimental group

Group	Test	Mean	SD value	t value	p value
control	pre	88.3	6.26	3.277	0.005
experimental	pre	79.87	8.85		

Table 4: shows comparison between control and experimental group post test. Mean value 88.33, 79.87 't' value 3.277 and 'p' value 0.005. It shows that it is statistically significant.



9. Discussion

The purpose of the study was to determine the effect of behavioural and oral motor training in eating behaviour of mentally retarded children.

Children's eating behaviour inventory is the pre test and post test measuring tool. The scale is used to assess eating and meal time behaviour problem.

Initially the children with mental retardation, who are selected based on the inclusion criteria and are assessed using children's eating behaviour inventory.

Table 1 graph 1, shows the comparison between children's eating behaviour inventory control and experimental group pre test score mean values 89.07, 88.07 and t value 0.3502, p value 0.7314, the table value is 2.05, the t value is lesser than the table value. Which shows it is not statically significant and there is no different between the pre test value of control group and experimental group. It denotes that the subjects in control and experimental group show same level of eating behaviour problem.

These findings is supported by Mohammed Rezaei (2011) they conducted a study about prevalence of feeding problem in children with intellectual disability. The study examines the eating problem of 144 individual with intellectual disability and was evaluated by screening tool of eating behaviour. This study indicate that in children with ID, eating problems are more prevalent

Table 2 and graph 2: shows comparison between children's eating behaviour inventory control group pre test and post test scores. The mean value are 89.07, 88.33 respectively and t value 4.0312 and p value 0.0012 and corresponding table value is 2.15, hence the calculated t value is greater than table value. It is show significant. The intervening variable could influence the result.

Table 3 graph 3: shows comparison between children's eating behaviour inventory experimental pre test and post test scores. The mean values are 88.07, 79.87 respectively and t value is 8.7985 and p value is 0.0001 and the corresponding table value is 2.15 hence the calculated t value is greater than the table value it's shows there is an extremely significant different between pre test and post test values of children's eating behaviour inventory experimental group. So the experimental group has significant improvement. Since the experimental group post test value is lesser then pre test value it is shows eating behaviourl problem in mental retardation is reduced in experimental group after intervention.

The findings was supported by Rinita B Laud (2009) conducted study about the 'Treatment outcomes for severe feeding problem in children with autism spectrum disorder'. Study done with age group 3 years with autism , there ere 46 children (40 male and 6 female). Children are evaluated by Children's eating behaviour inventory (CEBI). Children received behaviour therapy 3 hours a day and oral motor therapy 1 hours a day. Result showed that average caregiver satisfaction rank between very satisfied and extremely satisfied.

Table 4 graph 4: shows comparison between children's eating behaviour inventory control and experimental post test scores. The mean values are 88.33, 79.87 respectively and the t value 3.277, p value 0.005 and the corresponding tble value is 2.05 hence the calculated t value is greater than the table value. It shows there is a significant different between post test value of control and experimental group of children's eating behaviour inventory. Since the experimental group post test mean value is lesser than the control group children. It shows OT intervention along with behavioural and oral motor training reduced eating behaviour problem in mentally retarded children.

The findings were supported by Katrina E Olle (2011) conducted study to compare the combining stimulus fading, escape extinction, differential reinforcement for treating food and liquid refusal in children with autism. The various studies presented have shown that food and liquid refusal are inappropriate mealtime behaviour are a concerning and common problem amoung children who have the diagnosis of autism. she conclude that these technique seem more effective when used in combination with each other.

Present study has demonstrated that patient in the experimental group who receives behavioural and oral motor intervention shows statistical significant than the control group, therefore the present study rejecting the null hypothesis and accepting the alternative hypothesis. Result support a tentative conclusion that behavioural and oral motor intervention is a factor reducing abnormal eating behaviour in children with mental retardation.

10. Conclusion

From this study, it is conclude that there is a significant improvement in eating behaviour of children with mental retardation through oral motor and behavioural intervention.

The result of the study indicates that children who underwent behaviour and oral motor intervention along with occupational therapy intervention shows more improvement than who had occupational therapy intervention only.

11. Limitation and Recommendation

Limitation
- Study was done on a small sample size
- Study was conducted for short duration
- Male and female comparison is not included in the study

Recommendation
- The study can be done on large sample size
- Study can be done on different age group
- Study can be done for long duration
- Study can be measure by other assessment tools
- Study can be done on other condition
- Male and female comparison can be included in the study
- Further follow up study can be done

Place of the Study
Occupational Therapy foundation, Erode

Period of the Study
6 Month

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