

Effect Of Occupational Therapy Based Activities On Fine Motor Skills Of Children With Intellectual Disability

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Abstract

Aim :The aim of the study is to find the effect of occupational therapy activities on fine motor skills among intellectual disability children.

Objectives:

- To assess fine motor skills among intellectual disability children.
- To evaluate the effect of occupational therapy based activities on fine motor skills of children with intellectual disability.

Methods:

The study was done among intellectual disability children with fine motor problems in the age group of 8 to 12 years. 30 subjects were selected and divided into two groups. 15 subjects were taken in experimental group and 15 were taken in control group. Both groups were assessed using Madras Developmental Programming System scale and their scores were recorded. The control group received regular special school programme and the experimental group received occupational therapy based activities along with regular special school programme.

Results: The result of the study shows that there is a significant improvement in fine motor skills among intellectual disability children by using occupational therapy based activities.

Conclusion: The conclusion of the study indicates that occupational therapy based activities has a significant effect in improving fine motor skills.

Keywords: Occupational therapy activities, intellectual disability, fine motor skills.

Introduction

According to American Association on Intellectual and Developmental Disabilities, intellectual disability is a disability that occurs before age 18. It is characterized by significant limitations in intellectual functioning and adaptive behaviour as expressed in conceptual, social and practical adaptive skills¹. It is diagnosed through the use of standardized tests of intelligence and adaptive behaviour. American Association on Intellectual and Developmental Disability points out that both functioning and adaptive behaviour are affected positively by individualized supports.

Intelligence refers to a general mental capability. It involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience. Intelligence is represented by Intelligent Quotient (IQ) scores obtained from standardized tests given by trained professionals. Mental retardation is generally thought to be present if an individual has an IQ test score of approximately 70 or below.

Adaptive behaviour is the collection of conceptual, social and practical skills that have been learned by people in order to function in their everyday lives. Significant limitations in adaptive behaviour impact a person's daily life and affect the ability to respond to a particular situation or to the environment².

Most individuals with these disorders present for clinical attention during childhood or adolescence. Intellectual Disability can affect about 1-3% of the general population. The majority of cases are idiopathic. Most common mild Intellectual Disability (75- 90%) often goes unrecognized³. The idiopathic account for 30- 50% of cases and about 5% of cases are inherited from a person's parents. The epidemiological surveys in India showed the prevalence of psychiatric disorders varying from 9.5 to 370/1000 population⁴. Recent census data reported that only 2.7% has mental illness and 5.6% has mental retardation⁵.

Individuals with mild intellectual disability can generally acquire reading, writing, and mathematics skills to the level of grade 3 to 6, often enabling them to hold jobs and live independently. Individuals with moderate intellectual disability can also learn some basic reading and writing skills, but functional skills, such as those related to safety and self-help;

require some form of oversight or supervision.

Motor learning has an important role in all areas of development. Fine motor skills generally refer to the small movements of the hands, wrists, fingers, feet, toes, lips, and tongue. Fine motor development begins with strengthening and refining the muscles of the whole arm. At five years old, most children has matured in develop finemotor such as drawing, cut, paste and trace shapes

The level of development of fine motor skills is one of the indicators of intellectual development. Usually a child with a highly developed fine hand movements can think logically has a sufficiently developed memory and attention, speech. Preschoolers with minor hand motor impairments face serious difficulties in mastering fine motor skills. Fine motor skill is a complex skill that involves finely coordinated movements of the hands. Day to day life activities require coordinated work of the small muscles of the hand and the whole arm, as well as well-developed visual perception and voluntary attention.

The level of formation of fine motor skills with Intellectual Disability determines the potential for cognitive activity and has a significant impact on the effectiveness of learning⁶. A child's knowledge of the world around him or her cannot be formed without tactile-motor perception, which is the basis of sensory cognition. With the help of tactile-motor perception, the basic ideas about the size, shape of objects, and their location in space are formed.

The coordination of the fingers, hands and arms plays a vital role in activities such as eating, dressing, grasping and the use of utensils and tools. The development of the small muscles facilitates the proper coordination needed to perform daily activities. An intellectually disabled child needs moderate training in accordance with their physical, psychological and intelligence condition. Children with intellectual disability encounter barriers to their development and growth in the sensory and motor areas, including both gross motor and fine motor skills. The fine motor skills of intellectually disabled children are developing and so there needs to be training to develop the proper coordination.

The physiological, social and cultural limitations of children influence their educational capacity and their response to education. Activities for education of intellectually disabled children have become more important gradually. The reason is that activities facilitates the learning process in a positive environment.

Aim

The aim of the study is to find the effect of occupational therapy based activities on fine motor skills among intellectual disability children .

Objectives

1. To assess fine motor skills among intellectual disability children .
2. To evaluate the effect of occupational therapy based activities on fine motor skills of children with intellectual disability.

Methodology:

The researcher used quasi- experimental research design with the sample of 30 subjects of male and females. Samples were selected using convenience sampling method, 15 subjects in experimental group and 15 subjects in control group were randomly allocated by the researcher. Control group attended regular special school programme and experimental group underwent Occupational therapy based fine motor activities along with regular special school programme. A 45-minute intervention was delivered three days in a week for two months.

This study was conducted at AECT Special school in Erode. In this study Occupational therapy based fine motor activities were independent variable, hand functions of children with intellectual disability were dependent variables. In this study both male and female children diagnosed as mild and moderate intellectual disability by a pediatrician with the age group of 8 to 14 years were included. children of age below 8 years and above 14 years, severe and profound intellectual disability and children with other associated medical conditions were excluded. Madras Developmental Programming system scale^{7,8} was used to assess the fine motor skills of intellectual disability children in pre and post test.

Occupational therapy based activities are given with following activities. All these activities are therapeutically analyzed and intervened with adequate supervision and precautionary measures. Activities are ,Clay modelling⁹, Making fruit basket with clay⁹, Building blocks, Making numbers with slimes. Craft stick tweezers, Transferring pellets from one bowl to another with spoon using triphoid grasp, Stacking cups. Finger painting¹⁰, lacing¹¹, coloring, vegetable printing¹² and mosaic tiles¹³. A total of twenty four sessions of occupational therapy based fine motor activities were given to the experimental group. After the intervention period post test was conducted and scores are statistically analyzed.

Data Analysis and Results :

TABLE -1 :Comparison of pre – test fine motor skills score between control and experimental group

GROUP	TEST	MEAN	SD	t VALUE	p VALUE
CONTROL GROUP	PRE - TEST	13.53	1.77	0.2116	0.8339
EXPERIMENTALGROUP	PRE - TEST	13.4	1.59		

GRAPH - 1

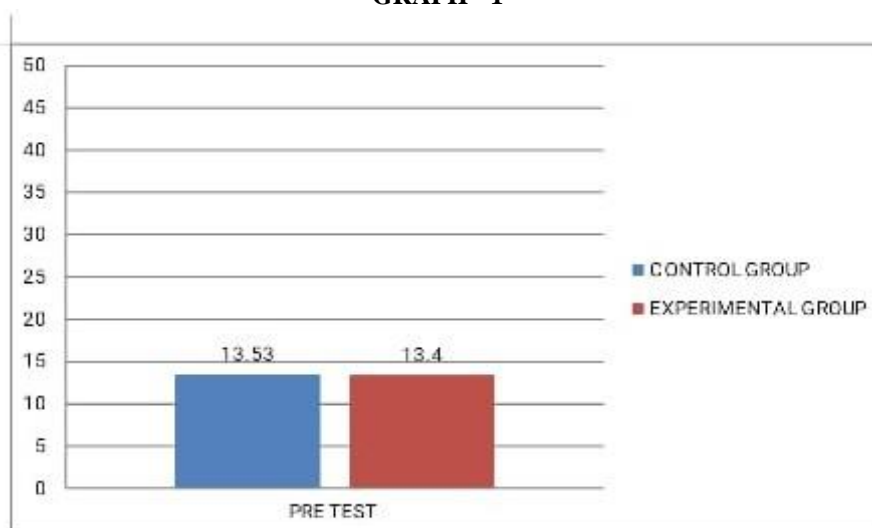


Table 1 and graph 1 shows the comparison of pre-test fine motor skills score between control group and experimental group. Mean values are 13.53 and 13.4 respectively and the 't' value is 0.2116 and the 'p' value is 0.8339, which shows there is no significant difference between pre-test of control group and experimental group.

TABLE-2 :Comparison between pre and post test fine motor skills score of control group

GROUP	TEST	MEAN	SD	T VALUE	P VALUE
CONTROL	PRE - TEST	13.53	1.77	0.0971	0.924
	POST - TEST	13.6	1.45		

GRAPH : 2

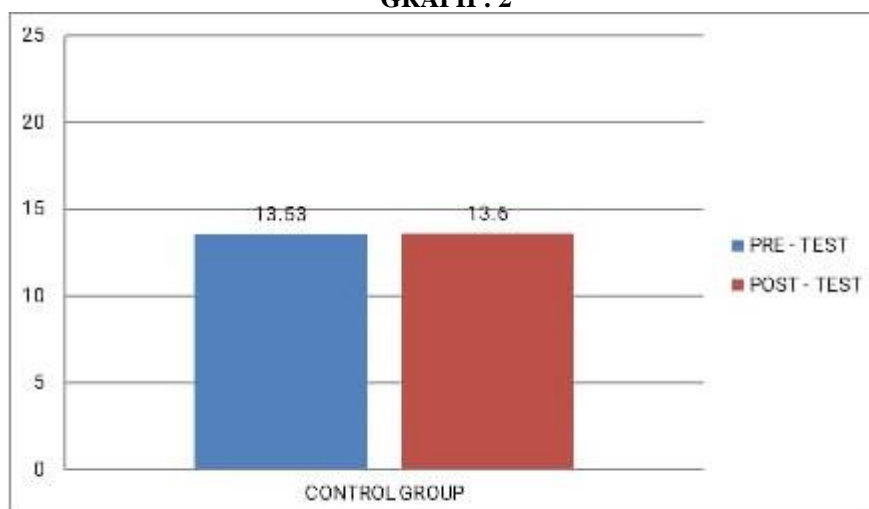


Table 2 and graph 2 shows the comparison between pre –test and post- test fine motor skills score of control group . The mean values are 13.53 and 13.60 respectively and the 't' value is 0.0971 and 'p' value is 0.9240, which shows there is no significant difference between control pre and post test values.

TABLE -3: Comparison between pre and post - test fine motor skills scores of experimental group

GROUP	TEST	MEAN	SD	t VALUE	p VALUE
EXPERIMENTAL GROUP	PRE - TEST	13.4	1.59	3.6158	0.0028
	POST - TEST	10.93	2.02		

GRAPH - 3

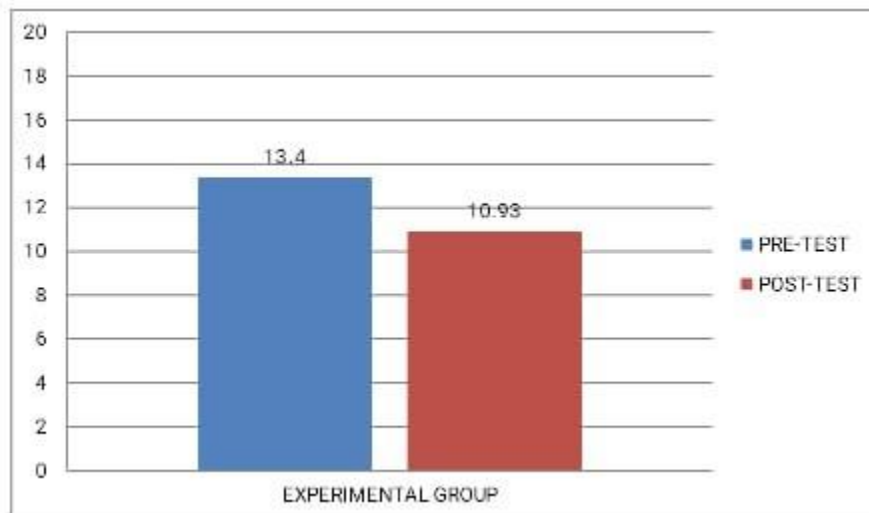


Table 3 and graph 3 shows the comparison between pre and post-test fine motor skills scores of experimental group. The mean values are 13.4 and 10.93 respectively and the 't' value is 3.6158 and 'p' value is 0.0028 which shows there is a significant difference between pre test and post test of experimental group.

TABLE – 4: Comparison between post test fine motor skills scores between control group and experimental group

GROUP	TEST	MEAN	SD	t VALUE	p VALUE
CONTROL GROUP	POSTTEST	13.6	1.77	3.8503	0.0006
EXPERIMENTAL GROUP		10.93	2.02		

GRAPH- 4 :

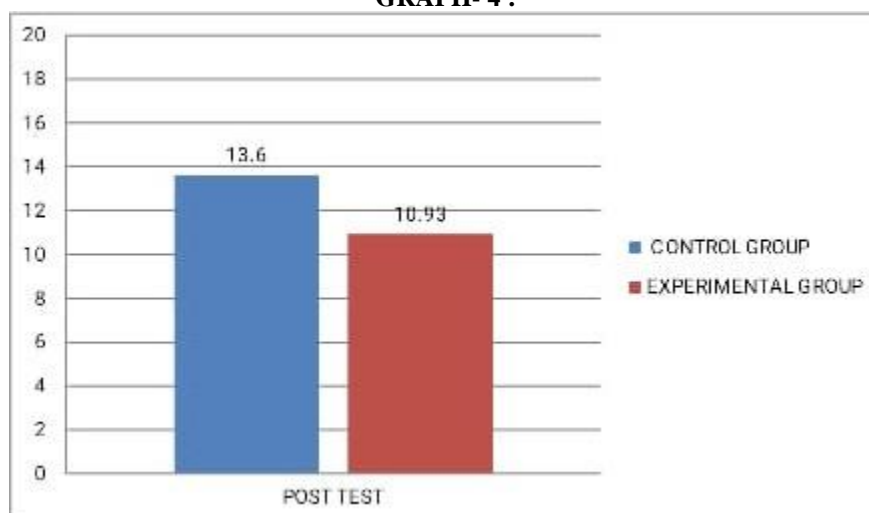


Table 4 and graph 4 shows the comparison of post test fine motor skills scores between control and experimental group. The mean values are 13.6 and 10.93 respectively and the t value is 3.8503 and p value is 0.0006 which shows there is significant difference between control and experimental group.

Discussion:

The purpose of the study is to find out the effectiveness of occupational therapy activities on fine motor skills among intellectual disability children.

Intellectual Disability is characterized by significant limitations in intellectual functioning and adaptive behaviour. Children with Intellectual Disability experience delays in fine motor skills. Activities play a major role in child's life. Occupational Therapy activities helps to improve all aspects of growth.

Fine motor skills involve the use of small muscles of the body, such as fingers, hands, toes etc. It refers to precision, dexterity and coordination of the hands. Fine motor skills are holding small items, buttoning, eating, grasping objects, opening lid, etc. They are bilateral hand coordination, pinching grasp (pincer, gross grasp, spherical grasp), in-hand manipulation (Translation, shift, rotation).

A total of 30 intellectual disability children were taken in this study through convenient sampling method. It is assessed using Madras Developmental Programming System scale before and after intervention. 24 sessions of Occupational therapy based fine motor skills training were given and scores were statistically analyzed with 't' test.

Table 1 And Graph 1 shows the comparison of pre-test of control group and experimental group, the mean values are 13.53 and 13.4 and 't' value is 0.2116 and 'p' value is 0.8339. It shows there is no significant difference between control group pre-test and experimental group pre-test. It denotes the subjects in control group and experimental group shows nearly same level of problem in fine motor skills.

Table 2 And Graph 2 shows the comparison of pre-test and post-test of control group. Paired 't' test was done and the mean values are 13.53 and 13.60 respectively and the 't' value is 0.0971 and 'p' value is 0.9240. It shows there is no significant difference between pre-test and post-test values of control group.

Table 3 And Graph 3 shows the comparison of pre-test and post-test of experimental group. The mean values are 13.4 and 10.93, and the 't' value is 3.6158 and 'p' value is less than 0.05 (0.0028) respectively. It shows that there is significant difference between experimental group pre-test and post-test. It denotes subjects in experimental group has increased ability to perform fine motor skills. These findings were supported by U. Divya Basi (2017)¹⁴. The study discusses about the effect of clay modelling on hand motor skills among mild intellectual disability children. On analyzing the data on pre-test and post-test hand motor skills of mild mentally retarded children found that the mean hand motor skills of mild mentally children before administering of clay modelling was 20.3 and the same was improved after intervention of about 25.3. The mean was significant at $p < 0.0001$.

Table 4 And Graph 4 shows the comparison of post-test of control group and experimental group. The mean values are 13.60 and 10.93 and 't' value is 3.8503 and 'p' value is < 0.05 (0.0006) respectively. It shows that there is significant difference between post-test (B) values of control group and experimental group. Since the post-test mean values of control group is more than the experimental group mean value, it denotes subjects in experimental group has great decrease in inability to perform fine motor skills than control group. These findings were supported by Syiddatul Budury (2020)¹¹. This study discusses about the effect of embroidery on improving fine motor skills among intellectual disability children. Before the intervention, more than half of the children had fine motor skills in the moderate category of 8 (61.5%) but there was a decrease after the intervention to (15.4%). There was a significant difference in the fine motor skills before and after the intervention with a 'p' value of 0.002. This result relates to Boopathi and Umarani found that facilitating fine motor activities program can promote fine motor skills (2019)¹⁵.

The researcher in this study explained about the fine motor skills problem in intellectual disability children. The occupational therapy activities intervention helped the children to overcome from the difficulty in fine motor skills which helps for their independence. Thus, the study shows the effect of occupational therapy based activities among intellectual disability children with fine motor problems. Hence it proves the alternative hypothesis and rejects the null hypothesis.

Limitations and Recommendations :

This Study done on limited sample size and confined age group. The study can be repeated with other population with shorter duration.

Financial Support and Sponsorship : Nil.

Conflicts of Interest: There are no conflicts of interest.

Conclusion:

The result of the study concludes that occupational therapy activities are effective method on improving fine motor skills among intellectual disability children which helps the children to maximize their independence in daily activities.

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