

# EFFECTIVENESS OF CONSTRAINT INDUCED MOVEMENT THERAPY VERSUS CONVENTIONAL THERAPY ON IMPROVEMENT OF UPPER EXTREMITY FUNCTIONS IN SUBJECTS WITH SPASTIC CEREBRAL PALSY - A COMPARITIVE STUDY

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## *Abstract-*

**BACKGROUND:** Cerebral Palsy is a group of disorder in children. It may affect muscle power, coordination & Nerve conduction from brain to body part. Usually CP caused by brain injury, Metabolic issues in pregnant lady and a lot. We must treat the CP Children in earlier stage to improve their activities of daily living. The benefits of giving Physiotherapy are manage the status or restoration of body functions. Constraint Induced Movement Therapy (CIMT) is one of the popular treatment method in Physiotherapy to enhance the motor activities in affected extremities. The Conventional therapy having three phases are Mobilization, Strengthening & Stretching.

**AIM & OBJECTIVE:** To find out effectiveness of constraint induced movement therapy versus conventional therapy on improvement of upper extremity functions in subjects with spastic cerebral palsy.

**Methodology:** We were selected 30 subjects for the study, who fulfilled the inclusion Criteria. Out of the 30 patients 15 subjects in Group A & remaining 15 subjects in Group B in age group between 7 - 12. Who were affected from spastic CP and also those who scored between 35 - 45 in School Kids Assistive Hand Assessment Score (School Kids-AHA). Group A subjects who selected were treated by Constraint Induced Movement Therapy (CIMT) and Group B subjects who selected were treated by Conventional therapy for a period of 5 days in all 8 weeks. The pretest and post-test measurement was taken by using Kids-AHA.

**RESULT:** The pretest and post-test mean values of Kids-AHA scored was analyzed using the paired 't' tests. For 14 degrees of freedom and 5% level of significance, the table's value is 2.145 and calculated 't' values are 29.07 for Group A, 20.1 for Group B. Since the calculated values were greater than table's value null hypothesis are rejected. The pretest and post-test mean values of Kids-AHA scored was analyzed using the unpaired 't' test. For 28 degrees of freedom and 5% level of significance, the table's value is 2.145 and calculated 't' value is 7.123 for the study. Since the calculated value is greater than table's value null hypothesis is rejected.

**CONCLUSION:** This study it can be concluded that both constraint induced movement therapy and conventional therapy are improve to upper extremity functions in subjects with spastic cerebral palsy. As per the study we concluded that constraint induced movement therapy is gives significant improvement than the conventional therapy on upper extremity functions in subjects with spastic cerebral palsy.

**Keywords:** Kids-AHA, Constraint Induced Movement Therapy (CIMT), Conventional therapy, Spastic CP, Upper extremity functions

## **INTRODUCTION:**

Cerebral Palsy is a group of disorder in children. It may affect muscle power, coordination, Nerve conduction from brain to body part. Usually CP caused by brain injury, Metabolic issues in pregnant lady and a lot. The etiologies are classified into three types are Prenatal, Perinatal & Postnasal. We must treat the CP Children in earlier stage to improve their activities of daily living. The benefits of giving Physiotherapy are manage the status or restoration of body functions. Constraint Induced Movement Therapy (CIMT) is one of the popular treatment method in Physiotherapy to enhance the motor activities in affected extremities. The Conventional therapy having three phases are Mobilization,

**Strengthening & Stretching** To find out effectiveness of constraint induced movement therapy versus conventional therapy on improvement of upper extremity functions in subjects with spastic cerebral palsy for a period of 8 weeks. School-Kids AHA for older children, aged six-years-old to 12-years-old. the child is invited to play one of two adventure-themed board games in the session. The same specially selected toys are used – but this time the toys are used as part of the board games. The goal remains the same to provoke the child to play using two hands together. The child is video recorded as they play. The therapist will later score their performance from the recording. The assessment session will take between 30 – 60 minutes and includes 15 minutes for the play-based Kids-AHA assessment<sup>1</sup>. It takes a further 60 minutes for a therapist to score the assessment from the video recording. Feedback about the assessment can be written in a report or given verbally depending on family preference. A written report takes approximately 30 minutes to complete and a face to face feedback session also takes approximately 30 minutes. The scale is specific for each item, but with a generic basis (that is, 4 = Effective to 1=Does not do). Scores are entered into an electronic spreadsheet, which calculates a raw score (20-80).

### **METHODOLOGY:**

A total number of 30 subjects were selected from Rehabilitation Unit in School of Physiotherapy, Faculty of Health Sciences Nursing and Education, Mahsa University, Malaysia and Swamy Vivekanandha Physiotherapy College, Namakkal by purposive sampling method by who fulfilled the inclusion criteria. The study was pretest and post-test for Group A & Group B comparative study in nature. The treatments were conducted for a period of 5 days in all 8 weeks. The subjects were selected by using purposive sampling method. pretest taken using School Kids Assistive Hand Assessment Score (School Kids-AHA) assigned to CIMT for group A and Conventional therapy for group B . The Inclusion Criteria are patients Age between 7-12 years and both genders have selected in this study, affecting from Hemiplegic and Diplegic spastic cerebral palsy, the subjects were selected 35 - 45 score in School Kids Assistive Hand Assessment (School Kids-AHA) . The Exclusion Criteria are the score below 7 & above 12 in School Kids-AHA, Uncooperative and unstable seizures patients and other Pathological or associated problems of Cardio-Neuro-Musculo-Skeletal issues other than CP . Surgical procedures and Botulinum toxin junction in the past 6 month. Before the patient treatment all the subjects and parents were explained about the study and the procedure to be applied. They were asked to inform if they any discomfort during the course of study. Written consent was obtained from all the subjects and Parents.

### **PROCEDURE:**

#### **Protocol:**

All subjects in Group A and Group B should be checked vital signs before starting program in all 5 days of 8 weeks. Only stable children should involve in to our study. We must check the precautions of Patient and Treatment table always.

#### **Group A - Constraint Induced Movement Therapy (CIMT):**

15 subjects in group A were treated with Constraint Induced Movement Therapy.

Command: Do it and Relax

Therapist Position: Walk standing or Comfortable Position

Total Timing: 45 min per day

Sessions: 1 time per day

Therapy:

1. Crayon Use
2. Puzzle Piece
3. Eat with Spoon
4. Throw ball into Target
5. Reach above head

#### **Group B - Conventional Therapy:**

15 subjects in group B were treated with Conventional therapy.

Command: Relax

Therapist Position: Walk standing or Comfortable Position

Total Timing: 45 min per day

Sessions: 1 time per day

Therapy:

1. Join mobilization
2. Strengthening
3. Stretching
4. Positioning
5. Splinting

**DATA ANALYSIS**

School Kids Assistive Hand Assessment Score (School Kids-AHA) for Group A:

Mean values		Calculated 't' value	Table 't' value	Level of Significance
Pre test	Post test			
35.5	42.7	29.07	2.145	P < 0.05 Significant

The pretest and post test mean values of School Kids Assistive Hand Assessment Score (School Kids-AHA) was analyzed using the paired 't' test. For 14 degrees of freedom and 5% level of significance, the table 't' value is 2.145 and calculated 't' value 29.07. Since the calculated 't' value was greater than table 't' value null hypothesis is rejected.

School Kids Assistive Hand Assessment Score (School Kids-AHA) for Group B:

Mean values		Calculated 't' value	Table 't' value	Level of Significance
Pre test	Post test			
35.6	40.7	20.1	2.145	P < 0.05 Significant

The pretest and post test mean values of School Kids Assistive Hand Assessment Score (School Kids-AHA) was analyzed using the paired 't' test. For 14 degrees of freedom and 5% level of significance, the table 't' value is 2.145 and calculated 't' value 20.1. Since the calculated 't' value was greater than table 't' value null hypothesis is rejected.

Unpaired t Value:

Unpaired 't' Value		Calculated 't' value	Table 't' value	Level of Significance
Group A	Group B			
29.07	20.1	7.123	2.145	P < 0.05 Significant

The pretest and post test mean values of School Kids Assistive Hand Assessment Score (School Kids-AHA) was analyzed using the unpaired 't' test. For 28 degrees of freedom and 5% level of significance, the table 't' value is 2.145 and calculated 't' value 7.123. Since the calculated 't' value was greater than table 't' value null hypothesis is rejected.

**Result:**

This study was conducted on 30 subjects. To find out the functions of upper extremities were used School Kids-AHA score. School Kids-AHA score used was short version. The pretest and post test mean values of School Kids-AHA score was analyzed using the paired 't' test of Group A & Group B and the unpaired 't' test. Since the calculated 't' values was greater than table 't' value null hypothesis are rejected. The overall result of this study is constraint induced movement therapy and conventional therapy are improve to upper extremity functions in subjects with spastic cerebral palsy for a period of 5 days in all 8 weeks.

**Discussion:**

All subjects were selected from Rehabilitation Unit in School of Physiotherapy, Faculty of Health Sciences Nursing and Education, Mahsa University, Malaysia and Swamy Vivekanandha Physiotherapy College, Namakkal. The Outcome measures included the School Kids-AHA score to treatment (pretest) and at the end of 5 days in all 8 weeks of treatment (post test). In this study aim was to find out effectiveness of constraint induced movement therapy versus conventional therapy on improvement of upper extremity functions in subjects with spastic cerebral palsy.. The overall effectiveness on School Kids-AHA score was analyzed by paired 't' tests and unpaired 't' after 8 weeks treatment which shows  $p < 0.05$  which is significant.

From this study it can be concluded after the constraint induced movement therapy and conventional therapy are improve to upper extremity functions in subjects with spastic cerebral palsy.

**Conclusion:**

The aim of study is found out the effectiveness of giving constraint induced movement therapy and conventional therapy are improve to upper extremity functions in subjects with spastic cerebral palsy. 30 patients were selected and assessed. Those who had School Kids-AHA score between 35 - 45. Out of 30 members 15 subjects were selected for Group A and 15 subjects were selected for Group B.

The School Kids-AHA score was measured before and after treatment session (8 weeks). Pretest and post test values of the study was collected and assessed for significant difference and their results were analyzed by using paired 't' tests and Unpaired 't' test.

This study it can be concluded that both constraint induced movement therapy and conventional therapy are improve to upper extremity functions in subjects with spastic cerebral palsy. As per the study we concluded that constraint induced movement therapy is gives significant improvement than the conventional therapy on upper extremity functions in subjects with spastic cerebral palsy.

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