



CODEN [USA]: IAJPBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.3270869>

Available online at: <http://www.iajps.com>

Research Article

EFFECT OF CONSTRAINT INDUCED THERAPY ON UPPER EXTREMITY WITH VIBRATION THERAPY IN HEMIPLEGIC CEREBRAL PALSY

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Article Received: May 2019

Accepted: June 2019

Published: July 2019

Abstract:

Background: Hemiplegia is a physical damage that can happen in childhood following head suffering, or transient ischemic occurrence (stroke), brain lump, or hereditary or perinatal injury. Most disabling symptom of hemiplegia is one sided impaired arm and hand function. Constraint Induced therapy is emerging as an intervention that is used to increase the upper extremity function affected by brain injury in hemiplegic children. Vibration therapy is considered important for fitness and plays an important role in muscle strengthening and induces relaxation. This review summarizes the importance of CIMT with vibration therapy on hand function of upper extremity in hemiplegic CP.

Methods: A single blinded randomized, controlled sample of pediatric CIMT in which forty children were identified with hemiplegic cerebral palsy age (5–12) years old. All participants that included in this study were school going. They were randomly assigned to two groups. One group received Constraint induced therapy combined with vibration therapy and the other were received Constraint Therapy. Base line treatment of both groups was Constraint Induced Movement Therapy (CIMT). Functional skills of children such as upper limb activities were assessed in special education and hospital settings by Jebsen Taylor Hand Function scale.

Results: The Patients receiving Constraint Induced Movement therapy with vibration therapy improved more having Mean and standard deviation to be (10.50±.513) and Mean difference (0.115) as compared to Constraint Induced Movement Therapy with Mean and standard deviation (5.55±.510) and Mean difference of (.114). Since the p value was 0.00, (< 0.05) we rejected the null hypothesis.

Conclusion: Constraint Induced movement therapy with combination of vibration therapy performed significantly better as compared to that of constraint induced therapy without vibration therapy.

Keywords: Constraint Induced Movement Therapy, Vibration Therapy, Hemiplegic CP

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Please cite this article in press Anam Naz et al., *Effect Of Constraint Induced Therapy On Upper Extremity With Vibration Therapy In Hemiplegic Cerebral Palsy.*, Indo Am. J. P. Sci, 2019; 07[07].

INTRODUCTION:

Background: Cerebral palsy (CP) is a nervous disorder resultant in motor diminishing and these damages develop directly from hypoxic injury and neglect during growth. Such damages may result in contribution limits that need reintegration during life. Amid these categories of children, 29% partake hemiplegic by means of involvement if of half side of body and mostly affected the upper limb than the lower limb. Hemiplegic cerebral palsy commonly have rational capacities to join the consistent schools, although weakened limb have a tendency to confine their involvement in undertakings of day-to-day life and influence their social image(1). Children with hemiplegic (CP) usually have a habit of many deficiencies. They have unilateral restrictions in the function of the damaged arm and slow and clumsy hand movements. There are many difficulties with the timing and dexterity of reaching movement deficiencies of grasping and fingertip force control and influence on involvement in home, school, social life, and daily activities such as feeding, dressing, and grooming is pronounced (2) Hemiplegic CP child has fluctuating degree of participation in the same sided upper and lower extremities including damages such as ineffective muscle conscription, reduced responsiveness, and stereotypic posing (3). CIMT is a freshly advanced method for educating upper extremity role in children with hemiplegic CP. It is a promising method for restoration of the upper extremity in hemi paretic (CP). This treatment is centered on two major ideologies that are constraint of the minimum affected upper and lower limb. Second Principal is rigorous and recurrent exercise of goings-on with the affected extremity (4). It reduces disability, increase use of the more affected arm, hand and promote brain plasticity for individuals with upper extremity hemiparesis post-stroke(5). Somatosensory awareness plays an important role in the early times of human advancement. Researches had proved the impact of vibration therapy. Vibrations of various frequencies 31, 35, 40, and forty four Hz decrease touch-pressure sensitivity at

Statistics Analysis:**Independent Sample T test**

Population N=40	Study Group	JTHF Mean (SD)				Effect Size
		Before Treatment (Pre treatment)	P-value (Before treatment)	After Treatment (Post treatment)	P-value (After treatment)	
20	CIMT with Vibration Therapy	5.55±.510	.759	10.50±.513	0.00	0.16 +/- 0.24
20	Conventional CIMT	5.50±.513	.759	5.55±.510	> 0.05	

10 min after exposure, lower pain sensitivity in cerebral palsy toddler, improve stability and motor characteristic, and reduce the secondary complications related to CP (6). El-Shamy SM *et al.* described RCT of fifteen children that had been assigned to the experimental group, which acquired whole-frame vibration therapy 9min five day per week. Entire-body vibration schooling can be a beneficial device for enhancing muscle energy and balance in children with diplegic cerebral palsy(7). Ibrahim MM *et al.* described effects of vibration therapy by allocation of thirty spastic diplegic CP youngsters (eight–12 years) into two groups. The group which received vibration therapy showed more improvement as compared to control group (8).

METHODS:

This was single blinded randomized trial and convenient sampling was used. Data was collected from Punjab Education (PEF) Foundation Schools of seven districts of Punjab (Lahore, Rawalpindi, Multan, Jhelum, Chakwal, Attock, Mailse and Vehari). Caregiver willingness to committed to the time required for daily procedure and follow-up care and those finding difficulty to perform their daily activities were included. While those who had Inability to participate in purposeful play or functional activity and children with contracture and dystonia were in exclusion criteria. Each Patient received four treatment sessions per week treatment sessions over the period of four months. Parents are also guided by physiotherapist to perform home-based CI therapy.

During activity session, CIMT performed on effected limb and unaffected limb was restrained for 15-20 min while vibration therapy was applied with vibrator for 8-10 minutes. Control group received constraint induced therapy without restraint of unaffected limb during activity session. Pretreatment and post treatment assessment of both groups were taken by Jebsen Taylor Hand Function test

RESULTS:

As above mentioned results of CI therapy with vibration therapy showed significant improvement with Mean (10.50±.513) and Mean difference (.115) as compared to conventional therapy with Mean (5.55±.510) and Mean difference of (.114). Since the p value 0.00, (< 0.05). It deduced that constraint induced movement therapy with vibration therapy is effective as compared to conventional physical therapy statistically & clinically.

DISCUSSION:

CE Naylor *et al.* prompted that constraint-induced movement medical aid considered good approach of treating young kids with unilateral paralysis (48). In our study, this effect was also beneficial in terms of participation and activity of upper limb and with long duration was given more surprising results. Louise *et al.* also described importance of CIMT in hemiplegic CP. As it was supported our study. Important finding of study was to increased awareness of effected side and also increased self confidence in the participants. LeeAnn Eagle Brown *et al.* explained the same fact of awareness of neglected side and increased confidence level of participants and significantly gained in speed of movement (47). Andrew M. *et al.* recommended that exhaustive practice associated with CI therapy increased movement competence that this ability was not age-dependent (46). As current study also indicated that ability of participation of activities of daily life were not age dependent.

This study found that CIMT combined with vibration therapy has beneficial effect as compared to conventional CI therapy for hemiplegic children especially on hand function were assessed and improved. Lack of awareness of therapy among community and frustration of children from session were problems faced by researcher. This caused a lot of time wasting. There were a lot of interruptions during activity session resultantly created hurdles in research process.

CONCLUSION:

Constraint induced therapy with combination of vibration therapy showed improvement than Constraint Induced Therapy and favored the concept of neuro plasticity. It is not only improved activity participation and gain speed in movement but also increased level of confidence to use affected extremity. However further investigation is required to prove the clinical efficacy of this technique over

other neuromuscular techniques. Future researchers are recommended to perform more randomized clinical trial with the large doses of the CI therapy to prove the efficacy of this technique alone and in combination of other neuromuscular techniques also.

REFERENCES:

1. Chiu HC, Ada L. Constraint-induced movement therapy improves upper limb activity and participation in hemiplegic cerebral palsy: a systematic review. *Journal of physiotherapy*. 2016 Jul 31;62(3):130-7
2. Abd El-Kafy EM, Elshemy SA, Alghamdi MS. Effect of constraint-induced therapy on upper limb functions: a randomized control trial. *Scandinavian journal of occupational therapy*. 2014 Jan 1; 21(1):11-23.
3. Charles J, Lavinder G, Gordon AM. Effects of constraint-induced therapy on hand function in children with hemiplegic cerebral palsy. *Pediatric Physical Therapy*. 2001 Jul 1; 13(2):68-76.
4. Aarts PB, Jongerius PH, Geerdink YA, van Limbeek J, Geurts AC. Effectiveness of modified constraint-induced movement therapy in children with unilateral spastic cerebral palsy: a randomized controlled trial. *Neurorehabilitation and neural repair*. 2010 Jul;24(6):509-18.
5. Gauthier LV, Kane C, Borstad A, Strahl N, Uswatte G, Taub E, Morris D, Hall A, Arakelian M, Mark V. Video Game Rehabilitation for Outpatient Stroke (VIGoROUS): protocol for a multi-center comparative effectiveness trial of in-home gamified constraint-induced movement therapy for rehabilitation of chronic upper extremity hemiparesis. *BMC neurology*. 2017 Jun 8; 17(1):109.
6. Kunde CA, Ganvir SS, Agrawal MM. Effect of vibrotactile stimulation on motor performance in a child with cerebral palsy: A case study. *Indian Journal of Cerebral Palsy*. 2016 Jan 1;2(1):43
7. El-Shamy SM. Effect of whole-body vibration on muscle strength and balance in diplegic cerebral palsy: a randomized controlled trial. *American journal of physical medicine & rehabilitation*. 2014 Feb 1;93(2):114-21.
8. Ibrahim MM, Eid MA, Moawd SA. Effect of whole-body vibration on muscle strength, spasticity, and motor performance in spastic diplegic cerebral palsy children. *Egyptian Journal of Medical Human Genetics*. 2014 Apr 1;15(2):173-9.