

**EFFECTS OF CONSTRAINT INDUCED MOVEMENT THERAPY IN IMPROVING
UPPER EXTREMITY FUNCTION IN STROKE PATIENTS**

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ABSTRACT

Back Ground: Constraint-induced movement therapy (CIMT) is an approach to stroke rehabilitation that involves the forced use and massed practice of the affected arm by restraining the unaffected arm. This has been proposed as a useful tool for recovering abilities in everyday activities. This therapy has been studied by high quality research studies and has been found beneficial for arm function in some patients- especially those who already have some use of their arm and hand. **Aim and Objective of The Study:** The aim of the study is to evaluate the effect of constrained induced movement therapy in improving upper extremity function in stroke patients. **Materials and Methods:** This study is an experimental study which includes a total of 20 samples of age group between 65-75years. They were divided into two groups- control group and experimental group. The control group performed the were given normal stroke protocols of upper extremity and the experimental group performed Constraint-induced movement therapy (CIMT). **Result:** The result showed significant improvement in both the groups. However, it is, group B subjects who were treated with Constraint-induced movement therapy (CIMT) showed an extremely significant improvement than when compared to group A subjects who were treated with strengthening exercises. **Conclusion:** The study concluded that both the groups were effective in improving balance but group B is more effective than group A.

KEYWORDS: Stoke, Stroke rehabilitation, Constraint-induced movement therapy (CIMT), strengthening exercises.

INTRODUCTION

About 17 million people worldwide have first stroke every year and about 35 million stroke survivors and 6 million stroke related deaths are reported. In India alone 152/100,000 person per year value are high than those of high income countries. making stroke second most common cause of death and one of main cause of acquired adult disability. Around 80% of these survivors have motor impairments of the upper limb that affects their ADL and social participation.^[1]

According to the WHO stroke is defined as a clinical syndrome which has a vascular origin and causes an overall neurological deficit that lasts for more than 24 hrs.^[3] A systematic review⁵ of 467 trials showed that the effectiveness of most interventions for upper and lower limb paresis is driven by repetition and principles of task-specific c and context-specific c motor learning.^[2]

Constraint induced movement therapy (CIMT) or modified versions of CIMT are considered the most effective treatment regimens in physical therapy to improve outcome of the upper paretic limb.^[2] It is designed to overcome learned disability by restraining

the unaffected extremity and training the affected extremity, thereby leading to massed practice in the use of the affected extremity.^[4-6]

AIM & OBJECTIVE

Aim of the study is evaluate the effects of constrained induced movement therapy for upper extremity in post stroke patient.

METHODOLOGY

This study is an experimental study which includes a total of 20 samples of age group between 65-75years. They were divided into two groups- control group and experimental group. The control group were given normal stroke protocols of upper extremity and the experimental group performed Constraint-induced movement therapy (CIMT).

INCLUSION CRITERIA

- At least 6 months post stroke
- Both male and female were taken for the study
- Age group between 45 to 65 yrs.

- Brunnstorm score for upper extremity between 3 to 6
- Home dwelling status

EXCLUSION CRITERIA

- Unilateral neglect
- Any comorbidity that influences involuntary upper extremity function.

OUTCOME MEASURES

FUGL MEYER assessment.

PROCEDURE

The study was carried out in community setting. Fugl - Meyer assessment was used to assess the motor function in post stroke patients. The test was explained and the subjects were provided consent form before collecting the data. 20 subjects were taken for the study. Group A(Experimental group) consists of 10 subjects and were given constraint induced movement therapy. Group B(control group) consists of 10 subjects and were given normal stroke protocols.

GROUP A

The subjects were given a restraints to contain non paretic upper limb to promote the use of impaired limb during 40% of total hours awake. 2 weeks later the usage of restraint is increased to 60% of awake hours. The

patient's care taker was given information prior to the therapy. 2 hrs of daily CIMT was given to the patient under the supervision of the care taker. After 4 weeks the motor function was assessed using Fugl Meyer Assessment.

GROUP B

The subjects were not given any specific treatment approaches. The regular stroke protocol was given to the healthy controls. Fugl Meyer Assessment was done after 4 weeks.

CONSTRAINED INDUCED MOVEMENT THERAPY

S.No	Exercises	Repetitions	Duration
1.	Ball rolling exercises	15 reps	10 mins
2.	Shape sorter board		15 mins
3.	Picking up objects	10 reps	10 mins
4.	Arm reach exercises	10 reps	10 mins

DATA ANALYSIS AND INTREPRETATION

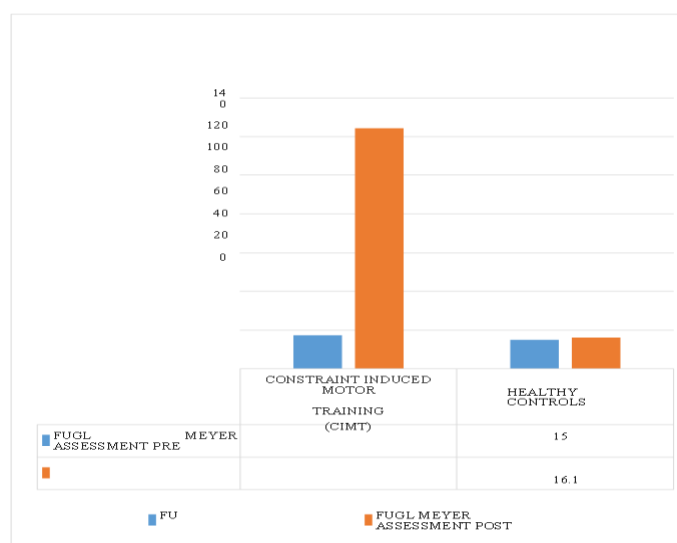
Statistical analysis was performed by using IBM SPSS software for windows version 25. The results are calculated using <0.0001 (P VALUE) level of significance. Paired t test used in the analysis of pre-test and post test values of both the groups and the independent t test is used in the analysis of post session values of the groups.

Table 1: Group A.

OUTCOME MASURES	MEAN		STANDARD DEVIATION		t VALUE	P VALUE
	PRE	POST	PRE	POST		
FUGLMEYER ASSESSMENT	17.20	24.40	4.80	5.27	10.3445	0.0001

Table 2: Group B.

OUTCOME MEASURES	MEAN		STANDARD DEVIATION		t VALUE	P VALUE
	PRE	POST	PRE	POST		
FUGL MEYER ASSESMENT	15.00	16.10	4.71	4.41	3.4980	0.0067



GRAPH: comparison of pre and post Fugl Meyer scores for both groups.

RESULT

The result of the study indicates that subjects in both groups improved in post test and also we found that the subjects who underwent constraint induced movement therapy in group A showed better results than the healthy control group B. In group A the pre and post Fugl Meyer scores were 17.20 and 20.40. In group B the pre and post Fugl Meyer scores were 15.0 and 16.10. By comparing 2 groups we concluded that motor function improved in group A when compared to group B.

DISCUSSION

The present study investigated the efficiency of the control induced movement therapy to improve the motor function of the upper extremity in post stroke patients. The motor function of the upper extremity was assessed using the Fugl Meyer assessment as the primary outcome. In comparison of pre and post session values of outcome measures shows a significant improvement in both groups but, among them GROUP A (CIMT) showed highly significant improvement in post stroke patients. **D.M Morris et al.**, stated that constraint induced therapy has been effective in improving upper extremity function in stroke. The approach has multiple components and sub components that interact together to produce the positive outcomes realized by patients. **Annett kunkel et al.**, suggested based on the large effects produced by constraint induced movement therapy it should also be applied to acute stroke to avoid completely the development of chronic motor deficit. **Steven L wolf et al.**, proved that among patients who had stroke attack with 3 to 9 months show significant and clinically relevant improvements in upper extremity motor function. **Gert kwakkel et al.**, stated that constraint induced motor therapy are considered the most effective treatment regimens in physical therapy to improve outcome of upper paretic limb.

CONCLUSION

This study was investigated with 20 post stroke patients. Statistical analysis was done using SPSS software version 25. There were significant difference between pre and post test results in terms of Fugl Meyer assessment in both groups and also showed the level of significance p value (<0.0001). This study concludes that the Constraint induced movement therapy as highly significant protocol in improving motor function of the upper extremity in post stroke patients.

REFERENCES

1. Constraint-induced movement therapy after stroke
Gert Kwakkel, Janne M Veerbeek, Erwin E H van Wegen, Steven L Wolf.
2. Incidence & prevalence of stroke in India: A systematic review
Sureshkumar Kamalakannan¹, Aashrai S. V. Gudlavalleti², Venkata S. Murthy Gudlavalleti¹, Shifalika Goenka³ & Hannah Kuper¹.

3. Hatano S. Experience from a multicentre stroke register: a preliminary report. *Bull World Health Organ*, 1976; 54: 541–53.
4. Taub E, Miller NE, Novack TA, Cook EW III, Fleming WC, Nepomuceno CS, et al. Technique to improve chronic motor deficit after stroke. *Arch Phys Med Rehabil*, 1993; 74: 347-54.
5. Taub E, Crago JE, Uswatte G. Constraint induced movement therapy: a new approach to treatment in physical rehabilitation. *Rehabil Psychol*, 1998; 43: 152-70.
6. Wolf SL, LeCraw DE, Barton LA, Jann BB. Forced use of hemiplegic upper extremities to reverse the effect of learned nonuse among chronic stroke and head-injured patients. *Exp Neurol*, 1989; 104: 125-32.
7. Corbetta D, Sirtori V, Castellini G, Moja L, Gatti R. Constraint-induced movement therapy for upper extremities in people with stroke. *Cochrane Database of Systematic Reviews*, 2015; 10. Art. No.: CD004433.)