

# SHORT COMMUNICATION

## Modified Cognitive Remediation Therapy for Chronic Schizophrenia: An Outpatient Clinic Based Study

<sup>1</sup>SUSMITA HALDER,<sup>2</sup> AKASH KUMAR MAHATO

**Abstract:** Cognitive remediation therapy (CRT) is an effective intervention for cognitive deficits in schizophrenia. The therapy often requires customization depending on cognitive and socio-demographic profile of the client. The study describes a CRT module for chronic schizophrenia modified to be more inclusive of available resources, assistance of care givers and use of computer based tasks and hypothesized to be effective in outpatient set up. Five chronic patients with schizophrenia having impaired attention, memory and executive functions underwent the modified CRT for a period of 6 months in an outpatient clinic and were followed up for one year. Improvement in the cognitive deficits as well as functional deficits in terms of disability level was found that were sustained in follow-up at 1 year. CRT gives ample scope of modification in **outpatient** and is effective in improving cognitive deficits in chronic patients with schizophrenia.

**Keywords:** Modified cognitive remediation therapy, schizophrenia, chronic, urban outpatient

### I. INTRODUCTION

Cognitive impairment has gradually established as one of the core areas for therapeutic intervention in schizophrenia. Cognitive remediation for schizophrenia has been defined as “a behavioral training based intervention that aims to improve cognitive processes (attention, memory, executive function, social cognition or metacognition) with the goal of durability and generalization” [1]. Cognitive remediation therapy (CRT) is predominantly in use since 1990’s with huge literature to support its implication in improving cognitive and real world outcomes in patients with schizophrenia [2,3,4] and other mental illness [5,6]. Structured CRT protocols for schizophrenia though are available [7], the protocols may not suit all participants considering socio-cultural and educational background. Thus CRT models have been customized globally to suit needs of the clients and reported to be effective at different levels. There are studies on CRT from India [8,9] but reports from outpatient clinics are few. Certain pilot studies of home based CRT are reported [10,11]. Most of these studies have documented improvement in cognitive deficits in their sample. However, the efficacy of these modified cognitive remediation programs across different population and different setup is yet to be explored. It could be argued that efficacy of a CRT module would be uniform across different settings. However, major modifications in the module warrants

---

<sup>1</sup>Amity Institute of Behavioural Health and Allied Sciences, Amity University Kolkata Major Arterial Road, Action Area II, Newtown Kolkata. 700135, shalder@kol.amity.edu

<sup>2</sup>Amity Institute of Behavioural Health and Allied Sciences, Amity University Kolkata Major Arterial Road, Action Area II, Newtown, Kolkata. 700135

research on efficacy of such modules to make them more evidence based and bring uniformity in techniques employed in these modules.

## II. METHOD

A CRT module, effectively used with over 15 in-patients with chronic schizophrenia in a tertiary care setup<sup>[12]</sup> was further modified for patients attending an urban outpatient mental health clinic from Kolkata. Patients with schizophrenia (n=5) and referred for psychological intervention were selected using purposive sampling to exclude patients with active psychotic symptoms but with demonstrable deficits in attention, memory and executive functions to undergo the modified CRT for 6 months. The Disability levels and Cognitive functions in domains of attention, memory and executive functions were assessed at baseline and followed up at 1 year.

### *Socio-demographic and clinical details of patients:*

All patients came from urban middle socioeconomic background. Two were female, aged 28 and 31 years respectively. Three male patients were of age 30, 35 and 38 years respectively. All were graduates. Three of the patients were currently unemployed; one was housewife and another into family business. Illness duration of all patients was above 5 years and all were on maintenance dosages.

### *2.2 Overall process of the modified CRT:*

- I. Baseline assessment of disability, psychopathology and cognitive functions was done.
- II. Psychoeducation was imparted to all patients. It has proven efficacy in improving treatment compliance, maintaining follow up as well as reducing burnout in patients and their caregivers with disabling illness. Patients were explained in simple language regarding sign and symptoms of schizophrenia as well as cognitive difficulties in schizophrenia and how it was affecting their daily functioning. Role of CRT in improving the functions was explained, as the techniques were unconventional for the patients who were mostly aware of pharmacotherapy in general. Patients were explained that they needed to continue their existing pharmacotherapy treatment and the CRT was an adjunct treatment to enhance the treatment outcome.
- III. Before start of the task, the patients were introduced to the CRT tasks with demonstration and explained its rationale.
- IV. Patients were engaged in the module with 01 session per week, spanned over 6 months. Average number of sessions was 25.
- V. The CRT consisted of a series of exercises that were hierarchically ordered according to increasing cognitive complexity and progressed in predetermined order from training the patients on basic and simple stimuli to more complex stimuli.
- VI. The exercises were formulated considering the educational and socio-demographic background of the patients so that they were feasible to follow at home under supervision.
- VII. The modules of the modified CRT focused on domains of Attention, Memory and executive functions; specifically targeting on sustained attention, selective attention, scanning ability, verbal memory, immediate and delayed memory, recall, planning and organizational capabilities. The CRT tasks predominantly included: *Letter*

*Cancellation, Grouping of Cards, Joining Dots, Reading Newspaper, Object Recall, Picture Recognition, Learning Word List, Story Telling, Category Matching, Correcting The Order, Making Daily Schedule and 'To Do List', Problem Solving and Extensive Training on Wisconsin Card Sorting Test.*

VIII. Home assignment and supervision: The tasks were advised to be done as home assignment too as part of structured daily routine with tracking of time. A specific family member was assigned to monitor the activity and compliance at home. On every subsequent session feedback was taken, and repeat assessment was done to check mastery over the task. As the subject gained mastery over old tasks, new tasks were introduced gradually.

IX. CRT sessions were terminated at 6 month; however patients continued the tasks at home and followed up once in a month. As they developed mastery over the task, engaging in more complex cognitive task within a structured daily activity schedule was advised.

X. Follow up was done at 1 year.

**Table 1: Modifications done in the CRT module <sup>[12]</sup> for Outpatient setup:**

	<b>Inpatient</b>	<b>Outpatient</b>
Total Duration	3 months	6 months
Frequency of session	5 days/ week	1 day/ week
No. of sessions (average)	50	25
Follow up	3 months	1 years
Tasks	Paper pencil tasks	Additional use of computers along with paper pencil tasks
Supervision	Hospital staff	Family members
Scope	Restricted to hospital	Open to real life situations

### **III. DISCUSSION**

It may appear apparent that CRT modules effective in tertiary care setting would be effective in outpatient setting too. However, there are certain limitations as well as positive feasibilities in both situations which demand modification in the module and affect outcome. As the patients stayed with family and daily sessions were not feasible, the module was modified on several fronts (Table 1) considering the resources available with individual patients and nature of tasks. The frequency of sessions was reduced to 1 session per week, spanned for 6 months. However, daily home assignment under supervision was ensured. Despite less number of individual sessions, regular home assignments made the modified CRT feasible and effective in outpatient setting.

Improvement in social and occupational functioning was reported by caregivers at follow up. Involving caregivers for monitoring and supervision in CRT is supported by previous studies <sup>[11]</sup> and aptly applied in the current CRT module.

Previous studies <sup>[2]</sup> stress that cognitive remediation modules need to be personalized on 'what works best for whom' principle and accordingly done in the current module too. There was a scope of using computer related

tasks in addition to paper pencil tasks with the patients in current module, as all the patients had good educational background and some with previous work experience too. Patients were involved in computer based CRT tasks, as original CRT models predominantly include computer based tasks. They engaged in regular tasks on computer, like typing and making word files, writing on some topic from newspaper, keeping accounts on excel, making and updating resume and making 'to do list'. Individual involvement in computer tasks though varied for patients. Previous studies do suggest better outcome of cognitive remediation in clients of younger age and with higher education level <sup>[13]</sup>, as in this study; however it does not reduce the effectiveness of the module considering illness duration of all patients was more than 5 years.

The feasibility to involve caregivers for supervision was a big benefit. It is important that effect of CRT do not limit to cognitive test scores and the improvements generalize in real world daily situations <sup>[14]</sup>. Accordingly, the CRT tasks in the module were chalked out with a scope of involving the patients in additional occupational activities; who were looking for better and full time occupational engagement, and could be engaged in part time occupational engagements. One of the advantages of outpatient setup was patients having more real life situations to deal with and scope of engaging in real occupational setting. It also helped in progress monitoring by caregivers and aided in compliance to the sessions.

Follow up at completion and another 6 months revealed sustained improvement in disability scores, attention, memory and executive functions of the patients. In addition to improvement in the cognitive domains, patients reported increased sense of self mastery, improved social interaction, independent engagement in daily activities, and better prepared for vocational reengagement.

It could be concluded that the modified CRT was effective in improving the cognitive functions and functional deficits of chronic patients with schizophrenia and the effects sustained at 1year follow up. Inclusion of Psychoeducation in the module appears to be an effective strategy. Despite reduced number of sessions, a regular follow up, proper monitoring and supervision from family, addition of computer based tasks, and scope of relating with real world setting facilitated the outcome of CRT in outpatient setting. Generalization of the improvements reflected in reported increased sense of self mastery, improved social interaction, independent engagement in daily activities, and better prepared for vocational reengagement by patients at one year follow up.

## REFERENCE

1. Cognitive Remediation Experts Workshop (CREW), Florence, April 2010. In, Barlati S, Deste G, De Peri L, Ariu C, Vita A. Cognitive remediation in schizophrenia: current status and future perspectives. *Schizophr Res Treatment*. 2013; 2013:156084. doi: 10.1155/2013/156084. Epub 2013 Dec 17. PMID: 24455253; PMCID: PMC3877646.
2. Bowie C R. Cognitive remediation for severe mental illness: state of the field and future directions. *World Psychiatry*. 2019 18: 274-275. doi:10.1002/wps.20660
3. Wykes T, Spaulding WD. Thinking about the future cognitive remediation therapy--what works and could we do better? *Schizophr Bull*. 2011 Sep; 37 Suppl 2 (Suppl 2):S80-90. doi: 10.1093/schbul/sbr064. PMID: 21860051; PMCID: PMC3160118.

4. Kurtz MM. Cognitive remediation for schizophrenia: current status, biological correlates and predictors of response. *Expert Rev Neurother*. 2012 Jul;12(7):813-21. doi: 10.1586/ern.12.71. PMID: 22853789.
5. Kim EJ, Bahk YC, Oh H, Lee WH, Lee JS, Choi KH. Current Status of Cognitive Remediation for Psychiatric Disorders: A Review. *Front Psychiatry*. 2018 Oct 1; 9:461. doi: 10.3389/fpsy.2018.00461. PMID: 30337888; PMCID: PMC6178894.
6. Halder S, Mahato AK. Neurocognitive psychotherapy for adult attention deficit hyperactive disorder. *Ind Psychiatry J*. 2009 Jul; 18(2):113-6. doi: 10.4103/0972-6748.62271. PMID: 21180488; PMCID: PMC2996211.
7. Barlati S, Deste G, De Peri L, Ariu C, Vita A. Cognitive remediation in schizophrenia: current status and future perspectives. *Schizophrenia Research and Treatment*. 2013; 2013:156084. DOI: 10.1155/2013/156084.
8. Hegde S. A review of Indian research on cognitive remediation for schizophrenia. *Asian J Psychiatr*. 2017 Feb; 25:54-59. doi: 10.1016/j.ajp.2016.10.001. Epub 2016 Oct 11. PMID: 28262174.
9. Deshpande SN, Bhatia T, Mohandas E, Nimgaonkar VL. Cognitive remediation in schizophrenia-The view from India. *Asian J Psychiatr*. 2016 Aug; 22:124-8. doi: 10.1016/j.ajp.2016.06.011. Epub 2016 Jun 24. PMID: 27520912; PMCID: PMC5445020.
10. Hegde S, Rao SL, Raguram A, Gangadhar BN. Addition of home-based cognitive retraining to treatment as usual in first episode schizophrenia patients: a randomized controlled study. *Indian J Psychiatry*. 2012 Jan; 54(1):15-22. doi: 10.4103/0019-5545.94640. PMID: 22556432; PMCID: PMC3339213.
11. Kumar D, Ashwini K, Hegde S, Prasanna L, Joseph B, Bose A, Nawani H, Bharath RD, Varambally S, Venkatasubramanian G, Gangadhar BN. Caregiver assisted home-based cognitive remediation for individuals diagnosed with schizophrenia: A pilot study. *Asian J Psychiatr*. 2019 Apr; 42:87-93. doi: 10.1016/j.ajp.2019.03.010. Epub 2019 Mar 21. PMID: 30981943.
12. Halder S, Mahato A K. Cognitive remediation therapy in chronic schizophrenia. In, *Chronic Mental Illness and the Changing Scope of Intervention Strategies, Diagnosis, and Treatment*. Editor Barre V P. IGI Global Publications. Pennsylvania. 2016 (292-307). ISBN13: 9781522505198. DOI: 10.4018/978-1-5225-0519-8
13. Lindenmayer JP, Ozog VA, Khan A, Ljuri I, Fregenti S, McGurk SR. Predictors of response to cognitive remediation in service recipients with severe mental illness. *Psychiatr Rehabil J*. 2017 Mar; 40(1): 61-69. doi: 10.1037/prj0000252. PMID: 28368180.
14. Medalia A, Choi J. Cognitive Remediation in Schizophrenia. *Neuropsychol Rev*. 2009, 19, 353. <https://doi.org/10.1007/s11065-009-9097-y>