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Cognitive-Behavioral Therapy (CBT) Versus Cognitive Retraining (CR) in Depression

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Abstract

Mood disorders are recurrent or episodic with significant cognitive deficits and incomplete recovery. Cognitive behavior therapy (CBT) has been a well-established evidence-based intervention, and Cognitive retraining (CR) is emerging to reduce cognitive deficits by application of techniques that improve attention, memory, and/or executive functions that enhance psychosocial functioning. **Method:** The present study compared CBT and CR delivered as independent interventions as well as combined with medicines employing pre-post intervention and experimental research design. Outcome measures were Beck Depression Inventory (BDI-II), Metacognitive Questionnaire (MCQ30), World Health Organization Quality of Life- Brief (WHOQOLBref), and Global Assessment of Functioning (GAF). **Results:** CBT group statistically had highest QOL supported by environment and global functioning. The change in mean scores on outcome measures was greater for CR groups. **Conclusion:** CR with or without medicine is a feasible treatment option when CBT promulgation is inhibited by patient, therapist, or environmental variables.

Keywords: CBT, CRT, depression, metacognition, QoL.

1. Introduction

Depressive disorders are recurrent or episodic depending upon the symptom's severity, persistence, and dysfunction caused by the illness. Distinguishing between the different grades of severity in depression; three grades of mild, moderate, and severe, have been specified (World Health Organization, 1982). However, it rests upon a clinical judgment as the grade or severity is determined by the number, type, and severity of the symptoms presented in a patient. Lifetime prevalence estimates of mood disorders are 20.8% and the median age of onset is 30 years (Kessler et al., 2005). Many persons are disabled with depressive disorders as complete inter episode complete recovery is rare and usually characterized by the residual symptoms. There is sufficient literature to highlight the role of cognitive deficits in the poor functioning of patients contributing to frequent relapses (Manove & Levy, 2010; Monkul et al., 2007;). Cognitive deficits are well known to have a significant role in clinical as well as functional outcomes, these devolve

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the cognitive triad and socio-occupational dysfunction thwarting the complete recovery (Kennedy et al., 2007; Mehta et al., 2014). The cognitive deficits have been further linked with increased rumination, a characteristic of depressive disorders (Whitmer & Gotlib, 2013). The narrowing of cognitive focus due to rumination, identified as a cognitive attentional syndrome (CAS), contributes to the depressogenic cognitions and is mediated by dysfunctional metacognitive beliefs (Hagen et al., 2017; Jelinek et al., 2017).

Attention is the most elementary cognitive function that is compromised in a state of distress, and lack of attention inhibits the utility of contextual factors and therefore the interpretations are circled by the negative view of self, others, and the future (Zetsche et al., 2012). This type of self-absorption justifies the attention and self-confirmatory biases reinforced by positive dysfunctional metacognitive beliefs (Huntley & Fisher, 2016). Whereas the negative beliefs center around the helplessness and persistence of maladaptive coping without any hope to adopt the adaptive coping to change the situation or resulting consequences.

There are potent treatments available for depressive disorders but these are not curative and only symptomatic management is viable. The advancements in cognitive theory identified distorted thinking as a characteristic of depression. The earliest use of the cognitive model was rational-emotive therapy, developed by Ellis who attributed the development of depression to the presence of absolute, rigid rules and failure to live up to these expectations leading to depression. Further, Beck emphasized the standardization of the treatment by combining the cognitive model with behavioral approaches and the submission of the intervention to scientific evaluation (Hofmann et al., 2012). Cognitive therapy (CT), commonly known as cognitive behavior therapy (CBT), and variants are now the most researched forms of psychotherapeutic interventions. Since the advent of third-wave therapies, the role of mindfulness and attentional training programs have been highlighted in the literature (Batmaz et al., 2021; Öst, 2008). Both these techniques (mindfulness and attentional training) emphasize attention regulation, that is, reducing the focus on internal experiences by being mindful. This, reduced focus, then alters the cognitive processes resulting in symptom reduction and boosted functioning (Ramel et al., 2004; Sharpe et al., 2010).

Cognitive retraining (CR) is a form of behavioral intervention that aims to reduce cognitive deficits by application of techniques and procedures that improve attention, memory, language, and/or executive functions by utilizing a variety of manual as well as computerized exercises or programs (McGurk et al., 2007; Wykes et al., 2011). The neuro-cognitive domains which are usually considered for retraining include: attention and concentration retraining, memory retraining, visual and spatial perceptual abilities, language and verbal skills, organizational skills retraining and executive skills, social skills, and metacognitive skills. Despite this, no rigorous attempt has been made to incorporate cognitive retraining interventions in patients with depression. However, in the last decade, there has been an increase in the number of studies, meta-analyses, and reviews, which identify the cognitive deficits, associated with mood disorders (Evans et al., 2014). CBT aims to alter the content while mindfulness-based interventions alter the cognitive process, but CR mediates both content and process through enhanced cognitive functions. There has been adequate literature highlighting effectiveness of cognitive retraining approaches in various psychiatric conditions and non-psychiatric conditions (Buhlmann et al., 2006; Stevenson et al., 2002). However, these findings have been inconclusive due to the limitations in methodology still cognitive retraining is an emerging treatment (Churchill et al., 2013; Öst, 2008). The current study attempts to deliver cognitive retraining in patients with unipolar depression and compare its effect with CBT. The study will have expansive clinical implications, as it will provide alternative to CBT. CR can be a feasible option that can address the barriers (Intelligence, sophistication, delivery by a specialist, etc.) in delivery of CBT.

2. Methods

2.1 *Participants*

The study employed intervention and experimental research design controlled by having four groups (Singh, 1998). Eighty participants were recruited from the Behaviour Therapy (BT) unit of the outpatient department (OPD) of Psychiatry of a government tertiary care teaching hospital located in an urban area. The non-probability sampling method of convenience sampling was used to recruit the participants who were randomly assigned to 4 groups namely; Cognitive Behavior Therapy (CBT), CBT along with pharmacological treatment (CBTm), Cognitive Retraining (CR), and CR along with pharmacological treatment (CRm; Singh, 1998). The patients with a diagnosis of depressive disorder were referred for psychotherapy by the Psychiatrist to the BT Unit. After entering in the BT record keeping register, those with odd numbers were assigned to cognitive-behavioural groups (CBT and CBTm) and even-numbered to cognitive retraining groups (CR and CRm). Further, the odd-numbered ones put on medication were assigned to CBTm while those referred for only therapy were assigned to CBT group. Similarly, even-numbered medicines were put to CRm groups and otherwise.

Males and females between 20-45 years age with a minimum of 10 years of formal education, having clinical diagnosis of depressive disorder were included. Whereas those with psychiatric co-morbidity, severe depression, suicidality, clinical evidence of intellectual disability, suffering from any terminal illness, neurological condition, history of head injury, or having received electro-convulsive therapy (ECT) or any evidence-based psychotherapy currently or in the last 6 months, practicing yoga/meditation/art of living currently or in last 6 months were excluded.

2.2. *Instruments*

2.2.1 *Mini-International Neuropsychiatric Interview (MINI 7.0.2; Sheehan et al., 1998)*

It is a short structured diagnostic interview developed for DSM-III-R and ICD-10 psychiatric disorders. MINI 7.0.2 is a revised version for both DSM-5 and ICD-10 diagnostic criteria. It assesses the most common psychiatric disorders.

2.2.2 *Beck Depression Inventory (BDI-II; Beck et al., 1996)*

Assesses the severity of depression using 21 items on 4-point Likert scale with scoring ranging from 0 to 3. The total maximum score comes up to 63 and requires 5 to 10 minutes to complete.

2.2.3 *Metacognitive Questionnaire (MCQ30; Wells and Cartwright-Hatton, 2004)*

It assesses the metacognitive model of psychological disorders. It includes 30 items rated on 4-point Likert scale from 1 to 4. The subscales assessing metacognitive beliefs include; positive beliefs about worry, negative beliefs about the uncontrollability of thoughts and danger, beliefs about the need to control thoughts, cognitive confidence, and cognitive self-consciousness. It takes around 25 to 30 minutes to complete.

2.2.4 *World Health Organization Quality of Life- Brief (WHOQOLBref; Saxena et al., 1998)*

It's a 26-item shorter version of the WHOQOL-100. It has four domains of quality of life: (i) physical; (ii) psychological; (iii) social relationships; (iv) environment. It enquires about the quality of life in the 'last 2 weeks' rated on a 5-point (0-5) scale. The scale is useful for clinics with a high patient load as it takes only 5-8 minutes to complete.

2.2.5 *Global Assessment of Functioning (GAF; Blacker, 2000)*

It is Axis V of the internationally accepted Diagnostic and Statistical Manual of Mental Disorders, fourth edition text revision. It scores the severity of psychopathology and the degree of psychological, social, and occupational functioning on a 10-point interval scale. It is a generic measure of how a patient is doing than a diagnosis-specific scoring system.

2.3 *Procedure*

The Ethics Committee of the Institution approved the study (GMCH/IEC/2019/316). The psychiatrists referred the patients of depressive disorders for psychotherapy to the Behaviour Therapy (BT) unit of the department. The researcher approached consecutive patients to seek consent to participate following declaration of Helsinki (World Medical Association, 2013). The researcher recorded the socio-demographic and clinical details of those who consented. Those included as per the defined criteria were administered MINI 7.0.2 for ruling out comorbid psychiatric disorders and for objective assessment of depressive disorders. Those who fulfilled the criteria for either major depressive episode (MDE) or recurrent depressive disorder (RDD) and had no psychiatric comorbidity were included. Likewise, researcher administered BDI-II; who scored 14-28 suggesting mild to moderate depression were included (Smarr and Keefer, 2011). Those with severe depression (score >28) were excluded and psychotherapy service was initiated for them. Once recruited in the study, pre-assessment was carried out for each participant on all the outcome measures namely; MCQ 30, WHOQOLBref and GAF.

Further, the appointment for therapy session was scheduled with each participant to be delivered in an individual face-to-face session. Those assigned to either CBT/CBTm groups were disseminated the session vise module of CBT displayed in Table 1 (Appendix). While CR was introduced to the respective participants with a standard set of instructions emphasizing the importance of improved brain functioning in reducing symptoms. Further, the process of weekly sessions and performing tasks at home monitored by a family member were explained. A face-to-face session was scheduled every 7th day as progress was made to a new module. In this manner, all six modules were delivered, and data were collected procedurally (Figure 1).

The incentive offered to all the participants was assistance in OPD registration and instant psychiatry consultation after bypassing the queue up to 6 months. On the other hand, those who had not been on any medication, they themselves were willing and motivated to be part of the study, but they were offered to be helped in OPD card registration up to 3 months in any OPD of the Hospital; also, they were informed treatment duration will be longer than the intervention study. Once the CBT or CR sessions were completed as per the module, the post-assessment was carried out for those who continued to visit OPD psychiatry excluding the dropped-outs. However, after the termination of the study, the patients continued to follow up in OPD Psychiatry for pharmacology and psychotherapy services.

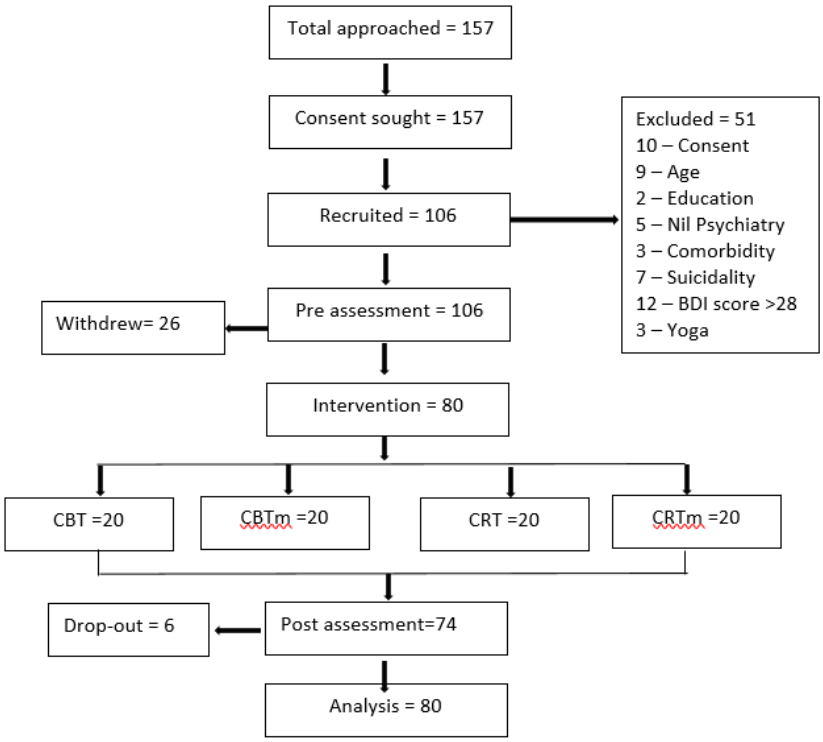

Figure 1. CONSORT Diagram

2.4 *Intervention*

The CBT module included ten sessions and was adapted by incorporating various techniques for the study (Freeman & Pretzer, 1990; Somers & Querée, 2007). Table 1 shows the scheme of the 10 sessions of CBT intervention. The tasks included in the 6-week module of CR were taken from the home-based CR module for schizophrenia developed for the Indian population by researchers at the National Institute of Mental Health and Neurosciences (NIMHANS; Hegde et al., 2012). The CR used in the current study comprised 42 sessions spread over six weeks utilizing 112 total tasks as described in Table 2.

2.5 *Data analyses*

The data were analysed using the software for statistics and data science Stata/IC version 16. The analysis of covariance (ANCOVA) calculated to control confounding variables such as diagnosis, number of episodes of depression, and duration of illness. Propensity score matching employed to overcome the limitation of purposive sampling by comparing each case to its nearest neighbor match (Austin, 2011). Cohen's *d* determined the effect size of these changes in response to the intervention (Sawilowsky, 2009). Multivariate analysis of variance (MANOVA) was computed to compare the differences in the dependent variables by comparing the four groups of treatment.

3. Results

The participant characteristics in all the four groups are shown in Table 3. For one-way MANOVA, assumptions were tested, and no significant outliers were found as Table 4 showed

the correlations among all the dependent variables were in a moderate range implying the assumption of MANOVA is tenable. The result of MANOVA yielded that there was a significant difference in all four groups; CBT, CBTm, CR, CRm, on the combined dependent variables (Pillai's trace=.979, F [36, 201] =2.70, p<.001, partial η^2 .326, observed power = 1.00). This implies there was a significant difference among all four treatments and concludes that participants' scores on outcome measures significantly differed based on the type of treatment they received. The effect size was large (η^2 >0.14). The observed power of 1.00 indicates that there was a 100% chance that the results would have come out significant and 33% (η^2=.326) of this variation is attributed to the treatment option.

Thereafter ANOVA was computed (Table 5). ANOVA was interpreted at .05 level of significance (Table 5). The main effects were significant for symptom severity (BDI-II, F [3,76] = 3.685, p<.05, partial η^2 =.127, observed power=.783); negative dysfunctional beliefs (NEG F [3,76] = 2.985, p <.05, partial η^2 =.105, observed power=.684); psychological (PSY F [3,76] = 2.939, p<.05, partial η^2 =.104, observed power=.676) and environment (ENV F [3,76] = 3.614, p<.05, partial η^2=.125, observed power=.775) factors of quality of life (WHOQOLBREF); and global functioning (GAF F [3,76] = 18.439, p<.001, partial η^2 =.421, observed power=.100). The effect sizes for ANOVA varied (Table 5). The small effect size for symptom severity revealed that 13 % of the variance in symptom severity (η^2=.127) was accounted for by the type of treatment and there would have been 78% chances for this variation. Similarly, small effect sizes were observed for negative dysfunctional beliefs and psychological and environmental factors of QOL with 10%, 10%, and 13% of the variance respectively that accounted for differences in treatment. The observed powers imply that 68%, 68%, and 77% chances that the result would be significantly different for all four group analyses for these dependent variables respectively. The large effect size was seen for global functioning and 42% of the variance could be accounted for differences in treatment groups, and 100% chance that results would have differed on group analysis.

Lastly, posthoc comparisons, to evaluate the pairwise differences among group means were conducted (Table 6). Tests revealed significant pairwise differences on symptom severity (p < .05) and psychological QOL (p<.05) between CBTm and CRm; environment (p<.05) factor of QOL between CBT and CR; and global functioning (p<.001) between CBT and CBTm as well as between CBT and CR. Upon observing the mean scores, participants in CRm group had the least severity of depression and the highest score on psychological QOL. While CBT sample had the highest QOL supported by environment factor and the highest global functioning.

4. Discussion

There were significant differences in the outcome measures in response to the treatment options. The participants in CRm group had shown the least severity of depression and the highest psychological QOL. While CBT group had the highest QOL supported by the environment and the highest global functioning. However, the mean scores of dysfunctional metacognitive beliefs were lower in CR/CRm groups than CBT/CBTMs groups except for the need for control which is primarily a characteristic of the anxious or worrisome thinking as seen in anxiety or compulsive disorders than a depressive cognitive phenomenon (Wells, 2009). Though these differences were not statistically significant they account for the medium effect size (η^2≥0.06), excluding the need to control thoughts, and cognitive confidence. CBT has been the gold standard treatment for depressive disorders, though some of the comparative studies show third-wave therapies to be superior but most of the studies conclude CBT to be similarly effective (O'Connor et al., 2018; Samaan et al., 2021). Third-wave therapies are considered an advancement in how fMRI was the next step after MRI, as these focus on higher-order processes of human functioning such as metacognition, meta-emotions, etc. The advances in science have been leading to the unfolding neural basis of all human behaviors and cognitive functions to be at the core of all

cognitive processes, including cognitions and metacognitions (Papleontiou-louca, 2003; Shimamura, 2000). The discoveries of neuropsychology have enlightened the professionals to understand the connections between behaviors and their corresponding brain areas, enhancing their knowledge of discretion as well as the plasticity of the brain. The findings have paved the way for decreasing suffering and increasing functioning through techniques that enhance brain functions (Edgar et al., 2009; Jeon et al., 2018). The improved attention, planning, organization, working memory result in enhanced problem solving and decision making that facilitates day-to-day functioning (Ball et al., 2002). The findings of the current study showed CR results were superior to CBT, few outcomes not being statistically significant though, but CR is known to mediate through decreased rumination and hence more attention or mental energy is available for listening, reading, planning the day and sequence of tasks which ultimately enhances day-to-day functioning providing a sense of worth and task completion leading to increased confidence (Hilt et al., 2014). This counters the cognitive triad and alleviates symptoms through enhanced functioning.

5. Conclusion

Cognitive retraining is an effective treatment and is a feasible option to enhance service delivery whenever there are barriers in delivery of CBT. The results of CR were promising but cannot be generalized due to limitations in methodology including small sample size, no neurocognitive outcome measure. The future studies can explore effectiveness of CR thru randomized control trials and comparative studies with third-wave therapies as well various other modes of CR itself.

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Appendix

Table 1. Scheme of weekly sessions of cognitive behaviour therapy (CBT) module in depressive disorders

Ss	Goal of session	Content of sessions
1	Psychoeducation	Introducing CBT. Informative model of psychoeducation Homework assigned to read brochures or pamphlets on depression. Explaining relationship among conation-affect-cognition (CAC). Summarize and terminate the session.
2	Initiate CBT	Feedback on homework and continue psychoeducation. Goal setting. Activity scheduling and guided imagery (GI) techniques. Homework- regular practice of GI and maintain record of activities followed. Summarize and terminate the session.
3	Introduce DTR	Feedback and Review. Psychoeducation continues Introduce dysfunctional or daily thought record (DTR). Homework assigned – GI practice, activity scheduling, and to maintain DTR. Summarize and terminate.
4	Cognitive errors	Feedback and Review. Psychoeducation continued using DTR and strengthening understanding of CAC. Discuss cognitive errors. Homework – GI practice, activity scheduling continued and to maintain DTR. Summarize and terminate.
5	Identify and label cognitive errors	Feedback and Review. Identifying and labelling of cognitive errors in DTR. Homework – GI practice, activity scheduling and to label in DTR. Summarize and terminate.
6	Cognitive restructuring	Feedback and Review. Identify cognitive errors in DTR and label. Use cognitive techniques to challenge the cognitive errors. HW – GI practice, activity scheduling, DTR labelling, cognitive technique reading Summarize and terminate.
7	Cognitive restructuring	Feedback and Review. Cognitive restructuring continued. HW – GI practice, activity scheduling, labelling, challenging and altering thought. Summarize and terminate.
8	Cognitive restructuring	Feedback and Review. Recognize barriers and techniques used in challenging of thoughts. Cognitive restructuring continued. HW – GI practice, activity scheduling, labelling, challenging and altering thought. Summarize and terminate.
9	Termination	Feedback and Review. Strengthen cognitive restructuring. Introduce termination of the study.
10	Termination	Feedback and Review. Summarize CBT process. Post-assessment carried out.

Ss: Sessions.

Table 2. Distribution of tasks of 6-week CR module

Wk	Domain	Tasks	Task description
1	Attention (Attn)	Number Connection (NC)	Participant connects numbers (1-50) in a sequence which are randomly presented in space in a box on an A4 sheet. The numbers increase thru week 1 to 3.
	Working Memory (WM)	Digit Sequencing (DS)	Two-digit numbers are presented and the participant is required to repeat immediately. The difficulty level has 2-digit numbers from 3 to 10.
	Mental Speed (MS)	Letter Symbol Substitution (LSS)	An A4 sheet had boxes split in two parts, upper half has an alphabet and lower half was left empty for the participant to match the symbol for each alphabet, given in a row on top the sheet, and pen it down (5 rows).
2	Attn	NC	As above (1-75).
	WM	DS	As above (3-10).
	MS	LSS	As above (10 rows).
3	Attn	NC	As above (1-100).
	Information processing (IP)	Grain Sorting (GS)	The task requires the participant to sort 2 types of grains (Beans and split chickpeas), A 100 gram amount of each grain was used.
	WM	Calculation (Cal)	Ten numerical problems are solved using addition, subtraction, division and multiplication.
4	Attn	Letter Cancellation (LC)	Participant cancels 2 letters appearing among randomly presented English alphabets on an A4 sheet (42 rows, 53 columns).
	IP	GS	As above (Green gram and rice).
	WM	Cal	As above (10 Problems).
5	Attn	LC	As above (42 Rows, 53 Columns).
	Planning (Pl)	Mazes (Mz)	Participant moves through two mazes presented in square of 9.53 cm each without lifting pencil avoiding alleys.
6	Attn	LC	As above (60 Rows, 60 Columns).
	Pl	Mz	As above.

Wk = week, cm = centimeters.

Table 3. Participant characteristics

Variable		CBT		CR	
		CBT	CBTm	CR	CRm
Age		28 ± 9.26	30.6 ± 9.21	27.1 (6.45)	30.35 (9.50)
Education (years)		15 ± 1.52	14.45 ± 1.67	15.4 (1.79)	14.65 (2.11)
Sex	Female	13 (65.0)	12 (60.0)	11 (55)	10 (50)
	Male	7 (35.0)	8 (40.0)	9 (45)	10 (50)
Diagnosis	MDE	14 (70.0)	6 (30.0)	11 (55)	11 (55)
	RDD	6 (30.0)	14 (70.0)	9 (45)	9 (45)
Episodes	0	14 (70.0)	6 (30.0)	11 (55)	11 (55)
	1	4 (20.0)	7 (35.0)	6 (30)	5 (25)
	2	2 (10.0)	7 (35.0)	3 (15)	4 (20)
Severity	Mild	9 (45)	5 (25)	4 (20)	6 (30)
	Mod	11 (55)	15 (75)	16 (80)	14 (70)
DOI (Months)		26.2 ± 22.04	50.9 ± 31.79	33.85 (36.24)	46.3 (71.78)
Number of sessions		9.8 ± .89	8.85 ± 2.08	111.05 (2.37)	109.75 (4.59)

MDE = major depressive disorder, RDD = recurrent depressive disorder, Mod = Moderate, DOI = duration of illness

Table 4. Pearson correlations, Means and SDs associated with outcome variables

Measures	1	2	3	4	5	6	7	8	9	10	11	12	M	SD
1BDI-II	1	-	-	-	-	-	-	-	-	-	-	-	7.50	6.11
2 MCQ30	.28*	1	-	-	-	-	-	-	-	-	-	-	46.34	12.32
3 POS	.19	.57**	1	-	-	-	-	-	-	-	-	-	8.05	2.33
4 NEG	.58**	.60**	.16	1	-	-	-	-	-	-	-	-	10.93	4.07
5 CC	.27*	.83**	.51**	.45**	1	-	-	-	-	-	-	-	8.09	3.29
6 NC	.24*	.85**	.57**	.42**	.67**	1	-	-	-	-	-	-	8.52	3.36
7 CSC	.02	.80**	.26*	.33**	.54**	.64**	1	-	-	-	-	-	11.14	4.30
8 PH	-.53**	-.35**	-.26*	-.43**	-.36**	-.35**	-.08	1	-	-	-	-	25.66	3.95
9 PSY	-.58**	-.20	-.20	-.46**	-.22*	-.18	.12	.68**	1	-	-	-	20.01	3.73
10 SR	-.47**	-.13	-.14	-.30**	-.15	-.16	.12	.57**	.68**	1	-	-	9.99	1.86
11 ENV	-.25*	.01	-.29**	.01	-.07	-.16	.18	.43**	.49**	.53**	1	-	27.98	5.17
12 GAF	.04	.24*	.14	.13	.15	.10	.19	.07	.10	.19	.27*	1	75.13	9.01

**p ≤.05. **p ≤.01. ***p ≤.001*

M = mean, SD = standard deviation, BDI-II = Beck depression inventory, MCQ-30 = metacognition questionnaire, POS = positive belief about worry, NEG = negative beliefs about uncontrollability and danger of worry, CC = cognitive confidence, NC = need for control, CSC = cognitive self-consciousness, QOL = World Health Organization quality of life brief, PH = physical, PSY =psychological, SR = social relations, ENV = environmental, GAF = global assessment of functioning.

Table 5. One-way ANOVA with outcome measure as dependent variable (DV) and treatment as independent variable (IV)

Measures	Levene's		ANOVAs			CBT		CBTm		CR		CRm	
	F(3,75)	*p*	F	*p*	η^2	M	SD	M	SD	M	SD	M	SD
BDI-II	2.73	.050	3.68	.016	.127	7.25	5.38	10.95	7.27	6.80	5.68	5.00	4.61
MCQ30	.23	.874	1.80	.155	.066	51.65	11.26	45.45	13.65	43.45	12.87	44.80	10.49
POS	2.51	.065	1.89	.138	.069	8.75	2.71	7.10	1.86	8.35	2.16	8.00	2.34
NEG	3.24	.027	2.98	.036	.105	12.25	3.61	12.15	4.44	10.10	5.01	9.20	1.96
CC	1.27	.290	.62	.605	.024	8.60	2.87	8.45	4.29	8.00	3.46	7.30	2.32
NC	.40	.753	.58	.631	.022	9.10	2.57	7.80	3.43	8.35	3.73	8.85	3.67
CSC	.74	.531	1.84	.147	.068	12.95	4.63	10.45	4.39	10.05	3.82	11.10	4.05
PH	.96	.417	2.39	.075	.086	26.40	2.84	23.70	4.29	26.00	4.04	26.55	4.04
PSY	1.77	.161	2.94	.038	.104	20.45	3.19	18.20	4.74	19.90	3.11	21.50	3.07
SR	1.71	.171	2.68	.053	.096	10.15	1.35	9.40	1.73	9.55	1.50	10.85	2.43
ENV	2.01	.120	3.61	.017	.125	30.80	4.20	27.50	5.09	25.75	3.77	27.85	6.28
GAF	1.70	.173	18.44	.000	.421	84.45	6.23	73.85	5.13	68.45	9.58	73.75	6.20

**p ≤.05. **p ≤.01. ***p ≤.001*

BDI-II = Beck depression inventory, MCQ-30 = metacognition questionnaire, POS = positive belief about worry, NEG = negative beliefs about uncontrollability and danger of worry, CC = cognitive confidence, NC = need for control, CSC = cognitive self-consciousness, QOL = World Health Organization quality of life brief, PH = physical, PSY =psychological, SR = social relations, ENV = environmental, GAF = global assessment of functioning.

Table 6. Mean differences in outcome measures between treatment groups

Measures	CBT vs CBTm	CBT vs CR	CBTm vs CRm	CR vs CRm
BDI-II	-.3.70	.45	5.95*	1.80
MCQ30	6.20	8.20	.65	-1.35
POS	1.65	.40	-.90	.35
NEG	.10	2.15	2.95	.90
CC	.15	.60	1.15	.70
NC	1.30	.75	-1.05	-.50
CSC	2.50	2.90	-.65	-1.05
PH	2.70	.40	-2.85	-.55
PSY	2.25	.55	-3.30*	-1.60
SR	.75	.60	-1.45	-1.30
ENV	3.30	5.05*	-.35	-2.10
GAF	10.60*	16.00*	.10	-5.30

**p ≤.05. **p ≤.01. ***p ≤.001*
BDI-II = Beck depression inventory, MCQ-30 = metacognition questionnaire, POS = positive belief about worry, NEG = negative beliefs about uncontrollability and danger of worry, CC = cognitive confidence, NC = need for control, CSC = cognitive self-consciousness, QOL = World Health Organization quality of life brief, PH = physical, PSY =psychological, SR = social relations, ENV = environmental, GAF = global assessment of functioning