

Effect of CBT on Metacognitive Beliefs in Depressive Disorders



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ABSTRACT

Metacognitive beliefs operate through cognitive attentional syndrome, where attention concentrated on negative automatic thoughts results in rumination. This perseverative thinking style manifesting in the form of rumination and worry intensifies depression. This study aims to assess the effect of cognitive behaviour therapy (CBT) on metacognitive beliefs, symptom severity, quality of life, and functionality. A pre-post study design comparing CBT-alone and CBT-with-medication was employed using purposive sampling to recruit 40 participants diagnosed with depressive disorders. All the participants received 10 sessions of CBT. Pre and post assessment measures were Beck Depression Inventory-II, Metacognitive Questionnaire-30, World Health Organization Quality of Life- Brief, and Global Assessment of Functioning. Paired t-test analysis revealed significant difference on outcome measures in both groups. Between-subject analysis revealed that the CBT-alone group was not significantly different in terms of improvement than CBT-with-medication group even when confounding variables were statistically controlled by way of testing analysis of covariance and propensity score match (nearest neighbour match).

Keywords: Cognitive behaviour therapy, metacognition, depressive disorders, metacognitive beliefs, depression, quality of life.

INTRODUCTION

Depressive disorders are recurrent or episodic with stressors often triggering individual episodes. Various grades of depression severity have been graded as mild, moderate, and severe (World Health Organization 1982). It calls for clinical judgment to determine such grades of severity as per number, type, and severity of symptoms the individual presents. Lifetime prevalence estimates of mood disorders are 20.8% and the median age of onset is 30 years (Kessler et al. 2005). A study conducted in India proclaimed that the overall prevalence of depression was 15.1% and, it affected females (3.0%) more than males (2.4%). Additionally, 13.7% lifetime prevalence for psychiatric morbidity was among those aged between 40-49 years, predominantly affected by psychotic, mood and neurotic and stress-related disorders (Gururaj et al. 2016, WHO 2017).

Beck's cognitive triad is a cardinal cognitive feature of depressive disorders (Freeman et al. 1990), with reference to dysfunctional thoughts about self, the others, and future that could worsen the course of or hamper recovery from a

depressive episode. Any stressor can activate dysfunctional thoughts during recovery, making complete remission rare (Halvorsen et al. 2014). According to the metacognitive belief model, it is not the thinking per se but the way an individual relates to these thoughts that cause or maintain depression. Metacognitive beliefs tend to operate through cognitive attentional syndrome (CAS), where attention is concentrated on negative automatic thoughts (NATs) fostering rumination; and rumination supplements NATs (Halvorsen et al. 2014, Normann et al. 2014), worsening the depressive state. Wells classified these dysfunctional metacognitive beliefs such as positive beliefs about worry, negative beliefs about uncontrollability and danger of worry, cognitive confidence, need for control, and cognitive self-consciousness (Wells 2009). The positive metacognitive beliefs breed rumination evaluating it as a coping mechanism that could lead to paramount harmful social and interpersonal consequences. Later, these consequences generate negative metacognitive beliefs about rumination (inducing worry and uncontrollability) inducing decreased cognitive confidence among individuals in depressive states (Halvorsen et al. 2014, Papageorgiou and Wells 2003).

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Metacognition, therefore, can be understood as an information processing system that monitors, interprets, evaluates and regulates content, and content organization processes (Flavell 1979, Papageorgiou and Wells 2003). An individual in the state of depression centres attention on NATs and continues to ruminate about negative experiences, events or emotions. This perseverative thinking style, inclusive of rumination and worry, gives rise to depression (Halvorsen et al. 2014).

CBT is an evidence-based therapy (EBT) for NATs and a gold-standard treatment to address NATs through cognitive restructuring, which consequently reduces relapses and improves functioning (Halvorsen et al. 2014). The third wave therapies, namely, the metacognitive therapy and acceptance and commitment therapy, manipulate dysfunctional thoughts (Jelinek et al. 2017), and metacognitive beliefs using increased attentional flexibility through mindfulness (Evans et al. 2008, Hofmann et al. 2010) whereas CBT addresses the very content of thoughts and not the dysfunctional metacognitive beliefs about these thoughts. Hence, interrogating the effect of CBT on dysfunctional metacognitive beliefs will be pivotal as well as to understand whether or not techniques such as guided imagery act as a mindfulness-based intervention. The researchers did not come across any Indian studies related to the effect of CBT on metacognition or dysfunctional metacognitive beliefs. The current study might be first in such direction attempting to enhance the understanding that existing mental health service delivery (CBT) in depressive disorders will be beneficial in addressing new aspects of human cognition (metacognitive beliefs).

METHOD

The study employed an experimental research design controlled by grouping, comparing pre-post intervention findings within and between groups (Singh 1998). Forty participants diagnosed with depressive disorder as per ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines (ICD10 CDDG) by WHO 1982 were recruited from the outpatient department (OPD) of Psychiatry of a government tertiary care hospital located in an urban area. The purposive sampling method was used to recruit the participants (Singh 1998). CBT group comprised of participants receiving only CBT whereas CBTM group had participants receiving CBT along with anti-depressants, i.e., selective serotonin reuptake inhibitor (SSRI). Twenty participants were recruited in each group as per the inclusion/exclusion criteria.

Inclusion and Exclusion Criteria

Participants between 20-45 years of age of both sexes, with a minimum 10 years of formal education, having a clinical diagnosis of depressive disorder were included. Whereas those

with psychiatric co-morbidities, severe depression, suicidality, clinical evidence of intellectual disability, or suffering from any terminal illness, neurological conditions, history of head injury, or having received electro-convulsive therapy (ECT) or any evidence-based psychotherapy currently or in last 6 months, practicing yoga/meditation/art of living currently or those to have done so in last 6 months were excluded.

Measures

Mini-International Neuropsychiatric Interview (MINI 7.0.2)

It is a short structured diagnostic interview developed by Sheehan and colleagues for DSM-III-R and ICD-10 psychiatric disorders. It assesses the 17 most common psychiatric disorders and has good reliability and validity when compared to other structured diagnostic interviews. Inter-rater reliability depicted thru kappa coefficients ranged from 0.88 to 1.0 and test-retest reliability with kappa coefficients values ranging between 0.76 and 0.93 (Lecrubier et al. 1997).

Beck Depression Inventory (BDI-II)

It assesses severity of depression, including a 4-point 21-item Likert scale with a scoring range from 0 to 3. The total maximum score can reach 63 requiring 5 to 10 minutes to complete (Beck et al. 1996). The internal consistency of BDI-II is reported around 0.9 and retest reliability between 0.73 to 0.96 (Wang and Gorenstein 2013)

Metacognitive Questionnaire (MCQ30)

It assesses the metacognitive model of psychological disorders. It includes 30 items, which are rated on a 4-point Likert scale from 1 to 4. The subscales assessing metacognitive beliefs include positive belief about worry, negative beliefs about the uncontrollability of thoughts & danger, beliefs about the need to control thoughts, cognitive confidence, and cognitive self-consciousness. It takes around 25 to 30 minutes to complete. The internal consistency of total score as well as of sub-scales using Cronbach's alpha ranged from 0.72 to 0.93 (Wells and Cartwright-Hatton 2004).

World Health Organization Quality of Life- Brief (WHOQOL-BREF)

It is a 26-item shorter version of the WHOQOL-100 with four domains on quality of life: (i) physical; (ii) psychological; (iii) social relationships and (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 clinical settings with a high patient load as it takes only 5-8 minutes to complete (Saxena et al. 1998). Cronbach's alpha values were 0.85 for psychological health, 0.73 for physical health, 0.73 for social relationships, 0.68 for environment (Oliveria et al. 2016).

Table 1. Course of Cognitive Behaviour Therapy (CBT) Module in Depressive Disorders

Ss	Goal of Session	Content of Sessions
1	Psychoeducation	Informative model of psychoeducation - imparting information on symptoms and dysfunction, prevalence, course and treatment options. Homework assigned to read brochures or pamphlets on depression. Summarize and terminate the session. Explaining relationship among cognition-affect-cognition (CAC). Conduct pre-assessment.
2	Initiate CBT	Recap with CAC. Feedback on homework and continue psychoeducation. Seeking consent for CBT. Goal setting. Deliver session of guided imagery (GI). Activity scheduling facilitated by environment. Homework - regular practice of GI and maintain record of activities followed. Summarize and terminate the session.
3	Introduce DTR	Review homework of previous session. Psychoeducation continues by explaining – rumination and negative automatic thought affecting mood and behaviour. Introduce dysfunctional thought record (DTR). Homework – GI practice, activity scheduling continued and to maintain DTR. Summarize and terminate.
4	Cognitive errors	Review homework of previous session. Discuss barriers in DTR, if any. Psychoeducation continued using DTR and its content to strengthen 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	Review homework of previous session. Identify cognitive errors in DTR and label. Homework – GI practice, activity scheduling and to maintain DTR. Summarize and terminate.
6	Cognitive restructuring	Review homework of previous session. Identify cognitive errors in DTR and label. Use cognitive techniques to challenge the cognitive errors. Homework – GI practice, activity scheduling continued, to maintain DTR and label cognitive errors in DTR. Summarize and terminate.
7	Cognitive restructuring	Review homework of previous session. Cognitive restructuring continued. Homework – GI practice, activity scheduling and practice challenging in new column in DTR. Summarize and terminate.
8	Cognitive restructuring	Review homework of previous session. Recognize barriers and techniques used in challenging of thoughts. Cognitive restructuring continued. Homework – GI practice, activity scheduling and continue challenging of thoughts in new column in DTR. Summarize and terminate.
9	Termination	Review homework of previous session. Strengthen cognitive restructuring. Introduce termination of the study.
10	Termination	Review homework on cognitive restructuring. Summarize CBT process. Post-assessment carried out.

Ss: Sessions.

Global Assessment of Functioning (GAF)

It is Axis V of the internationally accepted Diagnostic and Statistical Manual of Mental Disorders, fourth edition text revision (DSM-IV-TR). 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 (Kaplan and Sadock 1998).

Intervention

A module of ten CBT sessions was adapted incorporating various techniques for the study (Freeman et al. 1990, Somers and Querée 2007). The authors of the study finalised the content of 10 sessions. Table 1 schematizes the 10 sessions of intervention. CBT sessions were delivered by the first author, a licensed clinical psychologist with a working experience of more than 10 years, and pharmacological treatment was prescribed by the psychiatrist.

Procedure

The study has been approved by the Ethics Committee of the Institution. The psychiatrists referred the patients of depressive disorders to psychotherapy to the behaviour therapy unit of the department. The researcher approached consecutive patients to seek consent to participate following the Helsinki Declaration (World Medical Association 2013). The researcher recorded the socio-demographic and clinical details of those who consented. Those included as per 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 either major depressive episode (MDE) or recurrent depressive disorder (RDD) criteria and had no psychiatric comorbidities were included. Likewise, the researcher administered BDI-II, and those to score between 14-28 suggesting mild to moderate depression were also included (Smarr and Keefer 2011). Those with severe depression (score >28) were excluded and referred to psychotherapy. Once recruited in the study, those who have been referred only for CBT were assigned to the CBT group whereas those prescribed with SSRI were assigned to the CBTM group. The note was out in the file to keep the treating team informed. Each participant was pre-assessed for measures and – MCQ 30, and WHOQOLBref and GAF was carried out.

The researcher introduced every participant to CBT sessions once pre-assessment was complete. At the end of the 10th session of CBT, post-assessment was carried on measures: BDI-II, MCQ-30, WHOQOLBref and GAF. The study terminated and the participants continued to seek services in the OPD (Figure 1).

Data Analysis

Data was analysed using software for statistics and data science Stata/IC version 16. Descriptive statistics were computed for sociodemographic and clinical variables and scores of outcome measures. The difference between the two groups was computed using mean comparison tables; chi-square test for discrete variables and t-tests for continuous variables. The method of last observation carried forward (LOCF) was used for statistical analysis of the missing data of dropouts. Pre-post differences within groups were analysed using paired t-tests and independent t-test were used to compare the two groups. The analysis of covariance (ANCOVA) was used to control confounding variables such as diagnosis, number of episodes of depression, and the duration of illness. Propensity score matching was employed to overcome the limitation of purposive sampling by comparing each case to its nearest neighbour match (Austin 2011). Cohen's *d* determined the effect size of these changes in response to the intervention (Sawilowsky 2009).

RESULTS

Descriptive Statistics of Sociodemographic and Clinical Variables in Two Groups

The descriptive statistics was computed for sociodemographic and clinical variables. The two groups were matched on age, sex and education with no statistically significant ($p>0.05$) difference (see Table 2). However, the two groups differed significantly on clinical variables, namely, diagnosis, the duration of illness and the number of episodes. There was no significant difference in participation of therapy sessions.

Within-group Analysis of CBT and CBTM

The pre-post difference in scores on the outcome measures was very significant except for cognitive self-consciousness. Besides, CBTM group significant change in cognitive confidence. Cohen's *d* (see Table 3) unveiled larger effect size in CBTM group on negative beliefs about uncontrollability and danger of worry ($d=1.33$) value ranging from 0.33 to 4.15 indicating small to huge effect-range.

Between-group Analysis of CBT and CBTM

There was meaningful difference on positive belief about worry; physical health and global functioning whilst there was no significant difference as regards other measures (see Table 4). Disparities in clinical variables weakened the findings so ANCOVA was computed (see Table 5). The controlling of confounding variables, namely; diagnosis, duration of illness and number of episodes, also panned out meagre outcomes implying that CBT and CBTM produce parallel outcomes, which was verified when participants in groups were compared with their nearest match (see Table 5).

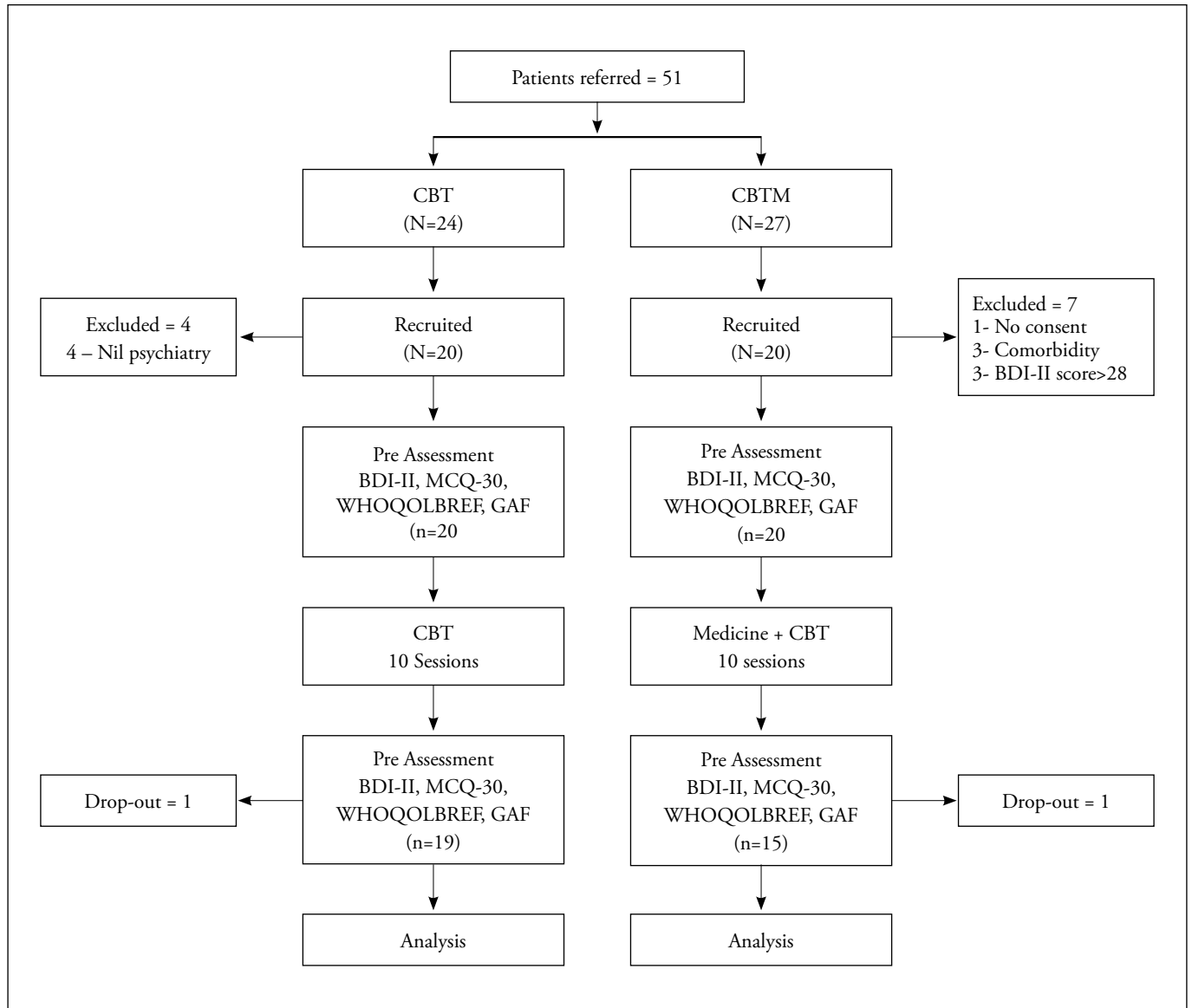


Figure 1. CONSORT diagram for participants throughout the study.

Table 2. Characteristics of Participants in Two Groups

Variable		CBT		CBTM		P
		M ± SD	Frequency (%)	M ± SD	Frequency (%)	
Age		28 ± 9.26	-	30.6 ± 9.21	-	0.379
Education (years)		15 ± 1.52	-	14.45 ± 1.67	-	0.283
Sex	Female	-	13 (65.0)	-	12 (60.0)	0.744
	Male	-	7 (35.0)	-	8 (40.0)	
Diagnosis	MDE	-	14 (70.0)	-	6 (30.0)	0.011*
	RDD	-	6 (30.0)	-	14 (70.0)	
Episodes	0	-	14 (70.0)	-	6 (30.0)	0.033*
	1	-	4 (20.0)	-	7 (35.0)	
	2	-	2 (10.0)	-	7 (35.0)	
Severity	Mild	-	9 (45)	-	5 (25)	0.185
	Mod	-	11 (55)	-	15 (75)	
DOI (Months)		26.2 ± 22.04	-	50.9 ± 31.79	-	0.006**
Number of sessions		9.8 ± .89	-	8.85 ± 2.08	-	0.069

p<0.05, **p<0.01, ***p<0.001, M: Mean, SD: Standard deviation, %: Percentage, MDD: Major depressive disorder, RDD: Recurrent depressive disorder, Mod: Moderate, DOI: Duration of illness.

Table 3. Outcome Measures at Pre-Post Treatment Differences Within-Groups (df=19)

Measure		CBT (n=20)						CBTM (n=20)							
		Pre-treatment		Post-treatment		t	p	d	Pre-treatment		Post-treatment		t	p	d
		M	SD	M	SD				M	SD	M	SD			
BDI-II		20.95	4.83	7.25	5.38	9.38	0.000***	2.68	21.75	3.81	10.95	7.27	7.12	0.000***	1.86
MCQ	Total	62.55	16.69	51.65	2.52	3.97	0.000***	0.76	54.9	15.67	45.45	13.65	4.67	0.000***	0.64
	POS	10.45	4.58	8.75	2.71	2.47	0.023*	0.45	8.5	3.24	7.1	1.86	3.39	0.003**	0.53
	NEG	15.65	4.29	12.25	3.61	5.79	0.000***	0.86	17.15	2.94	12.15	4.44	5.98	0.000***	1.33
	CC	10.2	3.47	8.6	2.87	2.71	0.014*	0.50	9.25	4.81	8.45	4.28	1.33	0.198	0.17
	NC	11.55	4.46	9.1	2.57	2.47	0.023*	0.67	9.15	3.28	7.8	3.43	2.38	0.028*	0.40
	CSC	14.7	4.88	12.95	4.63	1.82	0.083	0.37	11.4	4.75	10.45	4.39	1.56	0.135	0.21
QOL	PH	20.3	3.93	26.4	2.83	7.46	0.000***	1.78	19.6	3.27	23.7	4.29	5.00	0.000***	1.07
	PSY	14.85	3.60	20.45	3.19	8.45	0.000***	1.65	13.8	3.53	18.2	4.74	6.21	0.000***	1.05
	SR	8.9	1.62	10.15	1.35	3.05	0.006**	0.84	8.15	1.31	9.4	1.73	4.47	0.000***	0.81
	ENV	29.4	4.26	30.8	4.20	2.64	0.016*	0.33	25.2	5.19	27.5	5.09	3.38	0.003**	0.45
GAF		59.45	5.81	84.45	6.23	13.4	0.000***	4.15	57.55	5.74	73.85	5.13	12.58	0.000***	3.00

*p<0.05, **p<0.01, ***p<0.001, M: Mean, SD: Standard deviation, BDI-II: Beck Depression Inventory, MCQ30: 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 4. Outcome measures at pre-post treatment differences between groups (N=40, df =38)

Measures		M (SD) CBT	M (SD) CBTM	Mean Difference	Standard Error Difference	t	p	d
BDI-II		7.25 (5.38)	10.95 (7.27)	3.7	2.02	1.83	0.075	0.58
MCQ	Total	51.65 (11.26)	45.45 (12.74)	6.2	3.96	1.57	0.125	0.50
	POS	8.75 (2.71)	7.1 (1.86)	1.65	0.73	2.24	0.030*	0.71
	NEG	12.25 (3.61)	12.15 (4.44)	0.1	1.28	0.08	0.938	0.02
	CC	8.6 (2.87)	8.45 (4.28)	0.15	1.15	0.13	0.897	0.04
	NC	9.1 (2.57)	7.8 (3.43)	1.3	0.96	1.36	0.183	0.43
	CSC	12.95 (4.63)	10.45 (4.39)	2.5	1.43	1.75	0.087	0.55
QOL	PH	26.4 (2.83)	23.7 (4.29)	2.7	1.15	2.35	0.024*	0.74
	PSY	20.45 (3.19)	18.2 (4.74)	2.25	1.28	1.76	0.086	0.56
	SR	10.15 (1.35)	9.4 (1.58)	0.75	0.49	1.53	0.134	0.48
	ENV	30.8 (4.20)	27.5 (5.09)	3.3	1.48	2.23	0.031*	0.71
GAF		84.45 (6.23)	73.85 (5.13)	10.6	1.80	5.87	0.000***	1.86

*p<0.05, **p<0.01, ***p<0.001, M: Mean, SD: Standard deviation, BDI-II: Beck Depression Inventory, MCQ30: 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. Outcome measures at pre-post treatment differences between groups

Measure		ANCOVA			PSM-NNM		
		F	R ²	p	Coef	z	p
BDI-II		1.03	0.44	0.463	0.37	0.16	0.877
MCQ	Total	0.59	0.31	0.867	2.35	0.56	0.574
	POS	0.65	0.33	0.818	0.48	0.59	0.556
	NEG	0.73	0.36	0.747	1.11	0.85	0.395
	CC	0.60	0.32	0.854	1.13	1.41	0.157
	NC	0.43	0.25	0.960	0.59	0.50	0.619
	CSC	1.10	0.46	0.409	1.02	0.62	0.538
QOL	PH	0.87	0.40	0.606	3.60	2.96	0.003**
	PSY	1.06	0.45	0.445	1.54	1.23	0.220
	SR	1.16	0.47	0.364	0.80	1.24	0.215
	ENV	1.24	0.49	0.315	2.17	1.45	0.147
GAF		2.90	0.69	0.010*	9.72	3.67	0.000***

*p<0.05, **p<0.01, ***p<0.001, ANCOVA: Analysis of covariance, PSM-NNM: Propensity score matching using nearest-neighbour match, BDI-II: Beck Depression Inventory, MCQ30: 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

DISCUSSION

CBT is a popular approach to restructure erroneous cognitions by using various techniques (Freeman et al. 1990), to alleviate mood and improve functioning and it has been recommended as the first line of treatment in mild to moderate depressive disorders (Rupke et al. 2006). The within and between-group analyses revealed that CBT alone as well as CBT-with-medication had a significant effect on the reduction of symptoms, altering metacognitive beliefs and improving QoL and functioning. CBT is superior to other psychotherapies and might have a synergistic effect on patients receiving antidepressants and CBT further reduces the risk of relapse (Hofmann et al. 2012, Cuijpers et al. 2013). The between-group analysis showed no significant differences in outcome measures, indicating that CBT not only mitigate symptoms, and dysfunctional metacognitive beliefs but also amplify quality of life and functioning whether employed solely or in combination with pharmacological treatment.

The changes are significant in both groups but effect sizes are larger for CBT group than CBTM. This may be due the multiple causes such as CBT sample had more participants with first depressive episode whereas CBTM sample was composed of those with recurrent depressive episodes. Additionally, duration of illness was longer in CBTM sample than in CBT sample. Moreover, those who were not prescribed with medication by the psychiatrist were included in CBT group presuming lesser severity and better functioning. The current study examined the factors reducing QoL, which was found to improve with and functional recovery in QoL (Shumye et al. 2019, Park and Jung 2019) elevated by engaging in behavioural activation. The techniques of behavioural activation and guided imagery (GI) that encompass daily functioning and mood alleviation are beneficial. The larger effect size in CBT group than CBTM for quality of life is assessed by subjective views of the patient (Katschnig 2006) and research has shown that depression severity is correlated with QOL impairment (Jha et al. 2014), however, the changes in QOL are not fully correlated with variations in the severity of depression (Hirschfeld et al. 2002), and variations in QOL are very slow as compared to those in the severity of depressive symptoms (Trivedi et al. 2006). A meta-analysis looking at the efficacy of antidepressant medication in youth with depression showed that despite improvement in clinician-rated depression symptoms patients did not exhibit improvement in overall well-being and QOL (Spielmans and Gerwig 2014). Thus, quality of life is an independent variable and reduction in symptom-severity may not always improve quality of life. This implies that QoL improved to a greater extent in the CBT sample compared to the CBT with-medication group, which showed greater symptom reduction but lesser QoL improvement scores.

Within and between-group analyses within the scope of this study showed that CBT had a significant effect on the positive belief about worry (POS), negative beliefs about uncontrollability and danger of worry (NEG) and the need for control (NC). Metacognitions concerning uncontrollability and danger of worry show a positive relationship in clinically depressed individuals and positive beliefs about rumination are linked with a tendency to ruminate in both clinical and non-clinical samples in a state of low mood. Thus positive and negative beliefs about worry tend to be predictive as well as a by-product of depressive disorders (Huntley and Fisher 2016, Verplanken et al. 2007, Papageorgiou and Wells 2001). The decreases in confidence in cognitive functioning, a depressogenic by-product, might contribute to negative beliefs about interpersonal and social consequences of rumination as well as positive beliefs (Roelofs et al. 2007), concerning the need to ruminate to facilitate effective coping.

However, the within-group analysis showed no apparently significant effect on cognitive confidence (CC) and cognitive self-consciousness (CSC). This is also supported by western literature where CC was more closely linked to OCD (Janeck et al. 2003, Solem et al. 2009). Individuals with high persecutory thinking have low levels of cognitive self-consciousness leading to poor well-being. The moderation analyses showed the interaction between persecutory thinking and cognitive self-consciousness are predictors of psychological well-being while comparing groups of depressed psychotic and healthy controls (Valiente et al. 2012). Hence, cognitive self-consciousness may be attached to depression with psychotic symptoms than without.

The implemented CBT model was similar to Moritz's approach to metacognitive training as it targeted content of cognition, thereby, altering metacognitive beliefs. Whereas Wells's approach is similar to metacognitive training emphasizing the meta-level cognition and not content of cognition (Wells and Carter 2001). It might be possible that CBT, which incorporates GI or/and mindfulness-based technique, has a superior effect than CBT using only cognitive and/or behavioural techniques. Therefore, it is reasoned that CBT as well as anti-depressants not only address the content of cognitions but also is an effective intervention for meta-level beliefs.

Limitations

The study did not use any measures to assess rumination and dysfunctional thoughts. The intensity of rumination or the type of cognitive errors and its relation to metacognitive beliefs and outcomes still require exploration. The small sample size hindered the application of statistics to discover whether or not metacognitive beliefs mediate the improvement in terms of functioning and quality of life.

Implications of the study

CBT with or without medicine is an effective treatment for depressive disorders, altering cognitive content and meta-level cognitive beliefs resulting in symptom reduction and enhanced quality of life. The use of techniques targeting such components as cognition, affect and behaviour, result in a more promising outcome. The use of guided imagery (GI) might have played a role similar to mindfulness, as GI is a form of mind-body therapy (MBT).

Future directions

Future studies can have randomised trials comparing effectiveness of CBT with third-wave therapies in depressive disorders replicating these outcome measures or supplementing it by measuring rumination and dysfunctional thoughts. In addition, the association between pharmacological therapy and metacognition needs to be investigated.

CONCLUSION

CBT alone as well as combined with anti-depressants is an effective treatment alleviating symptoms, metacognitive beliefs, improving functionality and QOL in depressive disorders. Therefore, it is inferred that CBT addresses newer mediators such as metacognition and continues to be a gold standard treatment dealing with negative cognition as well as metacognitive beliefs. The monitoring of metacognitive beliefs can be of immense significance while dealing with individuals having depressive disorders, however, role of anti-depressants on metacognitive beliefs still needs to be explored further.

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