

Case report

## Efficacy of Mindfulness-Based Cognitive Therapy on Depressed Mothers with Cerebral Palsy Children

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**Objectives:** Findings Demonstrated that Parent of Children With Cerebral Palsy Experience Elevated Level of Distress, Depression, Anxiety, Posttraumatic Stress Symptom and Subjective Symptom of Stress. Depression is a common condition that typically has a relapsing course. Effective interventions targeting relapse have the potential to dramatically reduce the point prevalence of the condition. Many of studies have shown that Mindfulness based cognitive therapy (MBCT) is an intervention that has shown efficacy in reducing Depression syndrome and depressive relapse. In This Study, Effectiveness of Mindfulness –Based Cognitive Therapy (MBCT) on Reduction of Depression in Mothers of Children with Cerebral Palsy was examined.

**Method and Material:** Three Mothers Whose Children Had Cerebral Palsy Were Diagnosed to Have Depression Symptoms, Using Beck Depression Inventory II, Structured Clinical in This Experimental Signal - Case Study .After The Baseline was Determined, Subject Attended on Eight –Session Program of Mindfulness - Based Cognitive Therapy .

**Results:** The Comparison of Baseline and Post - Test was Showed That Depression Symptom has decreased through MBCT. Improvement Quotient for Depression of each Subject was good.

**Conclusion:** Data Showed that MBCT Reduced Depression Symptoms in Mothers of Children With Cerebral Palsy.

**Keywords:** Mindfulness Based cognitive therapy, Mindfulness, Depression, Cerebral Palsy.

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### Introduction

Cerebral palsy (CP) is a disorder of posture and movement as a consequence of non-progressive injury to the immature brain. The estimated incidence of CP is 2.0 to 2.5 per 1000 live births in developed countries (1). Children with CP have significant limitations in the activities of daily living such as feeding, dressing, bathing, and mobility (2). Although motor dysfunction is the defining clinical feature of CP, sensory, cognitive, and verbal impairment in addition to learning difficulties and behavioral problems can also be seen in this condition (3). Limitations can result in requirements for long-term care that far exceed the usual needs of children as they develop (1). Care giving is a normal part of being the parent of a young child whereas this role takes on an entirely different significance

when child experiences functional limitations and possible long term dependence (4).

Mothers of children with different level of disability tolerate high level of stress. Children with chronic medical conditions cause depression (5), emotional and behavioral problem in their mothers (6).

In the study of Ones and his colleagues (3) mothers having CP children had depressive symptoms and lower quality of life, in addition Manual(7) reported 30% of mothers having CP Children had the symptom of depression above cut off on center for Epidemiologic Studied- Depression (CES-D) Scale Short Form and the other study by Chey (8) and et al (2009) showed that the prevalence of depression in mother with cerebral palsy 84% and in mothers group of control 33%.In general ,Many studies have shown that depression in mothers of children with

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cerebral palsy is more than common in mothers of normal children. (9-15)

Like other mothers, mothers suffering from depression want the best for their children. But common symptoms of depression, such as anxiety, sadness, fatigue, and poor concentration, can affect parenting ability and the relationship between a mother and her both normal child and child with disabilities.(65-70) As a result, maternal depression is associated with a range of poor outcomes for children, including difficulties in mastering age-appropriate developmental tasks, reduced language ability (16), problems in social and emotional adjustment, and deficits in cognitive functioning (17). For example, infants with depressed mothers may have difficulties forming emotional bonds with caregivers and may be less responsive to others, less active, fussier, and slower to walk or vocalize (18). Toddlers with depressed mothers may exhibit attention problems and poor self-control, while for school-age children and adolescents, maternal depression is associated with school problems and low self-esteem. Children of depressed mothers are also at higher risk of developing mental disorders themselves (19). .In general, Depression affects almost all aspects of life and can eventually make

normal life impossible. (20) .It appeared that there is a relationship between child's disability and the maternal mental health problems that may affect each other.

Many of intervention on depressed mothers with cerebral palsy child are child- centered, another words, In this case, using approaches to rehabilitation of children with cerebral palsy for improved motor function and its effect on the improvement of maternal depression were examined (3, 9). Despite , no or little positive results in this style of type of intervention on maternal depression; (3,9,10) other interventions, including psychotherapy intervention on these mothers has been used very little or not at all.

Depression is serious health problem. The usual treatment offered is antidepressant medication, which often yields unwanted side effects, compromising patient compliance (21,22) .Cognitive therapy (CT) and psychopharmacology have been the mainstays of treatment for depression and relapse prevention, yet relapse remains a significant risk for this mental illness (23-26) .Consequently, the development of effective strategies to prevent relapse is very important.

**Table1.** Characteristics of mothers and their children

	Participant A	Participant B	Participant C
Age of child (years)	6	4	4
Gender	Boy	Boy	Boy
Type of cerebral palsy	Spastic (Hemiplegia)	Spastic (Diplegia)	Spastic (Hemiplegia)
Age of mother	35	41	39
Occupation of mother	Housewife	Typist at home	Housewife
Number of children	2	1	2

Mindfulness-based cognitive therapy (MBCT) is an alternative, psychological intervention designed for prevention of relapse in recurrent depression. (27) MBCT<sup>1</sup>, can reduce depression and anxiety symptoms. More recently, MBCT was shown to help individuals discontinue antidepressants after recovering from depression.(28) Overall, Apart from the studies (29,30,31) that showed relapse preventing effect of MBCT in previously depressed patients, there are now a number of reports demonstrating that MBCT can successfully reduce symptoms in currently depressed patients.(32,33) MBCT includes mindfulness practice designed to cultivate nonjudgmental observation and acceptance of bodily sensation, cognition, and emotions.

1 -Mindfulness based cognitive therapy

Participations learn to engage in sustained observation of these phenomena, with the tendency of interest and curiosity, and to accept them as they are, without trying to change or escape them.

The present study aimed to evaluate the effectiveness of MBCT on reduction of depression symptoms in mothers of children with cerebral palsy.

The present study is an effectiveness study and not efficacy study. Efficacy studies examine the effects of treatment in randomized controlled trials, involving participants, using a highly structured treatment manual for a narrow problem focus. Effectiveness studies examine the consequences of treatment conducted in non-research based clinical setting and purposive sampling. The aim of such research is to maximize the external validity or generalization of results to various settings.

## Materials and methods

### Participants

Participants in this study consisted of three mothers who were selected from among mothers who were referred to University of Social Welfare and Rehabilitation Centers for the rehabilitation of their children. Facilitator screened interested subjects for inclusion and exclusion criteria. Inclusion criteria were (A) Diagnosed with depression by a psychiatrist and Possessing 19 score and above in Beck Depression Inventory-II (BDI-II) ;( B) Meeting criteria for depression determined by the modified version of the structured clinical interview for DSM IV (34) ;( C) Medically stable patients with current associated major depression, substance abuse and /or dependence and psychosis and disabled were excluded from the study because of low concentration and orientation. All the children were boys with cerebral palsy spastic type. (Ages 4-6).All the children lived with their parents.

### Procedure

The method used in this study the single- case experimental design. In analyzing the data in the single case study, the dependent variable for the possible changes resulting from the independent variable can be read in two ways. (35) The first criterion is to draw the graphs of subjects' functions of the baseline and the intervention phase, and then compare them; and the second criterion is to consider the slopes in each of the two –step graph-line during the intervention. Thus, any trends or slopes in each stage are examined. In this study, the Improvement quotient was used to show treatment effect clearly. We subtracted the pretest scores from the post-test score and then divided the attained number by the pretest score. (36)

The Baseline included three measures of maternal depression using the Beck Depression Inventory, before the intervention. The measurements were performed at the end of second, forth, sixth and eighth sessions to monitor the changes. Participants attended in treatment for eighth consecutive weeks for tow hour individually.

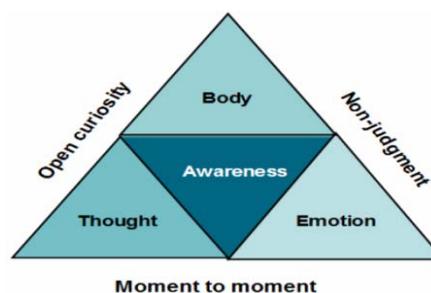
### Intervention

Mindfulness-based cognitive therapy (MBCT) is a synthesis of mindfulness-based stress reduction, mindfulness meditation, and traditional cognitive behavioral therapy. MBCT strategies help individuals recognize and understand the automatic patterns of sensation, cognition, behavior, and emotion which ultimately lead one to a depressive

episode. (27)Instead of trying to eliminate or fix the negative thoughts and emotions which precede depressive episodes, mindfulness-based cognitive therapy teaches the person to allow them to occur and become aware of what he or she is experiencing during their onset. (37) Ideally, in understanding these processes, one would be able to recognize the onset of symptoms and prevent them from developing into a depressive episode. MBCT is an eight week program which uses mindfulness exercises and homework to engage clients in experiencing the present and to avoid worrying about its relation to the past or future. (38)

How does the intervention work? Individuals who are depressed tend to interpret their life experiences in a negative and biased way. These opinions lead to be universal, self-critical, and involve the past and future. Over time, these individuals develop automatic, habitual patterns based on associated thoughts and moods. As these patterns develop and become automatic, the negative thoughts may easily perpetuate the sad moods previously associated with the same or similar thoughts, thus it becomes easier for the individual to fall into a downward spiral of depression. (29) As this process progresses, even mild changes in mood may lead to major changes in thinking, a concept termed cognitive reactivity. Using MBCT strategies, these individuals learn to recognize and welcome these patterns in order to understand them. This means that MBCT elements of cognitive therapy that is consistent with nonjudgmental acceptance of the experience and living in the moment. A decentered view of thoughts is emphasized, in which participants are encouraged to view their thought as transient mental events rather than as aspects of themselves or as necessarily accurate reflections of reality or truth. (39)

Mindfulness based intervention consists of the development of a particular kind of attention, characterized by a nonjudgmental awareness, openness, curiosity, and acceptance of internal and external present experiences, which allows practitioners to act more reflectively rather than impulsively.(40-42)



Eventually, the individual would be able to recognize the onset of these patterns, and disrupt the automatic processes (feedback loops) thus, is believed, by modifying the neural circuits in their brain that are involved with emotion (e.g. amygdala, hippocampus). (43)

Essentially MBCT is thought to alter the emotional/cognitive and physiological experiences of the present in order to treatment and prevent depressive relapse in the future (38). Research shows that such cognitive behavioral strategies may actually modify similar brain circuits which are targeted by medications. (44)

#### *Therapeutic Package*

In this study, the intervention include in our manual were provided in eight sessions.

Goals and techniques in the first session included building a rapport with the client, obtaining information from the client, providing psycho education on mindfulness, CBT, depression, identifying automatic thoughts and leading the client through a guided mindfulness meditation.

In the second Session, goals and techniques included 'stepping out of automatic pilot' (acting without conscious awareness), having a childlike Curiosity and Mindful eating Body scan (intentionally bringing awareness to bodily sensations)

In the third session, goal and technique included dealing with barriers (Awareness of how the chatter of the mind influences feelings and behaviors), Being compassionate with yourself and short breathing meditation

Goals and techniques in the fourth session helping the client recognize that most of her thought are not facts, teaching the client to use the thought record, educating client about cognitive distortion.

Goals and techniques in the fifth session included educating staying present with awareness of attachment and aversion, being patient; then, diaphragmatic breathing and sleep hygiene; next, teaching the client a brief body scans exercise to reduce muscle tension.

In the sixth session, goal and techniques included acceptance of thoughts and emotions as fleeting events; next, introducing mindful daily activity,

teaching mindful eating and mindful labeling on thoughts, feelings and behaviors.

In the seventh session, goals and techniques included symptom of depression and rumination thinking. we educated accept your rumination thinking without judgment and used diffusion technique for reduction of it.

In the eighth session, goal and technique included how can I best take care of myself? And using what you have learned to deal with future mood and reviewing the insights and found the most useful techniques of mindfulness by the client, identifying obstacle to practice mindfulness, providing a checklist of techniques included in the program.

#### *Instrument*

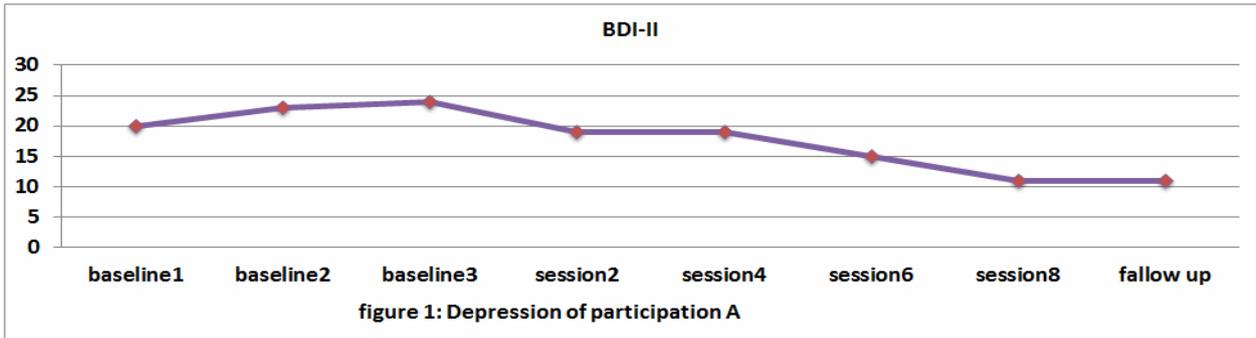
Beck Depression Inventory-II (BDI-II)

The Beck Depression Inventory-Second Edition (BDI-II)(45) is a 21 –item scale and one of the most widely used self –report measures of depression . Beck mentioned the alphas of 0.93 for college students and 0.92 for outpatients, in Steer et al study; an alpha of 0.92 for the BDI-II was reported. Beck reviewed 11 studies that showed the BDI is capable of discriminating between groups that differ in level of depression. 35 synchronic validation studies compared BDI with other depression ratings. Fourteen other studies indicated the correlations between the clinical scales and BDI; coefficients of psychiatric patients ranged from 0.55 to 0.96 with a mean of 0.72. The correlation between the earlier version of BDI and (BDI-II) was 0/93 and kappa agreement was 0.70. (46)

#### **Result**

##### *Participant A*

Diagram1 shows that the participant's depression level is 20-24 in BDI-II approximately at the baseline statement. These scores are moderate rates of depression in BDI-II. She obtained a score of 19 in BDI-II at end of session 2; and this reduction continued until the end of the intervention.as in last session, her score in posttest measurement was 11 in BDI-II. That indicates reduction in symptoms of depression. Her Percent of recovery was %50.74 for depression. (See Figure 1)

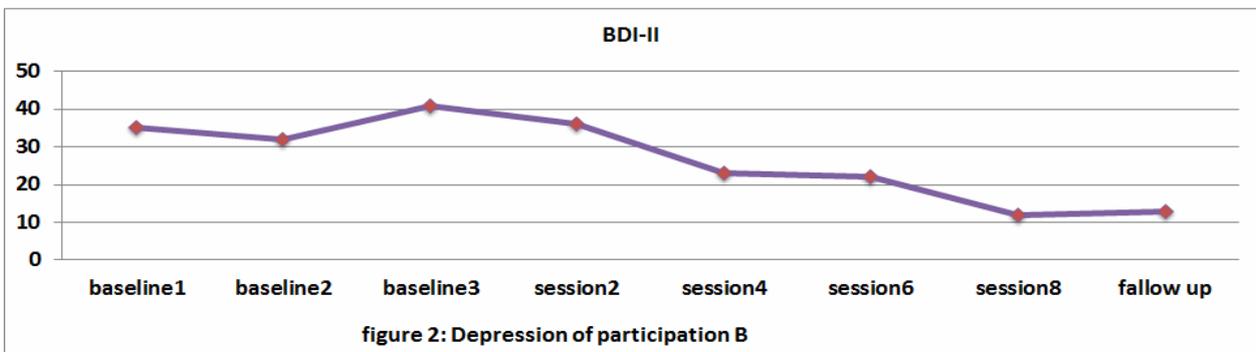


**Fig. 1** Participant A Percent of recovery

*Participant B*

Diagram 2 shows that participant's depression levels were 32-41 in BDI-II approximately at the baseline statement. These scores are severe range of depression in BDI-II. She obtained a score of 23 in

BDI-II and at end of session 2. Her scores in last post-test measurement were 12 in BDI-II that indicate reduction in symptoms of depression. Her Improvement quotient was %66.67 for depression. (See Figure 2)

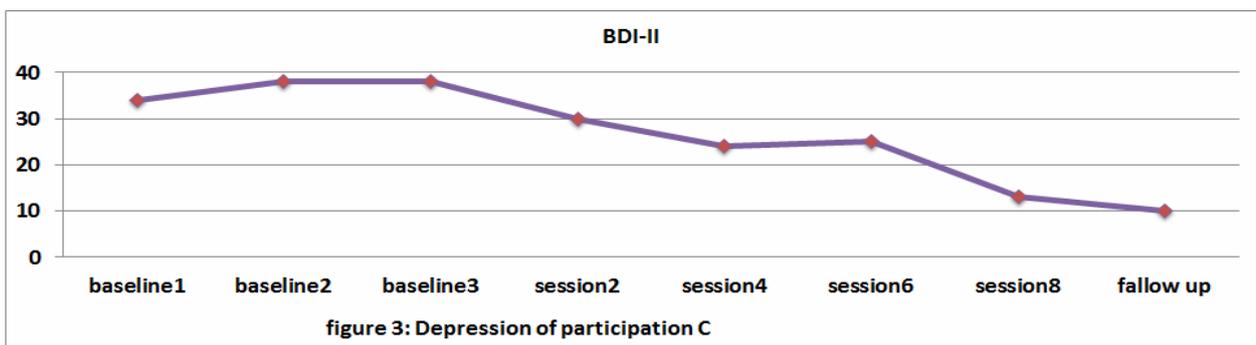


**Fig. 2** Participant B Improvement quotient

*Participant C*

Diagram 3 shows that participant's depression levels are 34-38 in BDI-II approximately at the baseline statement. These scores are severe rate of depression in BDI-II. She got the score of 24 in BDI-II at the

end of session 2. Her scores in last post-test measurement were 12 in BDI-II that indicate reduction in symptoms of depression. Her Improvement quotient was %63.55 for depression. (See Figure 3)



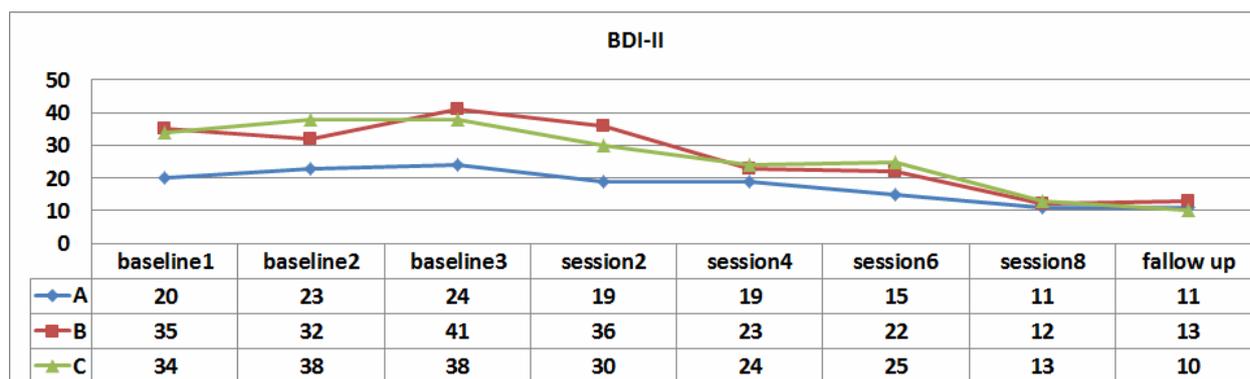


Fig. 3 Participant C Improvement quotient

All participants showed scores of 20-41 at the baseline statement that indicated Moderate (20-28) and severe depression (29-62) in BDI-II. Visual observation of diagrams demonstrates the decline of scores. Post- test of three participants (A, B and C) is in low or no depression remains.

### Discussion

This current study, According to the Ingram, Hayes, and Scott theory (2000), explains the result on the effects of MBCT on depressed mothers with cerebral palsy child in four areas to evaluate the performance of Cognitive Therapy. (46)

Universality of change (what is the percentage of the improvement?)

Differences between base line and post-test scores demonstrated that examinees show positive improvement on Beck depression scales. The percentages of recovery on depression were: participant A: %50.74; participant B: %66.67; and participant C: %63.55

These results are consistent with recent studies investigating the relationship between mindfulness and predictors of depression (47,48) which have shown that mindfulness functions as a protective factor against known correlates of depression Symptoms (e.g., rumination, negative cognitions).

Generality of change (what are the changes in relation to critical situations and jobs?)

The more complex the form of cerebral palsy, the less favorable the prognosis for the child's psychomotor development and a potentially greater risk of disturbances in the quality of communication and interaction with the parents (49, 50). The situation of parents of children with cerebral palsy is considered so stressful that it can be compared with the situation of parents of children with cancer (51). The difficult and constant struggle to improve the child's health and development is accompanied by

doubt, guilt and shame, which contributes to the deterioration of the quality of life of parents. (52) Experiencing severe anxiety (e.g. before making a crucial decision) often times leads to feelings of helplessness and lack of control, and this in turn may contribute to feelings of parental incompetence. (3, 53) Fatigue and frequent loneliness lower resistance to stress and disturb the normal regulation of emotions (53) Moreover, Brehaut et al (54) found that over the year's parents of children with cerebral palsy, compared with parents of healthy children, more frequently complain of experiencing severe and chronic stress, emotional and cognitive problems, as well as report numerous somatic complaints. In this study, participants also had many problems, including difficulty eating (part A), lack of concentration, decreased libido (part B), sleep disturbances (55) (part c), fatigue, lack of energy, social isolation, problems with spouse. At the end of the final sessions, the participant had a better solution for their problems and relationship with their spouse and children. Baer (56) argues that in mindfulness, several mechanisms can reduce the symptoms, including:

- Cognitive change
- improved self-management
- Exposure to painful experiences leading to reduced emotional reactivity.

Cognitive change—also called metacognitive awareness—is the development of a “distanced “or “decentered” perspective in which patients experience their thoughts and feelings as “mental events” rather than as true, accurate versions of reality. This is thought to introduce a “space” between perception and response that enables patients to have a reflective—rather than a reflexive or reactive—response to situations, which in turn reduces vulnerability to psychological processes that contribute to emotional suffering. Some preliminary

evidence suggests that MBCT-associated increases in metacognitive awareness reduce risk of depressive relapse. (57)

### *Safety*

Comparing the participants' scores at base line, post-test, and follow up in depression showed a great deal of improvement on the scales, and led to a full recovery. However, the recovery rate was different from patient to patient. This treatment approach did not show any side effects.

### *Stability (Treatment Achievements)*

Follow up result (30 days after the last therapy session) indicated that depression of participants A and C maintained in the score of less than 13 which indicates the state of no depression or least depression. Participant B with the score of 14 was categorized in a range of 14-19 with a diagnosis of mild depression; and it can be stated that MBCT provided them with a relative stability.

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### **Conclusion**

In summary, the current study demonstrated that Mindfulness-Based Cognitive Therapy has a significant effect on depression and on our samples. The depression changed in different ways. Due to the psychological interviews which the Facilitator carried out with mothers, this treatment approach significantly improved the relationship of these mothers with themselves, and their families, and also improved their social functions. The outcomes are coherent with the results of the studies which emphasize the Effectiveness of MBCT for treatment of depression, anxiety and stress and to improve psychosocial adjustment of people. (31, 58-64)

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