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**Mindfulness-Based Cognitive Therapy for Treatment-Resistant Depression: A Pilot Study**

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Much of the ongoing morbidity in patients suffering major depressive disorders is related to current treatments failing to produce complete remission. Many patients can be considered to have treatment-resistant depression (TRD), with failure to fully remit with adequate doses and durations of 2 or more antidepressant trials [1, 2]. TRD is associated with greater disability, mortality, morbidity, somatic symptoms, risk of relapse and societal cost [3, 4]. We report on a pilot study of mindfulness-based cognitive therapy (MBCT) for TRD.

While some studies have suggested cognitive behavior therapy as an augmentation strategy for TRD [5–10], randomized, controlled trials have yielded mixed results [11–14]. Thus there is a need for additional innovative treatments for TRD. Since MBCT has a different focus than cognitive behavior therapy, it may be of particular benefit.

MBCT is a recently developed group treatment that emphasizes mindfulness meditation training – not cognitive therapy – as the primary therapeutic technique. MBCT was developed to interrupt patterns of ruminative cognitive-affective processing [15, 16] that can lead to depressive relapse and which we believe may also act as a driver of TRD.

In MBCT, the emphasis is on changing the relationship to one’s thoughts [17, 18], differing from the emphasis of cognitive behavior therapy on challenging thought content [19]. Decentered thoughts are viewed as mental events that pass transiently through one’s consciousness, which may allow depressed individuals to decrease rumination and negative thinking [18].

This pilot study was a nonrandomized, single-site, open study of MBCT augmentation of psychotherapy and medication treatment for currently depressed patients with TRD. All participants had failed to remit with at least 2 antidepressant treatments. The study took place at the Langley Porter Adult Psychiatry Clinic at the University of California, San Francisco.

The study was approved by the university’s institutional review board. The participants were outpatients with a DSM-IV diagnosis of major depression at the start of the present episode and confirmed prior to entry to MBCT. All subjects were symptomatic at the initiation of MBCT with Beck Depression Inventory-II (BDI) scores  $\geq 10$  despite ongoing active treatment.

There were 6 MBCT groups, which ranged from 7 to 12 members per group. The treatment consisted of eight 2-hour weekly

sessions which were led by a psychiatrist and cotherapist. Both the curriculum and format were developed by Segal et al. [18] with modifications for an actively depressed population. Because MBCT was offered as an augmentation, referring clinicians could change the antidepressant dosing during the course of MBCT.

All subjects completed the BDI [20], which was the primary outcome measure, the Beck Anxiety Inventory [21] and the Ruminative Response Scale [22], before and immediately after MBCT. For the final 24 patients we added the Freiburg Mindfulness Inventory (FMI) [23] before and after MBCT.

The analysis consisted of 1- and 2-sample 2-tailed t tests to test for change over time and to compare genders on the measures. Pearson correlation coefficients were used to estimate the degree of relationships among measures.

A total of 55 patients enrolled in the course and data were collected on the 51 completers (93%) with 24 assessed on the FMI. The participants ranged in age between 22 and 75. Thirty-eight (74.5%) of the sample were women, 22 (44%) were married or partnered, 41 (82%) were white, 29 (61.7%) were employed full time and 26 (60.5%) had some education beyond college. Table 1 displays the numbers, means and standard deviations of the measures at both the pre- and posttreatment assessments. We performed an intent-to-treat analysis utilizing the last observation carried forward for the noncompleters. The average change in the BDI was 9.3 (standard deviation = 9.53), which was statistically significant ( $t = 7.28$ ,  $d.f. = 54$ ,  $p < 0.001$ ). Sixteen (or 29%) of the patients went into remission as defined as a BDI score  $< 10$  and 21 (or 38%) responded with a reduction in BDI score of  $\geq 50\%$ . The average change in the BDI as a percentage of the pretreatment score was 37% improvement.

We estimated the correlation between the change in mindfulness measured by the FMI and the change in BDI score and found a coefficient of  $-0.31$  ( $p = 0.11$ ). This was limited by our small sample size and could become significant with more subjects.

We found no evidence that more severely depressed patients had difficulty learning MBCT. The correlation between change in BDI and baseline score on the BDI was  $0.49$  ( $p < 0.001$ ); the higher the baseline score, the greater the decrease in BDI. Looking at the relationship between change in BDI and demographic mea-

**Table 1.** Mean pre- and posttreatment scores

Measure	Subjects	Pretreatment	Posttreatment	p value
BDI	55	23.95 $\pm$ 10.00	14.60 $\pm$ 9.28	<0.0001
RRS	55	52.84 $\pm$ 6.68	50.33 $\pm$ 9.26	0.013
BAI	51	13.38 $\pm$ 8.76	9.78 $\pm$ 6.38	0.004
FMI	24	67.25 $\pm$ 11.7	73.54 $\pm$ 11.6	0.0076

RRS = Ruminative Response Scale; BAI = Beck Anxiety Inventory.

tures, women improved more on the average than men (means = 10.6 and 5.2,  $t = 2.52$ ,  $p = 0.02$ ). No other variables were related to BDI change.

We found significantly decreased depression and anxiety levels as measured by the BDI and Beck Anxiety Inventory for individuals with TRD who completed MBCT. Increased mindfulness was associated with decreased depression levels. Decreases in rumination and anxiety were associated with trends for decreased depression levels.

MBCT may be useful for treating TRD while simultaneously reducing comorbid anxiety and rumination. Our study extends the work of others who have begun investigating MBCT in depressed populations and found similar effect sizes for depression, although they did not explore the potential factors of mindfulness and rumination as drivers of the effects [24, 25].

Our remission rate of 33% after 8 weeks of MBCT treatment compares quite favorably to the results of the Sequenced Treatment Alternatives to Relieve Depression (STAR\*D) trials at the second or third levels of treatment, in which 31 and 14% remitted respectively to treatment interventions [1, 26]. Certainly our population with an average duration of episode of 30 months and  $\geq 2$  antidepressant trials would have qualified for level 2 or beyond in the STAR\*D classification.

There are several limitations of this study. It does not allow any decrease in depressive symptoms to be attributed unambiguously to specific features of MBCT rather than nonspecific factors such as group support or expectancy bias. Furthermore, there is a possibility that medication changes could have washed out effects of MBCT or falsely amplified its effects. Our study is also limited by being an open trial in that the participants willingly chose to learn MBCT. Thus, it is possible that the participants were highly motivated. A future study investigating the value of MBCT for TRD in a randomized, controlled trial using interviewer-rated instruments would be timely.

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