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Mindfulness Based Cognitive Therapy for Residual Depressive Symptoms and Relapse Prophylaxis

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Abstract

Purpose of review—This article reviews the recent evidence for mindfulness based cognitive therapy (MBCT) for patients with residual depressive symptoms or in remitted patients at increased risk for relapse.

Recent findings—Randomized controlled trials have shifted focus from comparing MBCT with treatment-as-usual to comparing MBCT against interventions. These studies have provided evidence for the efficacy of MBCT on par with maintenance antidepressant pharmacotherapy and leading to a relative reduction of risk on the order of 30–40%. Perhaps fuelled by these data, recent efforts have focused on extending MBCT to novel populations, such as acutely depressed patients, those diagnosed with health anxiety, social anxiety, fibromyalgia, or multiple chemical sensitivities as well migrating MBCT to online platforms so that it is more widely available. Neuroimaging studies of patients in structured therapies which feature mindfulness meditation, have reported findings that parallel behavioural changes, such as increased activation in brain regions subsuming self-focus and emotion regulation (prefrontal cortex) and interoceptive awareness (insula).

Summary—The current evidence base for MBCT is strongest for its application as a prophylactic intervention or for residual depressive symptoms, with early data suggesting additional indications outside the mood disorders. Future work will need to address dose-effect relationships between mindfulness practice and clinical benefits as well as establishing the rates of uptake for online MBCT so that its benefits can be compared to in-person groups. Additionally, validating current or novel neural markers of MBCT treatment response will allow for patient matching and optimization of treatment response.

Keywords

Depression; Residual Depressive Symptoms; Mindfulness; Mindfulness-Based Cognitive Therapy; Neuroscience of Meditation; Relapse Prevention

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Conflicts of interest

Dr. Segal receives royalties from Guilford Press and fees for MBCT professional training workshops. MBCT is being developed for commercialization by MindfulNoggin as an online therapist training tool; although, at the time of publication no formal agreements are in place, Dr. Segal may receive royalties or other compensation in the future.

Introduction

Major depressive disorder (MDD) is now recognized as having a chronic and impairing course for most individuals [1], with the risk of relapse increasing with successive episodes experienced [2]. Even among patients who achieve clinical remission, residual depressive symptoms (RDS) following first-line antidepressant pharmacotherapy or psychotherapy are common [3]. Psychological accounts of MDD vulnerability emphasize how state-dependent learning links the experience of dysthymia with self-evaluative and ruminative cognitive styles, with each MDD episode strengthening the elements of this cognitive-affective network [4]. Over time, even small amounts of sad mood can (re)trigger depressive cognitive thought patterns leading to increased rates of symptom return [5]. From an intervention perspective, one goal of effective treatment would be to pre-empt the (re)establishment of such dysfunctional processing cycles by fostering metacognitive skills. Metacognitive skills refer to an awareness of, and ability to understand and influence cognitive processing, and they play a pivotal role in adaptive emotion regulation [6]. Residual symptoms and relapse risk would decrease if patients in partial or full remission can learn, first, to be more aware of negative thoughts and feelings at times of potential relapse/recurrence, and, second, to respond to those thoughts and feelings in ways that allow them to disengage from ruminative depressive processing. MBCT was designed to achieve these aims [7,8*].

Mindfulness-Based Cognitive Therapy is a manualized, group therapy that combines the attentional training of mindfulness meditation with the activation and psychoeducation elements of cognitive therapy for depression [9]. Patients are taught to become more aware of thoughts and feelings, and to relate to them in a wider “decentered” perspective as “mental events,” rather than as aspects of the self or as accurate reflections of reality. It is assumed that the cultivation of a detached, decentered relationship to depression-related thoughts and feelings is central in providing individuals with skills to prevent the escalation of negative thinking patterns at times of potential relapse/recurrence [10].

MBCT: Clinical Outcomes

While initial controlled trials of MBCT relied on treatment-as-usual (TAU) controls to determine clinical effectiveness [11], the trend more recently has been to evaluate MBCT against active interventions. In the largest trial to date, Kuyken *et al.* [12*] randomized 424 recurrently depressed patients to either continue on maintenance antidepressant treatment for two years or receive MBCT with support to taper or discontinue their medication. Rates of relapse/recurrence over the study period indicated no difference between conditions, suggesting that MBCT provided relapse protection on par with maintenance antidepressant pharmacotherapy. Interestingly, for patients who reported high rates of childhood abuse, MBCT was associated with a lower rate of relapse (47%) than antidepressants (59%). Data from Williams *et al.* [13*] also bear on the latter finding. They studied remitted patients who had experienced three or more episodes of depression in a three arm study; MBCT, MBCT with no mindfulness practice, and TAU. As in Kuyken, they found that for patients who reported greater childhood abuse, the full package MBCT outperformed the other two conditions. As these findings represent secondary analyses, more definitive conclusions

await replication with childhood abuse as a pre-trial stratification variable. Still, it is possible that in MBCT, patients learn how to approach and observe their painful memories rather than ruminating about them [12*,13*].

Conversely, Crane *et al.* [14*] investigated the relationship between how often patients actually practiced mindfulness meditation during the 8 week protocol and any clinical benefits accrued one year post-treatment. They report that patients who engaged in formal home practice of mindfulness meditation for three or more days a week were half as likely to relapse, regardless of the severity of childhood trauma. The formal mindfulness meditations in MBCT require a minimum of 30 minutes and may be construed as a form of 'massed practice' of both the approach and observed skills emphasized throughout the program. Increased practice frequency may make patients more adept at transferring these skills to emotional triggers that occur throughout the day.

MBCT: Mechanisms of Change

MBCT has been found to be extremely effective for patients with MDD, especially those who have a higher risk of relapse, such as patients with a history of childhood trauma [13*], unstable pharmacotherapy remitters [15], and patients who have experienced three or more depressive episodes [16]. Moving beyond the question of efficacy, a number of recent reviews have been conducted in an effort to identify putative mechanisms underlying MBCT's effectiveness. There is good concordance among three of these reviews regarding five constructs that bear a consistent association with MBCT outcomes; mindfulness, rumination, cognitive flexibility/decentering, cognitive reactivity, and self-compassion [10,17,18]. In line with the theoretical rationale for the development of MBCT, the most reliable pattern of change predicting outcome in MBCT is bivariate in nature - increases in mindfulness and metacognitive awareness of emotions are matched by decreases in rumination and worry.

Extensions of the MBCT Model

The most frequent modification to the MBCT protocol has been its use with patients that are more severely depressed – a departure from its original use in the context of prevention. Strauss *et al.* [8*] conducted a meta-analysis of MBCT effects on patients who were acutely depressed. They reported that MBCT showed similar effect sizes to active control conditions for reducing symptom severity, and larger effects compared to inactive controls. Similarly, van Aalderen *et al.* [19**] evaluated MBCT outcomes in both remitted and currently depressed patients. In both groups, compared to TAU, MBCT was significantly more effective in reducing depressive symptoms and rumination, as well as more effective in increasing mindfulness and quality of life. These changes remained stable over a one year follow up with some evidence that rumination continued to decrease over time.

Pots *et al.* [20] showed that MBCT can be utilized in community mental health settings where people may be reporting lower levels of depressive symptoms but no case level diagnosis of MDD. Evaluating their adaptation of MBCT, Pots *et al.* [20] found significant reductions in depressive symptoms and anxiety, and significant improvements in emotional and psychological well-being, psychological flexibility, and mindfulness. Finally,

Eisendrath *et al.* [21**] present initial data to suggest that MBCT may be an effective first-line treatment in acute depression relative to Sertraline, suggesting MBCT's value for patients who cannot tolerate side effects or do not respond to an initial trial of antidepressant medication.

Looking outside the scope of mood disorders, preliminary efficacy data have been shown for using MBCT with a variety of disorders such as; bipolar disorder, eating disorders, developmental life stages, and medically ill populations, such as cancer or diabetes [22]. Similarly, MBCT may be effective in reducing depressive symptoms found in traumatic brain injury patients [23], in changing pain-related cognitions, such as increasing pain acceptance in chronic pain patients [24], and in facilitating self-acceptance in patients with medically unexplained symptoms [25]. Perhaps the behavioural approach (BAS) elements associated with mindfulness practice that are explicitly taught in MBCT allow patients with chronic symptoms to reduce their sense of struggle and rely less on rumination to change or fix their situation.

Novel Delivery Formats of MBCT

Although accumulating evidence suggests that MBCT is an effective second-stage intervention in sequential treatment of residual depressive symptoms and prevention of relapse, it faces challenges to dissemination that are common to most treatments for depression, including: service costs, waiting lists, and time and distance to access treatment [26]. Moreover, MBCT faces unique challenges in training clinicians, a rate limiting factor in the dissemination of evidence-based treatments, due to the fact that requirements for therapist training and competence in MBCT comprise skill acquisition in both CBT and group facilitation, as well as the personal practice of mindfulness meditation and familiarity with yoga. One solution has been to turn to the internet and leverage the capacity for remote access as a way of delivering the core skills of MBCT to formerly depressed patients.

Dimidjian *et al.* [27*] created and tested an online version of MBCT called Mindful Mood Balance (MMB). This program adapted the core components of MBCT into an eight session online therapy program that is self-administered. As with MBCT, MMB teaches skills in affect regulation, decentering from thinking, and behavioural activation through guided sessions of mindfulness meditation and CBT. Dimidjian *et al.* [27*] compared Usual Depression Care (UDC) in a large HMO with MMB and found that MMB reduced residual depressive symptoms in patients to a significantly greater degree than UDC. Additionally, reductions in rumination and increases in mindfulness were also noted, and outcomes were maintained at six months post-treatment.

Similarly, Dowd *et al.* [28*] reported on a web-based adaptation of MBCT called mindfulness in action (MIA), which was developed for patients with chronic pain. The MIA program was compared to online pain management psychoeducation (PE) and results indicated that, while both MIA and PE reduced pain related appraisals, patients receiving MIA reported significantly greater life satisfaction and stress resilience along with lower emotional liability. In line with the findings from Day *et al.* [24] and van Ravesteijn *et al.* [25], the authors suggested that these improvements were linked to the addition of approach

and investigation skills to patients' repertoires for coping with chronic pain. Further research is clearly required to determine the efficacy of web-based adaptations of MBCT relative to in-person groups. A critical point to consider is how to calibrate a meaningful efficacy threshold for this delivery format. For example, even if online MBCT only provides 50–60% of the benefits of in-person groups, its ease of access and convenience could greatly increase access to care among patients who might otherwise go untreated.

Neuroimaging Studies on MBCT

The idea that mindfulness meditation trains a distinct approach to emotion regulation is supported by a growing neuroscience literature. Traditional forms of emotion regulation, such as reappraisal, have been associated with the prefrontal cortex, which tends to be active during the manipulation and evaluation of information [29]. Mindfulness, however, argues for a shift away from a focus on external outcomes. To do so, attention is trained to shift away from cognitive habits that link external sensations to conceptual manipulation and elaboration. Instead, mindfulness teaches individuals to direct attention internally, to representations of the visceral components of emotion, as supported by a distinct neural pathway for interoception, the sensation of the body's internal state, including signals from the breath [30]. One of the first studies in this area [31] asked novice participants and those who had completed 8 weeks of mindfulness training to focus on self-descriptive adjectives during fMRI. They found that focusing on the 'causes' of thoughts and feelings associated with the words resulted in activation of a broad network of cortical midline structures (CMS), including the posterior cingulate and medial prefrontal cortex. By contrast, the 'viewing' of thoughts and feelings as passing momentary resulted in neural de-coupling, with marked reductions along the CMS, and increased engagement of a right lateralised network associated with viscerosomatic awareness, including the insula and dorsolateral regions.

In a wide-ranging review on the neuroscience of mindfulness training, Tang *et al.* [32**] reported evidence of alterations in both neural structure and function of regions associated with emotion regulation, attention, and self-reference. The brain regions consistently found to change after mindfulness meditation were the anterior cingulate cortex (ACC), prefrontal cortex (PFC), posterior cingulate cortex (PCC), insula, striatum, and amygdala. Meditation experience was also found to play a role, with lower levels of frontal-limbic connectivity for novices, suggesting that this group may require more effortful attending to overcome habitual thought patterns in order to maintain a meditative state, compared to expert meditators [32**].

Fox *et al.* [33] found consistent differences in brain regions between meditators and controls in a number of regions associated with self-awareness. For example, changes in the anterior insula and the primary/secondary somatomotor cortices were related to increased body and sensory awareness, changes in the rostralateral PFC were related to increased metacognitive awareness, changes in the anterior/mid-cingulate cortex were related to increased attentional control, and changes in the hippocampus were related to increased stress resilience and behavioural flexibility [33]. In a similar vein, Lutz *et al.* [34] investigated neural changes associated with a brief mindfulness induction during emotional arousal. They reported that

meditators, compared to control participants, exhibited reduced activation in the right amygdala, parahippocampus, and insula, pointing to greater frontal down regulation of amygdala/limbic networks. As with much of the work in this area, it would be important to establish whether these findings were due to actual differences in time spent meditating, or to other factors associated with a meditation/non-meditation lifestyle.

Looking at more specific neural changes following mindfulness meditation, Singleton *et al.* [35*] correlated brainstem grey matter with psychological well-being after an 8 week mindfulness based stress reduction (MBSR) course. Psychological well-being improved after MBSR, which was correlated positively with changes in gray matter concentration in the brain stem. Two of the regions that increased in volume, the raphe nuclei and the locus coeruleus, are major sites of the neurotransmitters serotonin and norepinephrine, both of which have been implicated in the etiology of major depressive disorder [35*].

Conclusion

MBCT is effective for preventing relapse and resolving residual symptoms in patients with recurrent depression. While still speculative, the benefits conferred by MBCT may be a result of mindfulness meditation skills that inform affect regulation and are easily incorporated into daily routines [14*], a feature not available in other psychotherapies. MBCT has been effectively extended to a variety of patient populations and most recently has been digitized to enable web-based treatment of patients living in regions where MBCT is not available. Future studies will need to establish a meaningful threshold that balances acceptable clinical effectiveness with increased access through a variety of delivery formats.

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Key Points

- Data from multiple RCTs indicates that MBCT is effective in preventing relapse and reducing residual symptoms in patients with recurrent depression who are in clinical remission.
- Studies of the mechanisms of change in MBCT point to reductions in rumination and increases in metacognitive awareness as being consistently associated with clinical benefits
- In an effort to reduce barriers to care, MBCT has been adapted for online delivery – Mindful Mood Balance – with early data suggesting good patient engagement and outcomes.
- Mindfulness meditation is associated with increased activations in the insula and prefrontal cortex, neurological changes that parallel behavioural changes in interoceptive awareness and emotion regulation.