# Meditation for Depression

A Systematic Review of Mindfulness-Based Cognitive Therapy for Major Depressive Disorder

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#### **Preface**

Depression is a prevalent psychological health condition, and clinical diagnoses such as major depressive disorder (MDD) are associated with significant burden for patients and society in terms of reduced quality of life, lower productivity, increased rates of other health conditions, and increased health care costs. While several evidence-based treatments are included as front-line treatments for MDD in clinical practice guidelines, these interventions vary in their effectiveness, safety, and acceptability to different patient populations. Complementary and alternative medicine approaches to MDD treatment are becoming more common, and a number of military treatment facilities offer these services, including meditation therapies. However, the efficacy and effectiveness of meditation for treating MDD remains unclear.

The Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury is interested in determining the efficacy and comparative effectiveness of integrative medicine approaches for psychological health conditions. This report describes a systematic review of mindfulness-based cognitive therapy in the treatment of MDD, conducted during a two-year project on integrative medicine approaches for psychological health conditions. Key questions guiding this work focused on the efficacy and effectiveness of meditation for improving MDD symptoms and quality of life, as well as on describing the occurrence of adverse events related to meditation among MDD populations. This report should be of interest to health care providers and clinical policymakers interested in the treatment of MDD or the use of meditation.

A version of this report was provided to the committee for review in May 2015; we reproduce that version here, with minor editorial updates. None of the authors has any conflict of interest to declare.

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Depression is a prevalent psychological health condition, and clinical diagnoses such as major depressive disorder (MDD) are associated with significant burden in terms of reduced quality of life, lower productivity, increased prevalence of other conditions, and increased health care costs. Several meditation approaches, including mindfulness-based cognitive therapy (MBCT), have shown promise in treating depression and preventing relapse. We conducted a systematic review of randomized controlled trials (RCTs) that assessed the efficacy and safety of MBCT for treating patients diagnosed with MDD.

We searched the databases PubMed, CINAHL, PsycINFO, Web of Science, Embase, CDSR, CENTRAL, DARE, clinicaltrials.gov, and PILOTS for English-language RCTs published through May 2015. Two independent reviewers screened retrieved publications using a set of inclusion and exclusion criteria, abstracted study-level data, and assessed the quality of included studies. Meta-analysis was performed using the Hartung-Knapp-Sidik-Jonkman method for random-effects models. Quality of evidence was assessed using the GRADE approach.

Seventeen studies met inclusion criteria. Adjunctive MBCT reduced depressive symptoms compared with a mix of comparators in patients with MDD (SMD –0.77; 95% CI –1.21, –0.34; 7 RCTs) and in patients with MDD or a history of MDD (SMD –0.70; 95% CI –1.10, –0.29; 12 RCTs), but there was substantial heterogeneity. MBCT plus treatment as usual (TAU) reduced depressive symptoms more than TAU alone (SMD –0.92; 95% CI –1.57, –0.27; 5 RCTs); based on two identified RCTs, MBCT compared with CBT without mindfulness meditation did not show statistically significant differences (SMD –0.06, 95% CI –1.01, 0.89; 2 RCTs). MBCT was more effective than other comparators, particularly TAU, in the prevention of relapse in patients with a history of MDD (RR 0.72; 95% CI 0.56, 0.93; 6 RCTs). Five RCTs addressed adverse events; three reported that no adverse events occurred, and two reported adverse events that were deemed not related to the intervention. Differences in quality of life between MBCT and other interventions did not show statistically significant effects (SMD –0.46; 95% CI 0.97, 0.05; 5 RCTs), nor did the use of antidepressants (RR –0.01; 95% CI –0.34, 0.32; 5 RCTs). Very few studies assessed monotherapy MBCT, and the evidence was insufficient to determine its effect.

The MBCT evidence base is growing, and data exist for relapse and depressive symptom reduction. MBCT is more effective than TAU alone, but intervention-specific effects of MBCT—for example, compared with cognitive behavioral therapy without mindfulness meditation components—have to be investigated further.

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# Summary

#### Introduction

Depression is a prevalent psychological health condition, and clinical diagnoses such as major depressive disorder (MDD) are associated with significant burden for patients and society in terms of reduced quality of life, lower productivity, increased prevalence of other conditions, and increased health care costs. Meditation is a mind-body technique that refers to a broad variety of practices with the general goal of training the mind through regulation of attention and/or emotion to affect body functions, symptoms, and state of being. Meditation practice has recently been embedded in existing therapeutic approaches, particularly mindfulness-based cognitive therapy (MBCT). MBCT is a standardized training program that combines cognitive therapy with mindfulness meditation. This review summarizes the current state of the evidence from randomized controlled trials (RCTs) testing the efficacy and safety of MBCT for patients diagnosed with MDD. Specifically, this systematic review aimed to answer the following primary key questions (KQs) and subquestions:

- KQ 1: Is meditation, as a monotherapy, more effective than treatment as usual (TAU), waitlists, no treatment, or other active treatments in reducing depressive symptoms in adults with MDD?
  - KQ 1a: Among publications that address monotherapy meditation as a treatment for adults with MDD, how common and severe are adverse events?
  - KO 1b: Does the efficacy differ depending on the type of meditation used?
- KQ 2: Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing depressive symptoms in adults with MDD?
  - KQ 2a: Among publications that address adjunctive meditation as a treatment for adults with MDD, how common and severe are adverse events?
  - KQ 2b: Does the efficacy differ depending on the type of meditation used?
- KQ 3: Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in decreasing relapse rates in adults with MDD?<sup>1</sup>
  - KQ 3a: Does the efficacy differ depending on the type of meditation used?
- KQ 4: Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in decreasing relapse rates in adults with MDD?

-

<sup>&</sup>lt;sup>1</sup> A *relapse* occurs when a patient previously in remission experiences another episode of MDD less than a year after the previous episode; a *recurrence* occurs when a patient experiences a subsequent episode of major depression at least a year after the previous episode. Here we use the term *relapse* to include both relapses and recurrences.

- KQ 4a: Does the efficacy differ depending on the type of meditation used?
   In addition, we aimed to answer the following secondary key questions:
- KQ 5: Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in improving health-related quality of life symptoms in adults with MDD?
- KQ 6: Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in improving health-related quality of life symptoms in adults with MDD?
- KQ 7: Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing antidepressant use in adults with MDD?
- KQ 8: Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing antidepressant use in adults with MDD?

#### Methods

To address our key questions, we conducted a systematic search of databases—PubMed, CINAHL (Cumulative Index to Nursing and Allied Health Literature), PsycINFO, Web of Science, Embase, CDSR (Cochrane Database of Systematic Reviews), CENTRAL (Cochrane Central Register of Controlled Trials), DARE (Database of Abstracts of Reviews of Effects), clinicaltrials.gov, and PILOTS (Published International Literature on Traumatic Stress)—for English-language RCTs published through May 2015 testing the efficacy and safety of the meditation intervention MBCT, either as monotherapy or as adjunctive therapy, to treat adults with MDD or to prevent relapse of MDD. In addition, we screened bibliographies of prior systematic reviews and included studies.

Two independent reviewers used pre-established eligibility criteria to screen identified studies, abstract study-level information, and assess the quality of included studies. Outcomes of interest included depressive symptoms, relapse, health-related quality of life, and adverse events. Meta-analysis was performed with the Hartung-Knapp-Sidik-Jonkman method for random-effects models, a method suitable when the number of pooled studies is small and there is evidence of heterogeneity. The quality of evidence was assessed using the Grades of Recommendation, Assessment, Development, and Evaluation (or GRADE) approach.

#### Results

A total of 17 studies met the inclusion criteria for our review.

#### Key Question 1

We did not identify any study in patients with a current diagnosis of MDD that reported on the effectiveness of MBCT offered as monotherapy. We identified one study in patients in full or partial remission that explicitly assessed MBCT as monotherapy and reported on depressive symptoms. The study reported a significantly greater reduction in depressive symptoms compared with waitlist (standardized mean difference [SMD] –1.11; 95% confidence interval [CI] –2.07, –0.15; 1 RCT).

Given the paucity of relevant studies, we cannot sufficiently answer the review question.

#### Key Question 1a

Only two studies explicitly assessed MBCT as monotherapy. One of the studies addressed adverse events and reported that none occurred; the other study did not report on adverse events.

#### Key Question 1b

There was insufficient information to determine whether the efficacy differs depending on the type of meditation used.

#### Key Question 2

Seven RCTs reported on depressive symptoms in adults with current MDD. There was moderate quality evidence of MBCT reducing depressive symptoms in patients with MDD compared with all comparators (SMD -0.77; 95% CI -1.21, -0.34; I<sup>2</sup> 63%; 7 RCTs).

Twelve RCTs examined adjunctive MBCT on depressive symptom scores. There was moderate evidence in support of the use of adjunctive MBCT over all interventions (SMD -0.72; 95% CI -1.14, -0.30; I<sup>2</sup> 85%; 12 RCTs). There was moderate evidence of its efficacy compared with TAU (SMD -0.92; 95% CI -1.57, -0.27; I<sup>2</sup> 80%; 5 RCTs). The evidence suggested that MBCT had no significant effect on residual depressive symptom scores among those with a history of depression, but not currently depressed (SMD -0.57; 95% CI -1.67, 0.53; I<sup>2</sup> 92%; 5 RCTs).

#### Key Question 2a

Five out of 15 studies addressed adverse events; of those, three reported that none occurred. One study reported that the adverse events were not related to the intervention; another study reported two adverse events, one of which occurred in the intervention arm of the study.

#### Key Question 2b

There was insufficient evidence to answer this question. A meta-regression analyzing differences between studies that followed the original MBCT manual versus studies that used a modified MBCT intervention indicated that deviations were not significantly associated with MBCT results. In individuals with recurrent depression, one study found a weak correlation between the amount of formal meditation practiced outside the class and change in depressive symptom score during MBCT.

#### Key Question 3

Only one study assessed whether monotherapy MBCT reduces relapse rates compared with two control groups: (1) antidepressants and (2) placebo plus clinical management in a sample of participants in remission with a history of at least three previous episodes of depression. Overall, there were no significant differences in relapse rates between either MBCT and antidepressants (relative risk [RR] 0.80; 95% CI 0.39, 1.62) or between monotherapy MBCT and placebo plus clinical management (RR 0.65; 95% CI 0.34, 1.62). Thus, there is insufficient evidence to draw any conclusions on this question.

#### Key Question 3a

There was insufficient evidence to answer this question.

#### Key Question 4

We identified no study in adults with MDD that reported long-term effects. Six studies addressed MBCT as an adjunct treatment that included an assessment of relapse. There was moderate quality evidence that adjunctive MBCT reduces relapse rates compared with all controls (RR 0.72; 95% CI 0.56, 0.93; I² 25%; 6 RCTs) and compared with TAU (RR 0.70; 95% CI 0.50, 0.98; I² 39%; 5 RCTs). Among patients with at least three prior episodes of depression in at least partial recovery, there was moderate evidence of the impact of adjunctive MBCT on relapse rates (RR 0.66; 95% CI 0.48, 0.90; I² 47%; 6 RCTs). However, the evidence does not support that MBCT reduces relapse rates among individuals with one or two previous depressive episodes (RR 1.96; 95% CI 0.31, 12.29; I² 0%; 2 RCTs].

#### Key Question 4a

There was insufficient evidence to answer this question. A meta-regression analyzing differences between studies that followed the original MBCT manual versus studies that used a modified MBCT intervention indicated that deviations were not significantly associated with relapse. A study of individuals with recurrent depression found that relapse rates were higher among individuals with more body scan practice six to 12 months after MBCT, but found no associations with other forms of practice. Another study of individuals with recurrent depression found no difference in relapse rates between two trained MBCT instructors of different backgrounds.

#### Key Question 5

We did not identify any study that assessed whether monotherapy MBCT was associated with improved health-related quality of life among adults with MDD.

#### Key Question 6

Five studies examined the effect of adjunctive MBCT on health-related quality of life; TAU was the only comparator used in more than one study. Overall, there was very low quality evidence of the effect of MBCT on health-related quality of life. The pooled estimate showed no significant differences in quality of life in the MBCT groups compared with control (SMD -0.42; 95% CI -0.70, -0.14;  $I^271\%$ ; 5 RCTs).

#### Key Question 7

No studies addressed this question.

#### **Key Question 8**

We identified six studies of good and fair quality that examined the impact of adjunctive MBCT on antidepressant use or antidepressant costs. The pooled estimate of the four studies that examined use showed no statistically significant differences in antidepressant use in the MBCT groups compared with control (RR –0.01; 95% CI –0.34, 0.32; I² 18%; 4 RCTs). A fifth study found no statistically significant differences in changes in antidepressant use, and the sixth study focused on costs. There is moderate evidence that MBCT does not affect antidepressant use.

#### Conclusions

The evidence supports the use of *adjunctive* MBCT to reduce depressive symptoms among those currently depressed. The evidence also supports the use of *adjunctive* MBCT to reduce relapse among those with a history of at least three previous depressive episodes, but not among those with a previous history of one or two previous depressive episodes. This issue warrants additional research.

Evidence on the use of monotherapy MBCT is insufficient to draw conclusions about its efficacy, either to reduce depressive symptoms among those currently depressed or among those with a history of depression to reduce relapse. These are areas where additional studies are needed. There is also insufficient evidence on the effect of MBCT on health-related quality of life. Few studies examined the effect of MBCT on measures of health-related quality of life, and there was a lack of consistency in comparators used and the measures of health-related quality of life included. Further exploration of this is warranted.

The reported occurrence of adverse events was infrequent and did not appear to be related to MBCT. However, only six of the included studies (one monotherapy and five adjunctive) reported on adverse events.

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# **Abbreviations**

BDI Beck Depression Inventory
CBT cognitive behavioral therapy

CDSR Cochrane Database of Systematic Reviews

CENTRAL Central Register of Controlled Trials

CI confidence interval

CINAHL Cumulative Index to Nursing and Allied Health Literature

CPE cognitive psychological education

DARE Database of Abstracts of Reviews of Effects

DoD U.S. Department of Defense

DSM Diagnostic and Statistical Manual of Mental Disorders

GRADE Grades of Recommendation, Assessment, Development, and Evaluation

HRSD Hamilton Rating Scale for Depression ICD International Classification of Diseases

ITT intention-to-treat KQ key question

MBCT mindfulness-based cognitive therapy

MDD major depressive disorder

PICOTSS populations, interventions, comparators, outcomes, timing, setting, study

design

PILOTS Published International Literature on Traumatic Stress

RCT randomized control trial

RR relative risk

SMD standardized mean difference

TAU treatment as usual

VA U.S. Department of Veterans Affairs

WHO World Health Organization

Major depressive disorder (MDD) is a prevalent condition associated with significant burden for patients and society in terms of reduced quality of life, lower productivity, increased rates of other health conditions, and increased health care costs. In the general population of the United States, epidemiological studies of MDD suggest lifetime prevalence estimates between 13 and 16 percent and 12-month prevalence estimates between 5 and 7 percent among adults (Hasin et al., 2005; Kessler, Berglund, et al., 2003). Military service members and veterans with a history of combat exposure in the context of a deployment have been found to have elevated rates of probable MDD relative to the general population (Hoge et al., 2004; Schell and Marshall, 2008; Vaughan et al., 2011; Wells et al., 2010). Although the majority of individuals who develop MDD will experience remission of the major depressive episode within a year of onset (Coryell et al., 1994; Spijker et al., 2002), the probability of experiencing a recurrent episode is high. Roughly 80 percent of individuals who experience one episode of depression will experience another episode in the future (Judd, 1997). MDD is associated with significant medical, social, and economic consequences, including increased risk of various physical conditions, relationship problems, lost productivity, and health care costs (Donohue and Pincus, 2007; Kessler, 2012).

Several evidence-based treatments for MDD exist and are highlighted as front-line treatments for MDD in the U.S. Department of Veterans Affairs (VA) and U.S. Department of Defense (DoD) Clinical Practice Guidelines for Management of Major Depressive Disorder (Management of Major Depressive Disorder Working Group, 2009). However, these interventions vary in their effectiveness, safety, and acceptability to different patient populations, and many individuals who would benefit from treatment do not receive depression-related care (Tylee and Jones, 2005). The literature has documented a wide variety of barriers to mental health care among military personnel and veterans, including stigma, beliefs about mental health and mental health treatment, and access to mental health providers (Ben-Zeev et al., 2012; Vogt, 2011; Zinzow et al., 2012). Individuals with depression may use complementary and alternative medicine therapies (Kessler, Soukup, et al., 2001). One popular type of complementary and alternative medicine treatment that has been used in treating MDD is meditation (Su and Lifeng, 2011). Meditation is a mind-body technique that refers to a broad variety of practices with the general goal of training the mind through regulation of attention and/or emotion to affect body functions, symptoms, and state of being (Nash and Newberg, 2013; National Center for Complementary and Alternative Medicine, 2001, 2005). Meditation practice can also be embedded in a broader approach that includes movement (e.g., yoga, tai chi)—that is, movement meditation (Cahn and Polich, 2006; Goyal et al., 2014).

The only form of meditation specifically addressed in the current VA/DoD *Clinical Practice Guideline on Management of Major Depressive Disorder* is mindfulness-based cognitive therapy

(MBCT), which is a standardized training program that combines the principles of cognitive therapy with the practice of mindfulness meditation. The guideline indicates that MBCT may be employed for patients at high risk of relapse during the treatment continuation phase and comments on the lack of research comparing mindfulness-based interventions with control groups, medication, and psychotherapy during initial treatment (Management of Major Depressive Disorder Working Group, 2009).

This review seeks to examine the current state of the evidence regarding the efficacy and safety of MBCT for MDD.

### **Key Questions**

We conducted a systematic review to identify randomized control trials (RCTs) testing the efficacy and safety of meditation to treat individuals with MDD. Specifically, this systematic review aimed to answer the following primary key questions (KQs) and subquestions:

- KQ 1: Is meditation, as a monotherapy, more effective than treatment as usual (TAU), waitlists, no treatment, or other active treatments in reducing depressive symptoms in adults with MDD?
  - KQ 1a: Among publications that address monotherapy meditation as a treatment for adults with MDD, how common and severe are adverse events?
  - KQ 1b: Does the efficacy differ depending on the type of meditation used?
- KQ 2: Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing depressive symptoms in adults with MDD?
  - KQ 2a: Among publications that address adjunctive meditation as a treatment for adults with MDD, how common and severe are adverse events?
  - KQ 2b: Does the efficacy differ depending on the type of meditation used?
- KQ 3: Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in decreasing relapse rates in adults with MDD?<sup>2</sup>
  - KQ 3a: Does the efficacy differ depending on the type of meditation used?
- KQ 4: Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in decreasing relapse rates in adults with MDD?
  - KQ 4a: Does the efficacy differ depending on the type of meditation used?

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<sup>&</sup>lt;sup>2</sup> A relapse occurs when a patient previously in remission experiences another episode of MDD less than a year after the previous episode; a recurrence occurs when a patient experiences a subsequent episode of major depression at least a year after the previous episode. Here we use the term relapse to include both relapses and recurrences.

In addition, we aimed to answer the following secondary key questions:

- KQ 5: Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in improving health-related quality of life symptoms in adults with MDD?
- KQ 6: Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in improving health-related quality of life symptoms in adults with MDD?
- KQ 7: Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing antidepressant use in adults with MDD?
- KQ 8: Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing antidepressant use in adults with MDD?

## Search Strategy

We searched the databases PubMed, CINAHL (Cumulative Index to Nursing and Allied Health Literature), PsycINFO, Web of Science, Embase, CDSR (Cochrane Database of Systematic Reviews), CENTRAL (Cochrane Central Register of Controlled Trials), DARE (Database of Abstracts of Reviews of Effects), and PILOTS (Published International Literature on Traumatic Stress) for meditation studies published through January 2015. We performed an updated search in May 2015 that focused on MBCT. In addition, we screened studies included in prior systematic reviews related to this topic. We also searched Clinicaltrials.gov and contacted authors of all relevant, completed trials for which published data were not available to invite the submission of in-press publications.

The search strategy was developed by a reference librarian for RAND's Knowledge Services and was informed by search results of existing reviews. The search strings are described in Appendix A.

## Eligibility Criteria

The inclusion and exclusion criteria we applied to retrieved publications were developed using the framework of participants, interventions, comparators, outcomes, timing, settings, and study design, or PICOTSS.

- Participants: Studies were limited to those that focused on adults, male and female, who are at least 18 years of age and have been diagnosed with MDD. MDD was defined as meeting the criteria for a clinical diagnosis of MDD according to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM; American Psychiatric Association, 2013) or International Classification of Diseases, 9th revision, Clinical Modification (ICD-9-CM; National Center for Health Statistics, 2010) criteria. We included studies of populations with a history of MDD if they reported data on depressive symptoms or relapse.
- *Interventions*: Studies were included that examined the effect of MBCT. We included studies reporting deviations from the original MBCT protocol (Segal, Williams, and Teasdale, 2002) if MBCT was clearly referred to.
- *Comparators*: Studies that utilized TAU, waitlist control, attention control, no treatment, or other active treatments as the comparator were included. Studies that exclusively compared MBCT with other forms of complementary and alternative medicine (e.g., acupuncture) were excluded.
- *Outcomes*: Studies that reported one or more of the following outcomes were included: depression symptoms, treatment response, remission, relapse/recurrence, and health-related quality of life.

- *Timing*: Studies could involve any treatment duration and follow-up period.
- Setting: Studies were not limited by setting.
- *Study design*: Included studies were limited to individually- or cluster-randomized controlled trials only.
- *Other limiters*: Studies had to be published in English to be eligible. Data reported only in conference proceedings or abstracts were excluded.

## **Inclusion Screening**

Two independent reviewers screened titles and abstracts of retrieved citations following a pilot exercise to ensure similar interpretation of the inclusion and exclusion criteria. Citations judged to be potentially eligible by at least one reviewer were obtained as full text. Two independent reviewers screened full-text studies against predefined inclusion and exclusion criteria; any disagreements between the reviewers were resolved through discussion within the review team. The flow of citations throughout this process was documented in an electronic database, and reasons for exclusion of publications that underwent full-text screening were recorded in the database.

#### **Data Extraction**

Each publication was abstracted by two reviewers using electronic data collection forms designed by the project lead, with input from the project team. Reviewers pilot-tested the data collection forms on a few well-reported studies, modified the forms, and performed a final pilot of the forms on a random selection of included studies to ensure agreement of interpretation. The reviewers then independently abstracted study-level data in an electronic database. All discrepancies were resolved by PhD-level staff with input from both reviewers in a group setting. Study-level data were abstracted for the following information:

- Participants: gender, age, method of depression identification, baseline depression scores
- *Interventions*: type of meditation, dosage (intensity, frequency, duration), and co-intervention(s)
- *Comparators*: type of comparator
- *Outcomes* (depressive symptom score, response to treatment, remission, relapse, health-related quality of life, adverse events) for each follow-up point of measurement: domain, method of measurement, metric of data expression (e.g., means, proportions)
- *Timing*: timing of outcome assessment(s)
- Setting: country where the trial occurred
- *Study design*: purpose, inclusion and exclusion criteria, starting and ending sample size, items relevant to risk of bias and quality ratings

<sup>&</sup>lt;sup>3</sup> Response to treatment is at least a 50-percent reduction in the Hamilton Rating Scale for Depression (HRSD) score.

When different reports existed for the same study, descriptions of participants were compared to ensure that data from the same study populations were included in the review only once.

#### Risk of Bias

Project leaders assessed the risk of bias of included RCTs using the Cochrane Risk of Bias tool (Higgins et al., 2011). Specifically, the reviewers assessed risk of bias related to the following: random sequence generation (selection bias), allocation concealment (selection bias), blinding of participants (performance bias), blinding of outcome assessors (detection bias), completeness of reporting outcome data (attrition bias), and selective outcome reporting (reporting bias). Other biases related to the U.S. Preventive Services Task Force's criteria for internal validity of included studies were also assessed, namely those related to equal distribution among groups of potential confounders at baseline; cross-overs or contamination between groups; equal, reliable, and valid outcome measurement; clear definitions of interventions; and intention-to-treat (ITT) analysis (U.S. Preventive Services Task Force, 2008). These criteria were used to rate the quality of evidence of individual included studies using the following guidelines (Lewin Group and ECRI Institute, 2014; U.S. Preventive Services Task Force, 2008):

- Good: Comparable groups are initially assembled and maintained throughout the study with at least 80-percent follow-up; reliable, valid measurement is used and applied equally to all groups; interventions are clearly described; all important outcomes are considered; appropriate attention is given to confounders in analysis; ITT analysis is used.
- Fair: One or more of the following issues is found in the study: some though not major differences between groups exist at follow-up; measurement instruments are acceptable but not ideal, though are generally applied equally; some but not all important outcomes are considered; some but not all potential confounders are accounted for in analyses. ITT analysis is used.
- *Poor*: One or more of the following "fatal flaws" is found in the study: initially assembled groups are not comparable or maintained throughout the study; unreliable or invalid measurements are used or applied unequally across groups; key confounders are given little to no attention in analyses; ITT is not used.

# **Data Synthesis**

The primary aim of this systematic review was to identify whether meditation in the format of MBCT is effective in improving MDD symptoms and preventing relapse. A secondary outcome was adverse events. Results are described separately for MBCT delivered as monotherapy versus adjunctive therapy. We differentiated patients who had a clinical diagnosis of MDD, were experiencing a depressive episode, or had residual symptoms when they enrolled in the study from patients with prior MDD but who were in remission.

Treatment effects for continuous outcomes were computed as standardized mean differences (SMDs) together with their 95-percent confidence intervals (CIs) to ensure comparability of effect sizes across studies using different outcome measures. Relative risks (RRs) were computed for dichotomous variables (i.e., relapse). Results are reported such that SMDs less than zero and RRs less than one favor MBCT.

We used meta-analysis to pool results across included studies for depressive symptoms, relapse, and health-related quality of life. We used the Hartung- Knapp-Sidik-Jonkman method for random effects models (Hartung, 1999; Hartung and Knapp, 2001; Sidik and Jonkman, 2007). This method may be preferred when the number of studies pooled is small and when there is evidence of heterogeneity (IntHout, Ioannidis, and Borm, 2014). It produces more-robust error rates than the DerSimonian and Laird method (Sánchez-Meca and Marín-Martínez, 2008).

We calculated treatment effects at postintervention or the closest follow-up point to postintervention reported in the individual studies. When multiple depression measures were available, we used HRSD scores to assess treatment effects on depression symptoms, followed by the Beck Depression Inventory (BDI). When multiple health-related quality of life domains were reported, we used the psychological domain (rather than physical or social). Outcome data were based on ITT analyses reported in the included studies. In the absence of ITT data, we used the number of patients at follow-up. When studies reported on more than one comparator, the pooled analyses used a passive comparator where possible (e.g., waitlist, TAU). We also investigated publication bias for all main analyses with sufficient data using Begg's rank correlation test for funnel plot asymmetry (Begg and Mazumdar, 1994) and Egger's test for funnel plot asymmetry (Egger et al., 1997).

Subgroup analyses grouped studies by comparator. Meta-regression was used to determine the effect of effect modifiers.

# Quality of Evidence

The quality of evidence was assessed for major outcomes using the Grades of Recommendation, Assessment, Development, and Evaluation (or GRADE) approach, in which the body of evidence was assessed based on the following dimensions: study limitations (low, medium, or high), directness (direct or indirect), consistency (consistent, inconsistent, or unknown), and precision (precise or imprecise).

The quality of evidence was graded on a four-item scale:

- *High* indicates that the review authors are very confident that the effect estimate lies close to the true effect for a given outcome, as the body of evidence has few or no deficiencies. As such, the reviewers believe the findings are stable: i.e., further research is very unlikely to change confidence in the effect estimate.
- *Moderate* indicates that the review authors are moderately confident that the effect estimate lies close to the true effect for a given outcome, as the body of evidence has some deficiencies. As such, the reviewers believe that the findings are likely to be stable,

- but further research may change confidence in the effect estimate and may even change the estimate
- Low indicates that the review authors have limited confidence that the effect estimate lies close to the true effect for a given outcome, as the body of evidence has major or numerous (or both) deficiencies. As such, the reviewers believe that additional evidence is needed before concluding either that the findings are stable or that the effect estimate lies close to the true effect.
- *Very low* indicates that the review authors have very little confidence that the effect estimate lies close to the true effect for a given outcome, as the body of evidence has very major deficiencies. As such, the true effect is likely to be substantially different from the estimated effect; thus, any estimate of effect is very uncertain.

#### **Protocol Deviations**

In order to provide more-targeted information to answer the review questions, we did not apply the depression scale cut-offs as described in the systematic review protocol, but limited included studies to those that reported a clinical diagnosis of MDD. An initial screen of the identified literature indicated substantial clinical diversity; depression is a symptom relevant to a number of mental disorders, patient characteristics vary, and it is unclear whether and how treatment effects will translate to patients with MDD.

In addition, we restricted the systematic review to MBCT in order to be able to provide clear effectiveness statements. The initial searches indicated that the effect of other interventions—such as person-based cognitive therapy, compassion-mindfulness therapy, mindfulness meditation, mantra meditation, mindfulness training, miscellaneous group meditation formats, Chan-based mind-body intervention, Buddhist walking meditation, tai chi, diverse yoga approaches, or qigong interventions—have been investigated in only a very small number of studies in patients with a clinical diagnosis of MDD. Furthermore, test searches indicated that for each known intervention, because of the lack of standardization of the intervention description, including the name of the intervention (e.g., "tai chi," tai-chi," "tai-ji," "tai-ji," "t'ai chi," "t' ai chi," "taijiquan," OR "shadow boxing"), multiple searches in multiple sources would need to be undertaken to ensure that all relevant studies were found. Meditation is an element in a variety of very diverse approaches, which requires extensive and exhaustive literature searches, and multiple systematic reviews are necessary to summarize the effect of each of the diverse existing meditation interventions, which exceeds the resources of this project.

#### Results of Literature Searches

Our search of the electronic databases identified 7,290 publications; two additional studies were found by scanning citations (see Figure 3.1). After duplicates were removed, 4,072 publications were included for title and abstract screening, of which 3,357 were excluded because one or more of the exclusion criteria were met. An additional 690 publications were excluded during full-text review (listed in Appendix B). A total of 25 publications describing 17 unique RCTs of MBCT were identified and met the inclusion criteria for our review (described in Table 3.1).

Records identified through electronic databases Additional articles identified (7,290 total citations; 4,655 through scan of citations in unique) related review articles (2) 4,657=unique citations from all sources Additional duplicates identified n=585Title and abstract screening n=4,072Excluded n=3,357 Unable to locate n=1 Full-text review n=714Excluded N=689 Not MDD (398) Participants are children (1) Not MBCT (39) Not an RCT (219) No relevant outcome data assessed (9) Data abstraction Not English (1) n=17 studies, Conference proceeding or abstract (22) 25 publications

Figure 3.1. Publication Review and Inclusion

#### Key Question

For KQ 1 on the effect of MBCT as monotherapy for depressive symptoms, we identified one RCT that reported on the effect of treatment on depressive symptoms using standardized scales (Britton et al., 2010). The study did not examine response to treatment (i.e., at least a 50-percent reduction in depressive symptom score on a standardized scale) or remission.

For KQ 1a, one study provided information on the frequency and severity of adverse events that occurred with monotherapy MBCT (Britton et al., 2010).

For KQ 2 on the effect of MBCT as adjunctive therapy for depressive symptoms, we identified 12 RCTs<sup>4</sup> that reported depressive symptom scores using standardized scales (Barnhofer et al., 2009; Batink et al., 2013; Bondolfi et al., 2010; Chiesa, Mandelli, and Serretti, 2012; Forkmann et al., 2014; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Hepburn et al., 2009; Jermann et al., 2013; Keune et al., 2011; Kuyken, Byford, et al., 2008; Ma and Teasdale, 2004; Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013; Shahar et al., 2010; van Aalderen et al., 2012). One study examined response to treatment (Barnhofer et al., 2009).

For KQ 2a, we found six studies that provided information on the frequency and severity of adverse events with adjunctive MBCT used to treat MDD (Barnhofer et al., 2009; Forkmann et al., 2014; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Kuyken, Byford, et al., 2008; Shahar et al., 2010; Williams, Crane, et al., 2014).

For KQ 3, we identified one RCT that examined relapse after monotherapy MBCT (Segal et al., 2010), and for KQ 4, we identified six studies that examined relapse after adjunctive MBCT (Godfrin and van Heeringen, 2010; Jermann et al., 2013; Kuyken, Byford, et al., 2008; Ma and Teasdale, 2004; Teasdale, Segal, et al., 2000; Williams, Crane, et al., 2014).

We found no monotherapy MBCT studies that provided information on health-related quality of life for KQ 5. For KQ 6, we found five adjunctive MBCT studies that provided information on health-related quality of life (Chiesa, Mandelli, and Serretti, 2012; Godfrin and van Heeringen, 2010; Kuyken, Byford, et al., 2008; Manicavasgar, Parker, and Perich, 2011; van Aalderen et al., 2012).

We did not identify any RCTs that assessed reductions in antidepressant use following monotherapy MBCT (KQ 7), but we did identify six RCTs that investigated antidepressant use or costs of antidepressants for adjunctive MBCT (KQ 8) (Barnhofer et al., 2009; Bondolfi et al., 2010; Godfrin and van Heeringen, 2010; Kuyken, Byford, et al., 2008; Ma and Teasdale, 2004; Teasdale, Segal, et al., 2000).

<sup>&</sup>lt;sup>4</sup> The number of citations may be larger than the number of RCTs identified. This occurs when more than one publication on the same RCT reported analyses relevant and unique to the review.

Table 3.1. Evidence Base for Key Questions

Key	Question	Number of Studies
1	Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing depressive symptoms in adults with MDD?	1 RCT of monotherapy MBCT with efficacy data
1a	Among publications that address monotherapy meditation as a treatment for adults with MDD, how common and severe are adverse events?	1 RCT of monotherapy MBCT with safety data
1b	Does the efficacy differ depending on the type of meditation used (e.g., MBCT, mindfulness-based stress reduction, yoga, tai chi)?	1 RCT of monotherapy MBCT with efficacy data
2	Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing depressive symptoms in adults with MDD?	12 RCTs of adjunctive MBCT with efficacy data
2a	Among publications that address adjunctive meditation as a treatment for adults with MDD, how common and severe are adverse events?	5 RCTs of adjunctive MBCT with safety data
2b	Does the efficacy differ depending on the type of meditation used?	12 RCTs of adjunctive meditation with efficacy data
3	Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in decreasing relapse rates in adults with MDD?	1 RCT of monotherapy MBCT with relapse data
3a	Does the efficacy differ depending on the type of meditation used?	1 RCT of monotherapy MBCT with relapse data
4	Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in decreasing relapse rates in adults with MDD?	6 RCTs of adjunctive MBCT with relapse data
4a	Does the efficacy differ depending on the type of meditation used?	6 RCTs of adjunctive MBCT with relapse data
5	Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in improving health-related quality of life in adults with MDD?	RCTs of monotherapy     MBCT with health-related     quality of life data
6	Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in improving health-related quality of life in adults with MDD?	5 RCTs of adjunctive MBCT with health-related quality of life data
7	Is meditation, as a monotherapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing antidepressant use in adults with MDD?	0 RCTs of monotherapy MBCT with antidepressant use
8	Is meditation, as an adjunctive therapy, more effective than TAU, waitlists, no treatment, or other active treatments in reducing antidepressant use in adults with MDD?	6 RCTs of adjunctive MBCT with antidepressant use

### Design

Nine RCTs randomized participants by using a block randomization design, seven studies randomized individual participants rather than clusters of participants, and one study assigned participants to groups and randomized the groups. The studies included in this review varied widely in size, ranging from 18 to 274 enrolled participants. Three RCTs included fewer than 50 participants; eight enrolled between 50 and 100 participants; four included 100 to 200 participants; and two studies enrolled more than 200 participants. Six reported an *a priori* power calculation with a target sample size, nine studies reported insufficient power for post-hoc analyses, and two studies did not report information about power. Fifteen studies were two-arm RCTs, while two were three-arm RCTs.

### Location

The studies were performed in a variety of countries—two in the United States, five in the United Kingdom, two in the Netherlands, and one in each of the following countries: Australia, Belgium, Canada, Germany, Iran, Italy, and Switzerland. One study had sites in both Canada and the United Kingdom.

### **Participants**

The average age of participants ranged from 32 to 49 years in the studies that reported patient characteristics. One study did not report information about age of participants. The proportion of men in the studies ranged from 16 to 37 percent.

### Interventions

Studies occurring after 2002 reported using the MBCT manual developed by Segal, Williams, and Teasdale (2002). While all reported having eight weekly sessions, the length of the sessions varied from two to three hours. Studies reported holding up to four follow-up sessions after the completion of the MBCT intervention. Three studies reported modifying the MBCT program. Two made adjustments to address suicidality and acute symptoms (Barnhofer et al., 2009; Williams, Crane, et al., 2014). One study removed the yoga component (Manicavasgar, Parker, and Perich, 2011).

### Comparators

Comparators in the studies varied. Monotherapy studies used waitlist, antidepressants, and antidepressant placebo plus clinical management as comparators. For adjunctive MBCT studies, the most common comparators were TAU (ten studies) and antidepressants (four studies) controls.

### Outcome Measures

The length of follow-up ranged from immediately postintervention to 15 months after treatment was completed. Thirteen studies reported depressive symptom scores as an outcome. Seven of the studies assessed relapse. Five studies reported measures of health-related quality of life. Seven studies reported adverse events or side effects.

### Risk of Bias

Table 3.2 summarizes the authors' assessment of the risk of bias for the included studies using the Cochrane Risk of Bias tool for RCTs. Four studies were assigned a "good" quality rating (Barnhofer et al., 2009; Batink et al., 2013; Bondolfi et al., 2010; Ma and Teasdale, 2004; Teasdale, Segal, et al., 2000), five studies were rated "fair" quality (Chiesa, Mandelli, and Serretti, 2012; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Kuyken, Byford, et al.,

2008; Segal et al., 2010), and eight studies were rated "poor" quality (Britton et al., 2010; Hepburn et al., 2009; Keune et al., 2011; Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013; Shahar et al., 2010; van Aalderen et al., 2012; Williams, Crane, et al., 2014). In addition, seven studies had an overall rating of poor because of a lack of ITT analysis.

Random sequence generation. Two studies had unclear selection bias because they did not report their method for randomizing study participants (Hepburn, et al., 2009; Omidi et al., 2013). Of the remaining studies, 14 were rated as low risk because they reported adequate random sequence generation methods (Barnhofer et al., 2009; Batink et al., 2013; Bondolfi et al., 2010; Britton et al., 2010; Chiesa, Mandelli, and Serretti, 2012; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Keune et al., 2011; Kuyken, Byford, et al., 2008; Ma and Teasdale, 2004; Segal et al., 2010; Shahar et al., 2010; Teasdale, Segal, et al., 2000; van Aalderen et al., 2012; Williams, Holmes, et al., 2013; Williams, Crane, et al., 2014). One study was at high risk for selection bias because of inadequate randomization methods (Manicavasgar, Parker, and Perich, 2011).

Allocation concealment. Five studies had unclear selection bias because they did not report their allocation concealment method (Chiesa, Mandelli, and Serretti, 2012; Hepburn et al., 2009; Kuyken, Byford, et al., 2008; Omidi et al., 2013; van Aalderen et al., 2012). Twelve other studies did describe their method of allocation concealment and were rated as low risk (Barnhofer et al., 2009; Batink et al., 2013; Bondolfi et al., 2010; Britton et al., 2010; Forkmann et al., 2014; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Jermann et al., 2013; Keune et al., 2011; Ma and Teasdale, 2004; Manicavasgar, Parker, and Perich, 2011; Segal et al., 2010; Shahar et al., 2010; Teasdale, Segal, et al., 2000; Williams, Crane, et al., 2014).

Blinding of participants. Two studies had unclear selection bias because they did not report the approach for ensuring blinding of participants (Chiesa, Mandelli, and Serretti, 2012; Omidi et al., 2013). Fifteen studies did not report adequate blinding approaches and were rated as high risk (Barnhofer et al., 2009; Batink et al., 2013; Bondolfi et al., 2010; Britton et al., 2010; Forkmann et al., 2014; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Jermann et al., 2013; Keune et al., 2011; Kuyken, Byford, et al., 2008; Ma and Teasdale, 2004; Manicavasgar, Parker, and Perich, 2011; Segal et al., 2010; Shahar et al., 2010; Teasdale, Segal, et al., 2000; van Aalderen et al., 2012; Williams, Crane, et al., 2014).

Blinding of outcome assessors. Three studies had unclear risk of detection bias because they did not report whether outcome assessors were blind to participation allocation to study arms (Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013; van Aalderen et al., 2012). Fourteen studies reported the outcome assessors were blinded to intervention assignment or the study outcomes were self-reported instruments and were low risk (Barnhofer et al., 2009; Bondolfi et al., 2010; Britton et al., 2010; Chiesa, Mandelli, and Serretti, 2012; Forkmann et al., 2014; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Hepburn et al., 2009; Jermann et al., 2013; Keune et al., 2011; Kuyken, Byford, et al., 2008; Ma and Teasdale, 2004; Segal et al., 2010; Shahar et al., 2010; Teasdale, Segal, et al., 2000; Williams, Crane, et al., 2014).

Incomplete outcome data. Seven studies had low risk of attrition bias (Barnhofer et al., 2009; Batink et al., 2013; Bondolfi et al., 2010; Forkmann et al., 2014; Geschwind et al., 2012; Jermann et al., 2013; Ma and Teasdale, 2004; Omidi et al., 2013; Teasdale, Segal, et al., 2000; Williams, Crane, et al., 2014). Nine studies were at high risk for attrition bias (Britton et al., 2010; Chiesa, Mandelli, and Serretti, 2012; Godfrin and van Heeringen, 2010; Hepburn et al., 2009; Keune et al., 2011; Kuyken, Byford, et al., 2008; Manicavasgar, Parker, and Perich, 2011; Segal et al., 2010; Shahar et al., 2010). One study was unclear (van Aalderen et al., 2012).

Selective outcome reporting. Six studies had low risk of reporting bias because we were able to identify an *a priori* trial registration entry (Godfrin and van Heeringen, 2010; Keune et al., 2011; Kuyken, Byford, et al., 2008; Segal et al., 2010; van Aalderen et al., 2012; Williams, Crane, et al., 2014). Ten studies had unclear risk of reporting bias because we were unable to identify such an entry (Barnhofer et al., 2009; Batink et al., 2013; Bondolfi et al., 2010; Britton et al., 2010; Chiesa, Mandelli, and Serretti, 2012; Forkmann et al., 2014; Geschwind et al., 2012; Hepburn et al., 2009; Jermann et al., 2013; Ma and Teasdale, 2004; Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013; Shahar et al., 2010; van Aalderen et al., 2012). One study was high risk because we identified a trial registration entry and the study did not report on all identified outcomes (Teasdale, Segal, et al., 2000).

Other. One study did not provide an adequate description of the study to be able to determine whether other risk to biases existed (Godfrin and van Heeringen, 2010). Five studies were low risk for other biases because no other issues were identified (Bondolfi et al., 2010; Chiesa, Mandelli, and Serretti, 2012; Kuyken, Byford, et al., 2008; Ma and Teasdale, 2004; Teasdale, Segal, et al., 2000). The remainder of the studies suffered from one or more potential biases (Barnhofer et al., 2009; Batink et al., 2013; Britton et al., 2010; Geschwind et al., 2012; Hepburn et al., 2009; Keune et al., 2011; Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013; Segal et al., 2010; Shahar et al., 2010; van Aalderen et al., 2012; Williams, Crane, et al., 2014).

Table 3.2. Study Quality/Risk of Bias for Each MBCT Randomized Controlled Trial

Study	Random Sequence Generation (selection bias)	Allocation Concealment (selection bias)	Blinding of Participants (performance bias)	Blinding of Outcome Assessors (detection bias)	Completeness of Reporting Outcome Data (attrition bias)	Selective Outcome Reporting (reporting bias)	Other Biases <sup>a</sup>	USPSTF Quality Rating <sup>b</sup>
Barnhofer et al., 2009	Low risk	Low risk	High risk	Low risk	Low risk	Unclear	Differences in chronic depression among completers at baseline	Good
Batink et al. 2013 Geschwind et al., 2012; Forkmann et al., 2014	Low risk	Low risk	High risk	Low risk	Low risk	Unclear	Differences in employment and comorbid anxiety disorder; marginal differences in gender and use of antidepressants at baseline	Fair
Bondolfi et al., 2010; Jermann et al., 2013	Low risk	Low risk	High risk	Low risk	Low risk	Unclear	None	Good
Britton et al., 2010	Low risk	Low risk	High risk	Low risk	High risk	Unclear	Differential dropout between arms; no ITT analysis	Poor
Chiesa, Mandelli, and Serretti 2012	Low risk	Unclear	Unclear	Low risk	High risk	Unclear	None	Fair
Godfrin and van Heeringen, 2010	Low risk	Low risk	High risk	Low risk	High risk	Low risk	Unclear	Fair
Hepburn et al., 2009; Crane et al., 2008	Unclear	Unclear	High risk	Low risk	High risk	Unclear	No ITT analysis; non- completers were significantly younger than completers	Poor
Keune et al., 2011 Bostanov et al., 2012	Low risk	Low risk	High risk	Low risk	High risk	Low risk	No ITT analysis	Poor

Study	Random Sequence Generation (selection bias)	Allocation Concealment (selection bias)	Blinding of Participants (performance bias)	Blinding of Outcome Assessors (detection bias)	Completeness of Reporting Outcome Data (attrition bias)	Selective Outcome Reporting (reporting bias)	Other Biases <sup>a</sup>	USPSTF Quality Rating <sup>b</sup>
Kuyken, Byford, et al., 2008 Kuyken, Watkins, et al., 2010	Low risk	Unclear	High risk	Low risk	High risk	Low risk	None	Fair
Ma and Teasdale, 2004	Low risk	Low risk	High risk	Low risk	Low risk	Unclear	None	Good
Manicavasgar, Parker, and Perich, 2011	High risk	Low risk	High risk	Unclear	High risk	Unclear	No ITT analysis	Poor
Omidi et al., 2013	Unclear	Unclear	Unclear	Unclear	Low risk	Unclear	Substantive differences between arms at baseline	Poor
Segal et al., 2010	Low risk	Low risk	High risk	Low risk	High risk	Low risk	Differences in any axis-2 comorbidity at baseline	Fair
Shahar et al., 2010	Low risk	Low risk	High risk	Low risk	High risk	Unclear	No ITT analysis	Poor
Teasdale, Segal, et al., 2000; Teasdale, Moore, et al., 2002; Williams, Teasdale, et al., 2000	Low risk	Low risk	High risk	Low risk	Low risk	High risk	None	Good
Van Aalderen et al., 2012	Low risk	Unclear	High risk	Unclear	Unclear	Low risk	No ITT analysis; differential dropout	Poor
Williams, Crane, et al., 2014	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	No ITT analysis; non- completers were significantly younger than completers	Poor

<sup>&</sup>lt;sup>a</sup> Other biases include balance of confounders, cross-overs/contamination, measurement, intervention definition, and ITT analysis.

<sup>b</sup> The USPSTF criteria (U.S. Preventive Services Task Force, 2008) for study quality involve assessment of various factors related to the internal validity of the study. "Good" is the highest ranking, which involves comparable groups with low attrition, with outcomes being reliably and validly measured and analyzed. "Fair" is the next highest rating and involves studies with one or a few potential concerns (e.g., some though not major differences between groups exist at follow-up), though intention-to-treat analysis was performed. "Poor" is the lowest ranking and involves studies with one or more "fatal flaws" (e.g., no intention-to-treat analysis).

# KQ 1: Is Meditation, as a Monotherapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Reducing Depressive Symptoms in Adults with MDD?

We did not identify any study in patients with a current diagnosis of MDD that reported on the effectiveness of MBCT given as monotherapy.

We identified one study in patients in full or partial remission that explicitly assessed MBCT as monotherapy and reported on depressive symptoms. The RCT with 26 enrolled participants (Britton et al., 2010) was rated poor quality due to not performing ITT analyses and having unequal dropout in the study arms. The intervention consisted of eight weekly sessions and a one-day retreat. Study participants had a history of at least three depressive episodes. The study reported significantly greater reductions in depressive symptom scores in the MBCT arm compared with waitlist (SMD –1.11; 95% CI –2.07, –0.15; 1 RCT).

Three studies (Keune et al., 2011; Manicavasgar, Parker, and Perich, 2011; Shahar et al., 2010) were identified that did not indicate systematic co-interventions, such as antidepressants or TAU as recommended by their primary health care provider. Combined with the explicit monotherapy study, the pooled effect indicated that MBCT is potentially associated with reductions in depressive symptom scores versus other comparators, including waitlist or cognitive behavioral therapy (CBT) without mindfulness meditation (SMD –1.07, 95% CI –2.21, 0.08; I² 80%; 4 RCTs). A meta-regression indicated no statistically significant differences in the results between the monotherapy (p=0.49) and unclear (p=0.26) studies compared with adjunctive MBCT studies. Results from another meta-regression showed that unclear studies were possibly different from monotherapy studies (p=0.06). Thus, the unclear studies were included in the analyses with adjunctive MBCT studies.

## KQ 1a: Among Publications That Address Monotherapy Meditation as a Treatment for Adults with MDD, How Common and Severe Are Adverse Events?

Only two studies explicitly assessed MBCT as monotherapy (one reporting on depressive symptoms, one on relapse). One of the two reported that no adverse events occurred during the trial (Britton et al., 2010), but it did not report whether there was systematic monitoring for adverse events or which events were assessed

# KQ 1b: Does the Efficacy Differ Depending on the Type of Monotherapy Meditation Used (e.g., MBCT, mindfulness-based stress reduction, yoga, tai chi)?

The only identified explicit monotherapy study followed the standard MBCT program. The study reported on meditation practice and reported no correlation between depression scale scores and mindfulness meditation practice outside of class (Britton et al., 2010).

# KQ 2: Is Meditation, as an Adjunctive Therapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Reducing Depressive Symptoms in Adults with MDD?

Participants in seven studies had a clinical diagnosis of MDD, were experiencing a depressive episode, or had residual symptoms when they enrolled in the study, which we refer to as active depression (Barnhofer et al., 2009; Batink et al., 2013; Chiesa, Mandelli, and Serretti, 2012; Geschwind et al., 2012; Manicavasgar, Parker and Perich, 2011; Omidi et al., 2013; Shahar et al., 2010; van Aalderen et al., 2012). Studies compared MBCT with waitlist, TAU alone, psycho-education, or CBT without mindfulness meditation. The pooled analysis across these studies showed significantly greater improvement for MBCT than comparators (SMD –0.77; 95% CI –1.21, –0.34; I<sup>2</sup> 63%; 7 RCTs). There was substantial heterogeneity in study results (see Figure 3.2).

The effect estimate was similar when excluding two studies (Manicavasgar, Parker, and Perich, 2011; Shahar et al., 2010) that did not report a systematic co-intervention or that explicitly referred to ongoing TAU (SMD -0.83; 95% CI -1.38, -0.27; I<sup>2</sup> 61%; 5 RCTs).

One of the studies with participants who had a clinical diagnosis of MDD, were experiencing a depressive episode, or had residual symptoms when they enrolled in the study also examined response to treatment (i.e., at least a 50-percent reduction in depressive symptom score on a standardized scale) (Barnhofer et al., 2009). Participants were assigned to either MBCT and TAU or TAU alone. The reponse rate was not statistically significantly different between the MBCT group and TAU alone (RR 0.18; 95% CI 0.02, 1.31).

Figure 3.2. Efficacy of Adjunctive MBCT on Depressive Symptoms in Active Depression

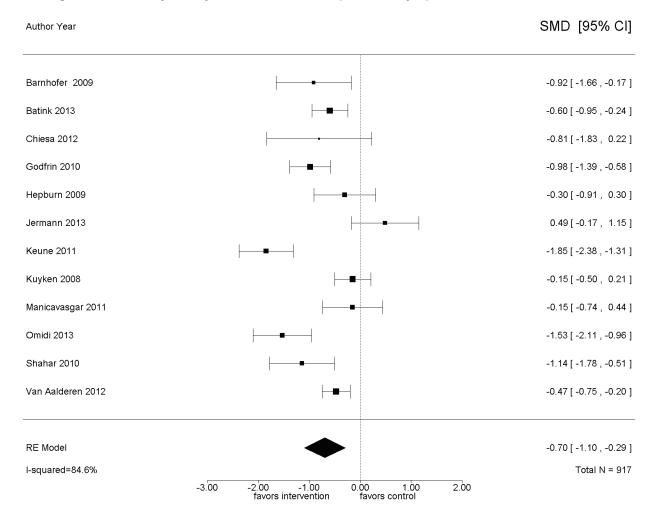
Author Year		SMD [95% CI]
Barnhofer 2009	<b></b>	-0.92 [ -1.66 , -0.17 ]
Batink 2013	<b>├──</b>	-0.60 [ -0.95 , -0.24 ]
Chiesa 2012	·	-0.81 [ -1.83 , 0.22 ]
Manicavasgar 2011	-	-0.15 [ -0.74 , 0.44 ]
Omidi 2013	<del></del>	-1.53 [ -2.11 , -0.96 ]
Shahar 2010		-1.14 [ -1.78 , -0.51 ]
Van Aalderen 2012		-0.43 [ -0.90 , 0.05 ]
RE Model		-0.77 [ -1.21 , -0.34 ]
I-squared=62.8%		Total N = 396
	-2.50 -2.00 -1.50 -1.00 -0.50 0.00 0.50 favors intervention favors control	

We identified 12 RCTs in total that examined the effect of adjunctive MBCT on depressive symptom scores (Barnhofer et al., 2009; Batink et al., 2013; Chiesa, Mandelli, and Serretti, 2012; Forkmann et al., 2014; Godfrin and van Heeringen, 2010; Jermann et al., 2013; Keune et al., 2011; Kuyken, Byford, et al., 2008; Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013; Shahar et al., 2010; van Aalderen et al., 2012). Studies included patients with current MDD or patients with a history of MDD but currently in remission. The primary treatment was TAU in seven studies (Barnhofer et al., 2009; Batink et al., 2013; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013; van Aalderen et al., 2012), TAU without antidepressants in one study (Bondolfi et al., 2010), and antidepressants in four studies (Chiesa, Mandelli, and Serretti, 2012; Keune et al., 2011; Kuyken, Byford, et al., 2008; Shahar et al., 2010). The most common comparator was TAU (seven studies) (Barnhofer et al., 2009; Batink et al., 2013; Bondolfi et al., 2010; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Omidi et al., 2013; van Aalderen et al., 2012). The comparator for three studies was antidepressants either alone (Kuyken, Byford, et al., 2008), with waitlist (Keune et al., 2011), or with psycho-education (Chiesa, Mandelli, and Serretti, 2012).

Two studies included CBT comparators (Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013).

The pooled analysis across the 12 studies indicated statistically significantly greater improvement in the MBCT group than for the comparator interventions (SMD -0.72; 95% CI -1.14, -0.30; I<sup>2</sup> 85%; 12 RCTs) (see Figure 3.3). However, there was substantial heterogeneity. We found no evidence of publication bias for relapse (Egger's test: p=0.80; Begg's test: p=1.00).

Figure 3.3. Efficacy of Adjunctive MBCT on Depressive Symptoms in MDD and Prior MDD



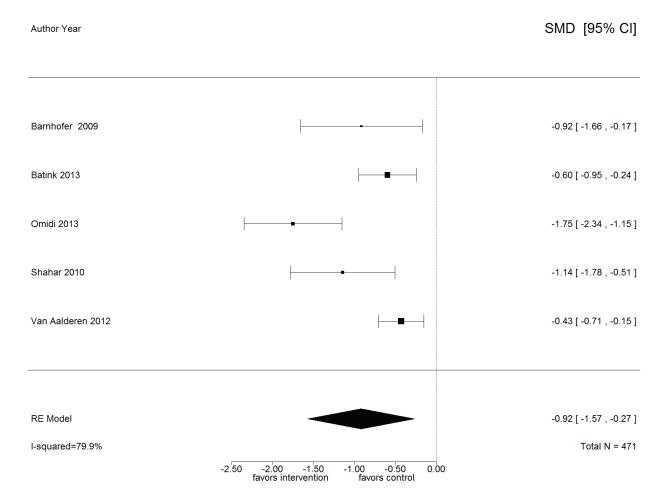
of note, the effect of adjunctive MBCT was less consistent among the five studies focused on those participants with a history of MDD who were not currently experiencing residual depressive symptoms. The primary treatment was TAU in three studies (Barnhofer et al., 2009; Batink et al., 2013; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013; van Aalderen et al., 2012) and antidepressants in two studies (Chiesa, Mandelli, and Serretti, 2012; Keune et al., 2011; Kuyken, Byford, et al., 2008; Shahar et al., 2010). The most common comparator was TAU (three studies) (Barnhofer et

al., 2009; Batink et al., 2013; Bondolfi et al., 2010; Geschwind et al., 2012; Godfrin and van Heeringen, 2010; Omidi et al., 2013; van Aalderen et al., 2012). The comparator for two studies was antidepressants either alone (Kuyken, Byford, et al., 2008) or with waitlist (Keune et al., 2011). Pooled across all studies, there was no statistically significant differences between MBCT and comparator interventions among studies whose participants had a history of depression but were not currently depressed (SMD –0.57; 95% CI –1.67, 0.53; I<sup>2</sup> 92%; 5 RCTs), and there was substantial heterogeneity across studies.

### MBCT Plus TAU Versus TAU

Five studies of mixed quality with 471 enrolled participants with current MDD or residual depressive symptoms reported a comparison of MBCT plus TAU and TAU alone. All studies showed significantly greater improvement among those receiving MBCT (Barnhofer et al., 2009; Forkmann et al., 2014; Omidi et al., 2013; Shahar et al., 2010; van Aalderen et al., 2012). The pooled effect showed MBCT plus TAU to be statistically significantly superior to TAU alone in reducing depressive symptoms (SMD –0.92; 95% CI –1.57, –0.27; I² 80%; 5 RCTs). However, there was substantial heterogeneity across studies, see Figure 3.4.

Figure 3.4. Adjunctive MBCT Versus TAU on Depressive Symptoms



### MBCT Plus Antidepressants Versus Antidepressants Alone

One fair quality study with 123 enrolled participants compared adjunctive MBCT plus tapered maintenance antidepressants with antidepressants alone (Kuyken, Byford, et al., 2008) in a sample of individuals who had experienced three or more previous depressive episodes. The tapering of antidepressants started in week four or five of the eight-week MBCT intervention. There were no statistically significant differences in the change in residual depressive symptoms between the MBCT plus antidepressant group and the antidepressant alone group a month after the intervention using the HRSD (SMD -0.30; 95% CI -0.66, 0.05), and there were marginal difference using the BDI (SMD -0.36; 95% CI -0.72, 0.00) in ITT analyses. There also were not statistically significant differences at 15 months after baseline in either the HRSD (SMD -0.23; 95% CI -0.58, 0.13) or BDI (SMD -0.33; 95% CI -0.69, 0.03).

### MBCT Plus TAU Versus CBT Plus TAU

Two poor quality studies with 159 enrolled participants compared adjunctive MBCT to adjunctive CBT (Manicavasgar, Parker, and Perich, 2011; Omidi et al., 2013). Among currently depressed patients, both MBCT and CBT were associated with significant improvements in depressive symptoms over the eight-week study period, with no differences in improvement between the two groups in one study (Manicavasgar, Parker, and Perich, 2011); there were also no statistically significant differences between MBCT and CBT at the six-month and 12-month follow-ups. In a sample of currently depressed individuals that were randomized to MBCT, TAU, or CBT, Omidi et al. (2013) also reported no statistically significant difference in improvement in depressive symptom scores between the MBCT and CBT groups. The pooled result was an SMD of -0.06 (95% CI -1.01, 0.89; I<sup>2</sup> 0%; 2 RCTs), indicating that mindfulness meditation did not statistically significantly improve depression scores compared with traditional CBT.

### MBCT Plus Antidepressants Versus Psycho-Education Plus Antidepressants

A single fair quality study with 18 enrolled participants with major depression who did not achieve remission following at least eight weeks of antidepressant treatment compared MBCT with a psycho-education intervention that focused on the criteria for MDD and underlying cognitive dysfunctions, as well as with pharmacologic and psychological treatments for MDD (Chiesa, Mandelli, and Serretti, 2012). There was no statistically significant difference in HRSD scores at the end of the intervention compared with the psycho-education intervention (SMD –0.81; 95% CI –1.83, 0.22).

### KQ 2a: Among Publications That Address Adjunctive Meditation as a Treatment for Adults with MDD, How Common and Severe Are Adverse Events?

Five MBCT RCTs of mixed quality addressed adverse events (Barnhofer et al., 2009; Geschwind et al., 2012; Kuyken, Byford, et al., 2008; Shahar et al., 2010; Williams, Crane, et al., 2014). Three studies reported that no adverse events occurred (Geschwind et al., 2012; Kuyken, Byford, et al., 2008; Shahar et al., 2010). One study reported that none of the adverse events was deemed to be related to the treatment, but one participant in the MBCT group contacted the therapist during a suicidal crisis and after crisis intervention was referred to his or her psychiatrist (Barnhofer et al., 2009). One MBCT study (Williams, Crane, et al., 2014) reported that 15 serious adverse events occurred, only one of which was thought to be related to the study interventions (the event occurred in the cognitive psychological education [CPE] arm). None of the studies stated whether the occurrence of adverse events was systematically assessed.

### KQ 2b: Does the Efficacy Differ Depending on the Type of Adjunctive Meditation Used?

There was insufficient evidence to answer this question. A meta-regression analyzing differences between studies that followed the original MBCT manual and studies that used a modified MBCT intervention indicated that deviations were not significantly associated with MBCT results (p=0.70).

One study of patients with a history of at least three previous depressive episodes, some of whom were experiencing depression at the time of the study, found a weak correlation between the amount of formal meditation practiced outside the class and change in depressive symptom score during MBCT (r=0.26, p<.05).

## KQ 3: Is Meditation, as a Monotherapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Decreasing Relapse Rates in Adults with MDD?

One fair quality study with 84 participants compared the effect on relapse rates at 18 months following treatment of MBCT with two control groups: (1) antidepressants and (2) placebo plus clinical management in a sample of participants in remission with a history of at least three previous episodes of depression (Segal et al., 2010). The intervention consisted of eight weekly sessions, as well as an all-day retreat. In addition, participants had daily homework exercises. Overall, there were no statistically significant differences in relapse rates between either MBCT and antidepressants (RR 0.80; 95% CI 0.39, 1.62) or between monotherapy MBCT and antidepressant placebo plus clinical management (RR 0.65; 95% CI 0.34, 1.62). Among those in stable remission, there were no statistically significant differences in relapse rates between either MBCT and antidepressants (RR 1.25; 95% CI 0.60, 2.59) or between monotherapy MBCT and antidepressant placebo plus clinical management (RR 1.06; 95% CI 0.54, 2.07). Among those in unstable remission, MBCT was associated with statistically significantly lower relapse rate compared with antidepressant placebo plus clinical management (RR 0.39; 95% CI 0.17, 0.88), but not compared with antidepressants (RR 1.02; 95% CI 0.30, 3.45). There were not enough studies to test for publication bias.

### KQ 3a: Does the Efficacy Differ Depending on the Type of Monotherapy Meditation Used?

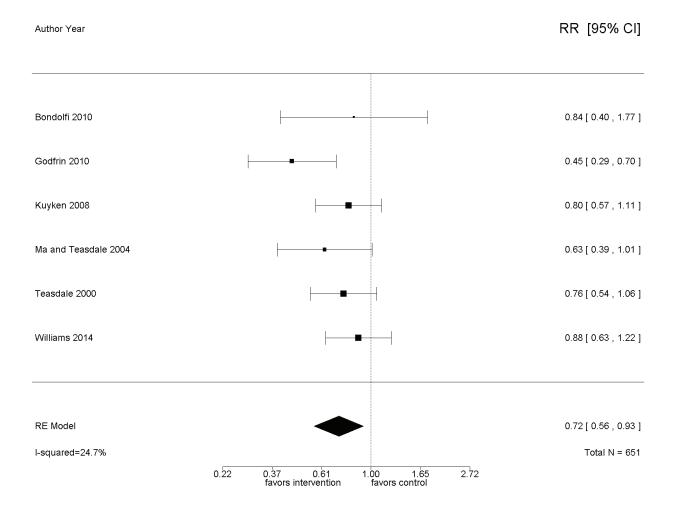
The monotherapy study that reported on depression relapse followed the standard MBCT protocol and did not report on associations between meditation characteristics (e.g., frequency outside of class) and the occurrence of relapse. Hence, there is insufficient evidence to address this question.

## KQ 4: Is Meditation, as an Adjunctive Therapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Decreasing Relapse Rates in Adults with MDD?

We did not identify any study that randomized patients with MDD to an MBCT intervention and reported on long-term follow-up to assess later relapse after initial treatment response.

We identified six RCTs that addressed MBCT as an adjunct treatment for patients with a history of MDD that included an assessment of relapse (Bondolfi et al., 2010; Godfrin and van Heeringen, 2010; Kuyken, Byford, et al., 2008; Ma and Teasdale, 2004; Teasdale, Segal, et al., 2000; Williams, Crane, et al., 2014). The studies enrolled 651 participants with a history of multiple previous depressive episodes. These studies were mostly good or fair quality. Two of the studies required at least two previous depressive episodes (Ma and Teasdale, 2004; Teasdale, Segal, et al., 2000), while four required at least three previous depressive episodes (Bondolfi et al., 2010; Godfrin and van Heeringen, 2010; Kuyken, Byford, et al., 2008; Williams, Crane, et al., 2014) to be included in the trial. Four of the studies provided MBCT adjunctive to TAU, and the comparator was TAU. In the fifth study, MBCT was adjunctive to TAU and compared with two groups: TAU alone or CPE. The sixth study was adjunctive to and compared with maintenance antidepressants (Kuyken, Byford, et al., 2008). The pooled estimate showed a statistically significant reduction of relapse rate for MBCT compared with control (RR 0.72; 95% CI 0.56, 0.93; I² 25%; 6 RCTs) (see Figure 3.5). We found no evidence of publication bias for relapse (Egger's test: p=0.55; Begg's test: p=0.27).

Figure 3.5. Adjunctive MBCT and Relapse



The pooled estimate for the five studies that compared MBCT plus TAU with TAU showed a statistically significant reduction of relapse rate for MBCT (RR 0.70; 95% CI 0.50, 0.98; I<sup>2</sup> 39%; 5 RCTs) (see Figure 3.6).

Figure 3.6. Adjunctive MBCT Versus TAU on Relapse

Author Year SMD [95% CI] Williams 2014 0.88 [ 0.63 , 1.22 ] Godfrin 2010 0.45 [ 0.29 , 0.70 ] Bondolfi 2010 0.84 [ 0.40 , 1.77 ] Teasdale 2000 0.76 [ 0.54 , 1.06 ] Ma and Teasdale 2004 0.63 [ 0.39 , 1.01 ] RE Model 0.70 [ 0.50 , 0.98 ] I-squared=39.2% Total N = 528 0.22 0.37 0.61 1.00 2.72

Several studies indicated that treatment effects were stronger among patients with at least three prior episodes of depression in at least partial recovery. In one study, significantly fewer patients receiving MBCT plus TAU showed relapse compared with patients receiving TAU alone (RR 0.45; 95% CI 0.29, 0.70), and the mean time to first relapse was longer (39.5 weeks versus 53.7; p<0.001) (Godfrin and van Heeringen, 2010). Similarly, another study demonstrated a reduction in the risk of relapse among participants receiving MBCT plus TAU compared with TAU alone (RR 0.61; 95% CI 0.41, 0.89) (Teasdale, Segal, et al., 2000). Two studies found no statistically significant differences in relapse rates among recurrently depressed patients receiving MBCT plus TAU compared with either TAU alone (RR 0.88; 95% CI 0.63, 1.22) (Williams, Crane, et al., 2014), maintenance medication (RR 0.80; 95% CI 0.57, 1.11) (Kuyken, Byford, et al., 2008), or CPE (RR 0.93; 95% CI 0.70, 1.24) (Williams, Crane, et al., 2014). One study showed no statistically significant differences in relapse rates among patients receiving MBCT plus TAU compared with TAU alone (RR 0.84; 95% CI 0.40, 1.77), but it did find a significant reduction in the time to relapse in the intervention group compared with TAU alone

(204 days versus 68 days; p=0.006) (Bondolfi et al., 2010). The pooled estimate for subgroups of participants with at least three or more previous depressive episodes had an RR of 0.66 (95% CI 0.48, 0.90; I² 47%; 6 RCTs). In contrast, two studies found that adjunctive MBCT did not reduce risk of relapse among patients with two prior episodes of depression (Ma and Teasdale, 2004; RR 2.50; 95% CI 0.60, 10.34) (Teasdale, Segal, et al., 2000; RR 1.80; 95% CI 0.77, 4.19). The pooled estimate for the subgroup of participants with two previous episodes had an RR of 1.96 (95% CI 0.31, 12.29; I² 0%; 2 RCTs). A meta-regression indicated that the number of depressive episodes is potentially associated with the treatment success, but the results were not statistically significant (p=0.07).

### KQ 4a: Does the Efficacy Differ Depending on the Type of Adjunctive Meditation Used?

There was insufficient evidence to answer this question. A meta-regression analyzing differences between studies that followed the original MBCT manual versus studies that used a modified MBCT intervention indicated that deviations were not significantly associated with relapse (p=0.33).

Two studies reported an analysis of the effect of meditation characteristics on relapse rates. One study examined the relationship between maintenance of regular practice during the intervention, the six months following the intervention, and six to 12 months after the intervention by patients who had experienced at least three previous depressive episodes but were in remission at the time of the study and relapse. The amount of sitting meditation, three-minute breathing space, and informal space did not differ during any time period for those who did and did not relapse. Individuals who relapsed were engaged in significantly more body scan practice six to 12 months after completing MBCT (Bondolfi et al., 2010).

One study explored whether depression relapse among patients with recurrent depression was associated with an MBCT instructor, a clinical psychologist, and an occupational therapist. Both instructors had participated in a training program and run pilot MBCT groups with supervision. An independent MBCT therapist reviewed videotapes of the MBCT sessions and confirmed the competency of both instructors. There was no significant difference in relapse rates across the therapists or the groups they led (Kuyken, Byford, et al., 2008).

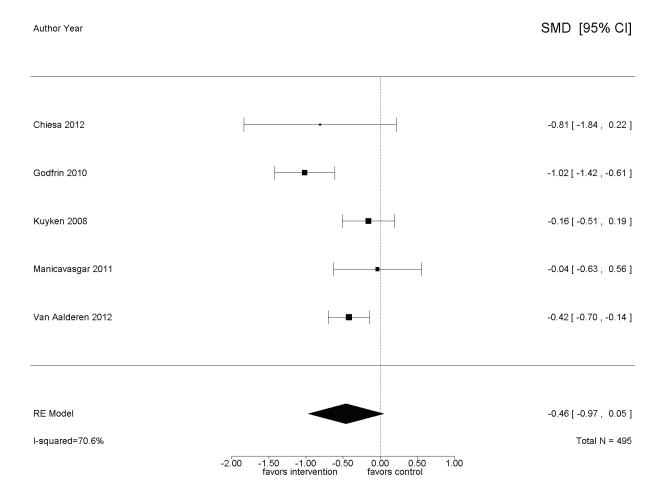
# KQ 5: Is Meditation, as a Monotherapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments In Improving Health-Related Quality of Life in Adults with MDD?

We did not identify any study that assessed whether monotherapy MBCT was associated with improved health-related quality of life among adults with MDD.

# KQ 6: Is Meditation, as an Adjunctive Therapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Improving Health-Related Quality of Life in Adults with MDD?

Five studies assessed whether adjunctive MBCT was associated with improved health-related quality of life among adults with MDD. Three of the studies included individuals experiencing a depressive episode or residual depressive symptoms (Chiesa, Mandelli, and Serretti, 2012; Manicavasgar, Parker, and Perich, 2011; van Aalderen et al., 2012), while two focused on individuals with a history of depression who were not experiencing residual symptoms (Godfrin and van Heeringen, 2010; Kuyken, Byford, et al., 2008). The pooled estimate showed no significant differences in quality of life in the MBCT groups compared with control (SMD –0.42; 95% CI –0.70, –0.14; I<sup>2</sup> 71%; 5 RCTs) (see Figure 3.7).

Figure 3.7. Adjunctive MBCT and Health-Related Quality of Life



### MBCT Plus TAU Versus TAU Alone

Two studies (one fair and one poor quality) with 325 enrolled participants compared MBCT with TAU on quality-of-life measures. In a study comparing MBCT with TAU among recurrently depressed (defined as at least three prior episodes) patients, MBCT was associated with better scores on the World Health Organization (WHO) Quality of Life psychological subscale compared with TAU (SMD –0.38; 95% CI –0.66, –0.11), but not the physical (SMD –0.42; 95% CI –0.70, –0.14) or social (SMD –0.09; 95% CI –0.36, 0.18) subscales. In a subgroup of patients who were currently depressed (n=69), scores also favored MBCT compared with TAU on the psychological subscale (SMD –0.49; 95% CI –0.77, –0.21), but not on the physical (SMD –0.17; 95% CI –0.44, 0.11) or social (SMD 0.26; 95% CI –0.53, 0.02) subscales (van Aalderen et al., 2012). In a second study among currently remitted patients with at least three prior depressive episodes, MBCT was associated with better health-related quality of life as measured by the Quality of Life in Depression Scale compared with TAU at 8 weeks (SMD –1.02; 95% CI –1.42, –0.61), 8 months (SMD –0.67; 95% CI –1.06, –0.28) and 14 months (SMD –0.68; 95% CI –1.07, –0.29) after baseline (Godfrin and van Heeringen, 2010).

### MBCT Plus Maintenance Antidepressants Versus Maintenance Antidepressants Alone

One fair quality study of MBCT versus maintenance antidepressants with 123 enrolled participants compared health-related quality of life for currently remitted patients with at least three prior depressive episodes (Kuyken, Byford, et al., 2008). There were not significant differences in quality of life at one month post-treatment between MBCT and maintenance antidepressants in the physical (SMD –0.10; 95% CI –0.46, 0.25), psychological (SMD –0.16; 95% CI –0.51, 0.19), or social (SMD –0.21; 95% CI –0.56, 0.15) domains of the WHO Quality of Life scale (Kuyken, Byford, et al., 2008).

### MBCT Plus Antidepressants Versus Psycho-Education Plus Antidepressants

In a fair quality study of 18 patients with major depression who did not achieve remission following at least eight weeks of antidepressant treatment, there was not a significant difference in health-related quality of life measured by the Psychological General Well-Being Index in the MBCT group compared with a psycho-education control group (SMD -0.81; 95% CI -1.84, -0.22) (Chiesa, Mandelli, and Serretti, 2012).

### MBCT Plus Antidepressants Versus CBT Plus Antidepressants

One poor quality study with 69 currently depressed patients compared changes in health-related quality of life as measured by the Social and Occupational Functioning Scale (SOFAS) in a group receiving MBCT with changes in a group receiving CBT (Manicavasgar, Parker, and Perich, 2011). There was no significant difference in health-related quality of life between groups (SMD 0.04; 95% CI –0.63, 0.56).

## KQ 7: Is Meditation, as a Monotherapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Reducing Antidepressant Use in Adults with MDD?

None of the monotherapy studies examined the effect of interventions on the use of antidepressants.

# KQ 8: Is Meditation, as an Adjunctive Therapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Reducing Antidepressant Use in Adults with MDD?

We identified six studies of good and fair quality that examined the impact of adjunctive MBCT on antidepressant use. Five studies found no significant differences in reductions, changes, or reinstatement of antidepressant use over time or between groups (Barnhofer et al., 2009; Bondolfi et al., 2010; Godfrin and van Heeringen, 2010; Ma and Teasdale, 2004; Teasdale, Segal, et al., 2000), while one study found that the cost of antidepressants was significantly lower in the MBCT group (Kuyken, Byford, et al., 2008). In one study among patients who had a history of recurrent depression, had a history of treatment by a recognized antidepressant, were currently off antidepressant medication, and were in at least partial remission, there were no significant differences in the proportion of patients using antidepressants at any time over the 52week follow-up period between the MBCT plus TAU group compared with the TAU alone group (40 percent versus 45 percent, p=0.10) (Teasdale, Segal, et al., 2000). In a similar patient sample, another study found no difference between adjunctive MBCT and TAU alone in the use or dosage of antidepressants over a 60-week study period (Ma and Teasdale, 2004). Another study of adjunctive MBCT among patients with a history of at least three prior depressive episodes currently in at least partial remission (as defined by the study) (Godfrin and van Heeringen, 2010) similarly found no significant differences in antidepressant medication use over a 14-month follow-up period between patients receiving MBCT plus TAU (baseline: 73 percent; 14-month follow-up: 64 percent) compared with TAU alone (baseline: 61 percent; 14month follow-up: 62 percent). A study of individuals who were in remission, had a history of recurrent major depression, and had at least two depressive episodes in the past five years found no difference in antidepressant reinstatement during the study between MBCT plus TAU (36 percent) and TAU alone (31 percent). The pooled estimate showed no significant differences in antidepressant use in the MBCT groups compared with control (RR -0.01; 95% CI -0.34, 0.32; I<sup>2</sup> 18%; 4 RCTs). A fifth study of patients with current MDD or residual symptoms following an MDD episode found differences that approached statistical significance in the percentage of participants with changes in their antidepressant use during the study period (14 percent in MBCT plus TAU versus 50 percent in TAU alone group, p=0.052) (Barnhofer et al., 2009).

The sixth study included participants with a history of three or more episodes of depression on maintenance antidepressants. Over a 15-month follow-up period, this study found that the cost of antidepressants was \$103 less (95% CI –\$191 to –\$14) in the MBCT group than the maintenance antidepressant group (Kuyken, Byford, et al., 2008).

### **Summary of Findings**

The evidence on the efficacy of MBCT for MDD has expanded in recent years. We identified 17 relevant studies investigating MBCT for preventing relapse and reducing depression symptoms. Data on quality of life remains sparse, and adverse events have not been systematically assessed.

## KQ 1: Is Meditation, as a Monotherapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Reducing Depressive Symptoms in Adults with MDD?

We did not identify any study in patients with a current diagnosis of MDD that reported on the effectiveness of MBCT given as monotherapy. We identified one study in patients in full or partial remission that explicitly assessed MBCT as monotherapy and reported on depressive symptoms. There was very low quality evidence that MBCT reduces depressive symptoms more than waitlist control (SMD -1.11; 95% CI -2.07, -0.15; 1 RCT).

### KQ 1a: Among Publications That Address Monotherapy Meditation as a Treatment for Adults with MDD, How Common and Severe Are Adverse Events?

Only two studies explicitly assessed MBCT as monotherapy (one reporting on depressive symptoms, one on relapse). One of the two addressed adverse events and reported that no adverse events occurred during the trial (Britton et al., 2010), but did not report whether there was systematic monitoring for adverse events.

### KQ 1b: Does the Efficacy Differ Depending on the Type of Meditation Used (e.g., MBCT, mindfulness-based stress reduction, yoga, tai chi)?

The only identified monotherapy study followed the standard MBCT program. The study reported on meditation practice and reported no correlation between depression scale scores and mindfulness meditation practice outside of class.

## KQ 2: Is Meditation, as an Adjunctive Therapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Reducing Depressive Symptoms in Adults with MDD?

There was moderate quality evidence of MBCT reducing depressive symptoms in patients with MDD compared with all comparators (SMD -0.77; 95% CI -1.21, -0.34; I<sup>2</sup> 63%; 7 RCTs).

Twelve RCTs examined adjunctive MBCT on depressive symptom scores. There was moderate evidence in support of using adjunctive MBCT over all interventions (SMD –0.72; 95% CI –1.14, –0.30; I<sup>2</sup> 85%; 12 RCTs). There was moderate evidence of its efficacy compared with TAU (SMD –0.92; 95% CI –1.57, –0.27; I<sup>2</sup> 80%; 5 RCTs). The evidence suggested that MBCT had no significant effect on residual depressive symptom scores among those with a history of depression but not currently depressed (SMD –0.57; 95% CI –1.67, 0.53; I<sup>2</sup> 92%; 5 RCTs).

### KQ 2a: Among Publications That Address Adjunctive Meditation as a Treatment for Adults with MDD, How Common and Severe Are Adverse Events?

Five MBCT studies reported on adverse events, and three stated that no adverse events occurred. One study reported that none of the adverse events was deemed to be related to the treatment, but one participant in the MBCT group contacted the therapist during a suicidal crisis and, after crisis intervention, was referred to his or her psychiatrist. The fifth study reported that 15 serious adverse events occurred, only one of which was thought to be related to the study interventions (the event occurred in the CBT arm). None of the studies stated whether the occurrence of adverse events was systematically assessed. The lack of systematic assessment of adverse events and the small sample size of individual studies reduces the ability to draw conclusions, however, because rare adverse events are unlikely to be reported.

### KQ 2b: Does the Efficacy Differ Depending on the Type of Meditation Used?

There was insufficient evidence to answer this question. A meta-regression analyzing differences between studies that followed the original MBCT manual versus studies that used a modified MBCT intervention indicated that deviations were not significantly associated with MBCT results. One study showed that relapse rates did not differ between therapists of different backgrounds who were trained in MBCT and determined to be competent instructors.

In individuals with recurrent depression, one study found a weak correlation between the amount of formal meditation practiced outside the class and a change in depressive symptom score during MBCT. Another study of individuals with recurrent depression found that relapse rates were higher among individuals with more body scan practice six to 12 months after MBCT, but found no associations with other forms of practice.

## KQ 3: Is Meditation, as a Monotherapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Decreasing Relapse Rates in Adults with MDD?

One fair quality study with 84 participants compared the effect on relapse rates at 18 months following treatment of MBCT with two control groups: (1) antidepressants and (2) placebo plus clinical management in a sample of participants in remission with a history of at least three previous episodes of depression. Overall, there were no significant differences in relapse rates

between either MBCT plus antidepressants (RR 0.80; 95% CI 0.39, 1.62) or monotherapy MBCT and placebo plus clinical management (RR 0.65; 95% CI 0.34, 1.62). Among those in stable remission, there were no significant differences in relapse rates between either MBCT plus antidepressants (RR 1.25; 95% CI 0.60, 2.59) or monotherapy MBCT and placebo plus clinical management (RR 1.06; 95% CI 0.54, 2.07). Among those in unstable remission, MBCT was associated with lower relapse rates compared with placebo plus clinical management (RR 0.39; 95% CI 0.17, 0.88), but not compared with antidepressants (RR 1.02; 95% CI 0.30, 3.45).

### KQ 3a: Does the Efficacy Differ Depending on the Type of Meditation Used?

The monotherapy study that reported on depression relapse followed the standard MBCT protocol and did not report on associations between meditation characteristics (e.g., frequency outside of class) and the occurrence of relapse. Hence, there is insufficient evidence to address this question.

## KQ 4: Is Meditation, as an Adjunctive Therapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Decreasing Relapse Rates in Adults with MDD?

We did not identify any study that reported on patients with MDD at the time of enrollment who were randomized to MBCT and that reported on long-term follow-up to assess later relapse after initial treatment response. We identified six RCTs that addressed MBCT as an adjunct treatment and that included an assessment of relapse. There was moderate quality evidence that adjunctive MBCT reduces relapse rates compared with all controls (RR 0.72; 95% CI 0.56, 0.93; I<sup>2</sup> 25%; 6 RCTs) and compared with TAU (RR 0.70; 95% CI 0.50, 0.98; I<sup>2</sup> 39%; 5 RCTs). Only one study compared relapse rates of MBCT with those of maintenance medication (RR 0.80; 95% CI 0.57, 1.11) or CPE (RR 0.93; 95% CI 0.70, 1.24). Among patients with at least three prior episodes of depression in at least partial recovery, there was moderate evidence of the impact of adjunctive MBCT on relapse rates (RR 0.66; 95% CI 0.48, 0.90; I<sup>2</sup> 47%; 6 RCTs). However, the evidence does not support that MBCT reduces relapse rates among individuals with one or two previous depressive episodes (RR 1.96; 95% CI 0.31, 12.29; I<sup>2</sup> 0%; 2 RCTs].

### KQ 4a: Does the Efficacy Differ Depending on the Type of Meditation Used?

There was insufficient evidence to answer this question. A meta-regression analyzing differences between studies that followed the original MBCT manual versus studies that used a modified MBCT intervention indicated that deviations were not significantly associated with MBCT results. A study of individuals with recurrent depression found that relapse rates were higher among individuals with more body scan practice six to 12 months after MBCT, but found no associations with other forms of practice. Another study of individuals with recurrent depression found no difference in relapse rates among two trained MBCT instructors of different backgrounds, a clinical psychologist, and an occupational therapist.

KQ 5: Is Meditation, as a Monotherapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Improving Health-Related Quality of Life Symptoms in Adults with MDD?

We did not identify any study that assessed whether monotherapy MBCT was associated with improved health-related quality of life among adults with MDD.

KQ 6: Is Meditation, as an Adjunctive Therapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Improving Health-Related Quality of Life Symptoms in Adults with MDD?

Five studies examined the effect of adjunctive MBCT on health-related quality of life; TAU was the only comparator used in more than one study. Overall, there was very low quality evidence of the effect of MBCT on health-related quality of life. The pooled estimate showed no significant differences in quality of life in the MBCT groups compared with control (SMD –0.42; 95% CI –0.70, –0.14; I<sup>2</sup> 71%; 5 RCTs).

KQ 7: Is Meditation, as a Monotherapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Reducing Antidepressant Use in Adults with MDD?

None of the monotherapy studies examined the effect of MBCT on the use of antidepressants.

KQ 8: Is Meditation, as an Adjunctive Therapy, More Effective Than TAU, Waitlists, No Treatment, or Other Active Treatments in Reducing Antidepressant Use in Adults with MDD?

We identified six studies of good and fair quality that examined the impact of adjunctive MBCT on antidepressant use. Four studies found no significant differences in use or reinstatement of antidepressants over time or between groups. The pooled estimate showed no statistically significant differences in antidepressant use in the MBCT groups compared with control (RR –0.01; 95% CI –0.34, 0.32; I² 18%; 4 RCTs). A fifth study found no statistically significant differences in changes in antidepressant use compared with TAU alone (14 percent in MBCT plus TAU group; 50 percent in TAU alone group). There is moderate evidence that MBCT does not affect antidepressant use. The sixth study found that the cost of antidepressants was \$103 less (95% CI –\$191 to –\$14) in the MBCT group than the maintenance antidepressant group over a 15-month period.

Table 4.1. Summary of Findings and Quality of Evidence

Outcome	Study Design (number of RCTs and participants)	Findings (direction and magnitude of effect)	Study Limitations (study quality; risk of bias)	Inconsistency	Indirectness	Imprecision	GRADE of Evidence for Outcome
KQ 1: Monotherapy medit			,				
Comparison: MBCT versus waitlist (Britton et al., 2010)	1 RCT; 26 enrolled, 20 completed	Study showed greater reduction in depressive symptoms in MBCT compared with waitlist; SMD -1.11; 95% CI -2.07, -0.15	1 poor quality study (-2)	No replication (-1)	Direct	Precise	Very Low
KQ 1a: Monotherapy med							
Comparison: MBCT versus waitlist	1 RCT; 26 enrolled, 20 completed	No adverse events occurred	1 poor quality study (-2); study size too small to detect rare events	No replication (-1)	Direct	Imprecise (-1)	Very low
		on the characteristics of mor	otherapy meditat	ion used?			
Comparison: Amount of mindfulness meditation practice outside of MBCT class	1 RCT; 26 enrolled, 20 completed	The study reported no correlation between depression scale scores and mindfulness meditation practice outside of class	1 poor quality study (-2)	No replication (-1)	Indirect	Unclear	Insufficient
KQ 2: Adjunctive meditati							
Comparison: MBCT versus all comparators, MDD	7 RCTs; 609 enrolled, 554 completed	SMD -0.80; 95% CI -1.29, -0.31	Mixed quality	Mostly positive results, but substantial heterogeneity (-1)	Direct	Precise	Moderate
Comparison: MBCT versus all comparators, current MDD and history of MDD	12 RCTs; 1,057 enrolled, 910 completed	SMD -0.72; 95% CI -1.14, -0.30	Mixed quality	Mostly consistent in direction, but substantial heterogeneity (-1)	Direct	Precise	Moderate
Comparison: MBCT versus all comparators, history of MDD	5 RCTs; 518 enrolled, 430 completed	SMD -0.57; 95% CI -1.67, 0.53	Mixed, but mostly poor quality studies (-1)	Mostly consistent in direction, but substantial heterogeneity (-1)	Direct	Imprecise (-1)	Very low

Outcome	Study Design (number of RCTs and participants)	Findings (direction and magnitude of effect)	Study Limitations (study quality; risk of bias)	Inconsistency	Indirectness	Imprecision	GRADE of Evidence for Outcome
Comparison: MBCT plus TAU versus TAU, MDD	5 RCTs; 522 enrolled, 493 completed	SMD -0.92; 95% CI -1.57, -0.27	Mixed, but mostly poor quality studies (-1)	Substantial heterogeneity (-1)	Direct	Precise	Low
Comparison: MBCT plus antidepressants versus antidepressants	1 RCT; 123 enrolled, 104 completed	SMD of HRSD not significant; SMD -0.30; 95% CI -0.66, 0.05	1 fair quality study (-1)	No replication (-1); Mixed results depending on measure of depression (HRSD significant; BDI not significant)	Direct	Imprecise (-1)	Very low
Comparison: MBCT plus TAU versus CBT plus TAU	2 RCTs; 159 enrolled, 135 completed	No differences between groups in either study; Pooled SMD -0.06; 95% CI -1.01, 0.89	2 poor quality studies (-1)	Consistent	Direct	Imprecise (-1)	Very low
Comparison: MBCT plus antidepressant versus psycho-education plus antidepressant	1 RCT; 18 enrolled, 16 completed	No difference between groups; SMD -0.81; 95% CI -1.83, 0.22	1 fair quality study (-1)	No replication (−1)	Direct	Imprecise (-1)	Very low
KQ 2a: Adjunctive medita	tion and adverse						
Comparison: MBCT versus all comparators	5 RCTs; 610 enrolled, 581 completed	3 RCTs reported that no adverse events occurred. 1 RCT reported that none of the adverse events was related to the intervention. 1 RCT reported 15 adverse events, but only one in a comparator arm was potentially related to the	Mostly fair and poor quality studies (-1); studies do not state whether occurrences of adverse events were systematically	Consistent	Direct	Imprecise; studies too small to detect rare events (-1)	Low

Outcome	Study Design (number of RCTs and participants)	Findings (direction and magnitude of effect)	Study Limitations (study quality; risk of bias)	Inconsistency	Indirectness	Imprecision	GRADE of Evidence for Outcome
		on the type of adjunctive me		inconsistency	in an oothood	mpredicien	Outoonio
Comparison: Interventions with deviations from MBCT manual versus no deviations	15 RCTs;	A meta-regression did not indicate that manual deviations were associated with treatment results. One study found a weak correlation between the amount formal meditation practiced outside the class and change in depressive symptom scores. Another study found that relapse rates were higher among individuals with more body scan practice six to 12 months after MBCT, but found no associations with	Not systematically assessed (-1)	Unclear (-1)	Indirect	Imprecise (-1)	Insufficient
KQ 3: Monotherapy medit	Lation and depres	other forms of practice.					
Comparison: MBCT versus placebo plus clinical management	1 RCT; 56 enrolled, 56 completed	No significant differences between groups; RR 0.65; 95% CI 0.34, 1.62	1 fair quality study (-1)	No replication (-1)	Direct	Imprecise (-1)	Very low
Comparison: MBCT versus antidepressants	1 RCT; 54 enrolled, 54 completed	No significant differences between groups; RR 0.80; 95% CI 0.39, 1.62	1 fair quality study (-1)	No replication (−1)	Direct	Imprecise (-1)	Very low
<b>KQ 4: Adjunctive meditat</b>							
Comparison: MBCT versus all comparators	6 RCTs; 783 enrolled, 695 completed	RR 0.72; 95% CI 0.56, 0.93	Mix of good, fair, and poor quality studies (-1)	Consistent	Direct	Precise	Moderate
Comparison: MBCT versus all TAU	5 RCTs; 550 enrolled, 488 completed	RR 0.70; 95% CI 0.50, 0.98	Mix of good, fair, and poor quality studies (-1)	Consistent	Direct	Precise	Moderate
Comparison: MBCT versus maintenance antidepressant	1 RCT; 123 enrolled, 104 completed	RR 0.80; 95% CI 0.57, 1.11	1 fair quality study (-1)	No replication (−1)	Direct	Precise	Low
Comparison: MBCT versus CPE	1 RCT; 218 enrolled, 202 completed	RR 0.93; 95% CI 0.70, 1.24	1 poor quality study (-2)	No replication (-1)	Direct	Precise	Very low

Outcome	Study Design (number of RCTs and participants)	Findings (direction and magnitude of effect)	Study Limitations (study quality; risk of bias)	Inconsistency	Indirectness	Imprecision	GRADE of Evidence for Outcome
KQ 5: Monotherapy medi	<u> </u>	, , , , , , , , , , , , , , , , , , , ,	non or blue,	moondotoney	in an oothood	Improdicion	- Cuttoniic
MBCT versus all comparators	0 RCTs	NA	NA	NA	NA	NA	No evidence
KQ 6: Adjunctive meditat							
Comparison: MBCT versus all comparators	5 RCTs; 535 enrolled, 446 completed	Mixed results; SMD -0.42; 95% CI -0.70, -0.14	Fair and poor quality studies (-1)	Inconsistent (-1)	Direct	Imprecise (-1)	Very low
Comparison: MBCT versus TAU	2 RCTs; 325 enrolled, 281 completed	One study found MBCT associated with improved quality of life (SMD -1.02; 95% CI -1.42, -0.61). The other study found that MBCT was associated with better scores on the WHO Quality of Life psychological subscale compared with TAU (SMD -0.38; 95% CI -0.66, -0.11), but not the physical subscale (SMD -0.42; 95% CI -0.70, -0.14) or social subscale (SMD -0.09; 95% CI -0.36, 0.18).	1 poor and 1 fair quality study (-1)	Inconsistent (-1); Mixed results	Direct	Imprecise (-1)	Very low
Comparison: MBCT versus psycho-education	1 RCT; 18 enrolled, 16 completed	Significantly larger improvements in health-related quality of life with MBCT; SMD -0.81; 95% CI -1.84, -0.22	1 fair quality study (-1)	No replication (−1)	Direct	Imprecise (-1)	Very low
Comparison: MBCT versus CBT	1 RCT; 69 enrolled, 45 completed	No significant differences between MBCT and CBT; SMD 0.04; 95% CI -0.63, 0.56	1 poor quality study (-2)	No replication (−1)	Direct	Imprecise (-1)	Very low

Outcome	Study Design (number of RCTs and participants)	Findings (direction and magnitude of effect)	Study Limitations (study quality; risk of bias)	Inconsistency	Indirectness	Imprecision	GRADE of Evidence for Outcome
Comparison: MBCT versus maintenance antidepressants	1 RCT; 123 enrolled 104 completed	There were not significant differences in quality of life at 1 month post-treatment between MBCT and maintenance antidepressants in the physical (SMD -0.10; 95% CI -0.46, 0.25), psychological (SMD -0.16; 95% CI -0.51, 0.19), or social (SMD -0.21; 95% CI -0.56, 0.15) domains of the WHO Quality of Life scale.	1 fair quality	No replication (−1)	Direct	Imprecise (-1)	Very low
	litation and reduct	ion in antidepressant use					
Comparison: MBCT versus all comparators	0 RCTs	NA	NA	NA	NA	NA	No evidence
KQ 8: Adjunctive medita							
Comparison: MBCT versus TAU  NA = not applicable.	5 RCTs; 417 enrolled, 364 completed	Four studies compared antidepressant use between an MBCT group and controls. There were no significant differences in use of antidepressants between MBCT and controls; RR -0.01; 95% CI -0.34, 0.32.  One study compared antidepressant changes between MBCT plus TAU versus TAU (14 percent in MBCT plus TAU versus 50 percent in TAU group; p=0.052).	4 good and 1 fair quality studies	Consistent	Direct	Imprecise (-1)	Moderate

### Other Reviews in This Area

Previous reviews of MBCT (Chiesa and Serretti, 2011; Coelho, Canter, and Ernst, 2007) included a smaller number of studies, which reflects the emerging evidence base related to MBCT. Coelho, Canter, and Ernst (2007) focused on whether MBCT could reduce depression relapse among individuals with three or more previous episodes of depression. The review by Chiesa and Serretti (2011) examined both relapse and depressive symptoms, but did not restrict the included studies to those focusing on an MDD sample. Consistent with our findings, both reviews concluded that MBCT in addition to usual care can reduce major depression relapse among those with at least three previous depressive episodes compared with usual care alone. Also consistent with our findings, Chiesa and Serretti (2011) concluded that adjunctive MBCT could reduce residual depressive symptoms in patients with MDD. We expanded on previous reviews by analyzing data separately for monotherapy and adjunctive MBCT, as well as by separately examining available information for those with active depression and those in remission.

### Strengths and Limitations

This review has a number of strengths, including a comprehensive search of electronic databases, the use of two independent reviewers to perform study selection and data abstraction, and the assessment of risk of bias and quality of evidence to develop the review's conclusions. Furthermore, we contacted investigators of recently completed registered trials to inquire about completed work that had not yet been published. In addition, this review systematically documents the available evidence on MBCT for MDD, the condition that is the focus of the VA/DoD clinical guidelines (Management of Major Depressive Disorder Working Group, 2008), rather than depressive disorders more broadly, and this review assesses the quality of evidence by specific outcomes. However, there are also some limitations worth noting. We did not request study authors to provide data beyond what was contained in publications or in-press manuscripts. Many of the articles had small samples and were of poor quality, largely due to lack of ITT analysis, poor follow-up, or baseline differences between study arms. Thus, the poor quality of the underlying studies limits the ability to draw strong conclusions about the effect of MBCT on depression.

### Implications for Future Research and Practice

The existing evidence is primarily based on adjunctive therapy studies. The evidence on the use of monotherapy MBCT is insufficient to make conclusions about its efficacy, either to reduce depressive symptoms among those who are currently depressed or to reduce relapse among those with a history of depression. These are areas where additional studies are needed.

There is also insufficient evidence on the effect of MBCT on health-related quality of life. Few studies examined the effect of MBCT on measures of health-related quality of life, and there was a lack of consistency in comparators used and the measures of health-related quality of life included. In addition, there is a lack of standardized reporting of adverse events.

Future studies should improve on the weaknesses pervasive in the current body of work, including suboptimal participant retention and a lack of true ITT analyses. Further research examining the effect of MBCT on depression should include samples large enough to allow results to be stratified by disease severity, include measures of health-related quality of life, and systematically assess adverse events.

### Appendix A: Search Strategy

Our search strategy for each database used the key words presented in Chapter Two. Here, we present our original search strategy specifications. In May 2015, we performed an updated search that focused on MBCT, and these search strategy specifications are also presented.

### **PubMed**

### Limits: English; Not: Editorial or Comment; through January 2015

(depress\* OR depression[MeSH] OR "depressive disorder" [MeSH] OR "mood disorders" [MeSH] OR "mood disorders" OR "Mood disorders" OR "depressive disorders" OR "depressive disorders" OR ("mood" [Title/Abstract] AND "disturbance" [Title/Abstract]) OR "affective disorders" OR "affective disorders")

### **AND**

(Meditation OR "mental training" OR "open monitoring meditation" OR "mindfulness" OR "mindful" OR "mindfulness-based stress reduction" OR Zen OR Vipassana OR Sahaja OR "Mindfulness-based cognitive therapy" OR "mindfulness based relapse prevention" OR "mindful attention")

### OR

("focused"[Title/abstract] AND "attention"[Title/Abstract] AND ("meditations"[Title/Abstract] OR "meditation"[Title/Abstract])) OR "compassion meditation" OR "loving kindness" OR metta OR tonlen OR "qigong" OR "Qi Gong")

### OR

("automatic" [Title/abstract] AND "self-transcending" [Title/abstract] AND "meditation" [Title/abstract]) OR ("Mantra" [Title/abstract] AND ("meditations" [Title/abstract]) OR ("mantram" [Title/abstract]] AND "repetition" [Title/abstract] AND "program" [Title/abstract]) OR "transcendental meditation" OR "relaxation response training")

### OR

("movement" [Title/Abstract] AND ("meditation" [Title/Abstract] OR "meditations" [Title/Abstract])) OR yoga OR "tai chi" OR "meditative movement" OR yoga [MeSH])

### OR

(zazen OR ("one-pointed" [Title/Abstract] AND "meditation" [Title/Absract]) OR "progressive muscle relaxation")

### Web of Science

Refined by: Languages=(ENGLISH) AND [excluding] Document Types=(EDITORIAL MATERIAL OR LETTER OR NEWS ITEM OR BOOK REVIEW)
Timespan=2014-2015. Databases=SCI-EXPANDED, SSCI, A&HCI.

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

### AND

Meditation OR "mental training" OR "open monitoring meditation" OR mindfulness OR mindful OR "mindfulness-based stress reduction" OR Zen OR Vipassana OR Sahaja OR "Mindfulness-based cognitive therapy" OR "mindfulness based relapse prevention" OR "mindful attention"

### OR

"focused attention meditations" OR "focused attention meditation" OR "compassion meditation" OR "compassion meditations" OR "loving kindness" OR metta OR tonlen OR qigong OR "Qi Gong"

### OR

"automatic self-transcending meditations" OR "automatic self-transcending meditation" OR "Mantra meditations" OR "mantra meditation" OR "mantram repetition program" OR "transcendental meditation" OR "relaxation response training"

### OR

"movement meditation" OR "movement meditations" OR yoga OR "tai chi" OR "meditative movement"

### OR

zazen OR "one-pointed meditation" OR "progressive muscle relaxation"

### **Embase**

English; not ('conference abstract'/it OR 'conference review'/it OR 'editorial'/it OR 'letter'/it OR 'note'/it)

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

### AND

Meditation OR "mental training" OR "open monitoring meditation" OR mindfulness OR mindful OR "mindfulness-based stress reduction" OR Zen OR Vipassana OR Sahaja OR "Mindfulness-based cognitive therapy" OR "mindfulness based relapse prevention" OR "mindful attention"

## OR

"focused attention meditations" OR "focused attention meditation" OR "compassion meditation" OR "compassion meditations" OR "loving kindness" OR metta OR tonlen OR qigong OR "Qi Gong"

## OR

"automatic self-transcending meditations" OR "automatic self-transcending meditation" OR "Mantra meditations" OR "mantra meditation" OR "mantram repetition program" OR "transcendental meditation" OR "relaxation response training"

#### OR

"movement meditation" OR "movement meditations" OR yoga OR "tai chi" OR "meditative movement"

## **OR**

zazen OR "one-pointed meditation" OR "progressive muscle relaxation"

# CINAHL (Cumulative Index to Nursing and Allied Health Literature)

## **English**; Academic Journals

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

#### AND

Meditation OR "mental training" OR "open monitoring meditation" OR mindfulness OR mindful OR "mindfulness-based stress reduction" OR Zen OR Vipassana OR Sahaja OR "Mindfulness-based cognitive therapy" OR "mindfulness based relapse prevention" OR "mindful attention"

## OR

"focused attention meditations" OR "focused attention meditation" OR "compassion meditation" OR "compassion meditations" OR "loving kindness" OR metta OR tonlen OR qigong OR "Qi Gong"

## OR

"automatic self-transcending meditations" OR "automatic self-transcending meditation" OR "Mantra meditations" OR "mantra meditation" OR "mantram repetition program" OR "transcendental meditation" OR "relaxation response training"

#### OR

"movement meditation" OR "movement meditations" OR yoga OR "tai chi" OR "meditative movement"

#### OR

zazen OR "one-pointed meditation" OR "progressive muscle relaxation"

# PsycInfo

## **English; Peer Reviewed Journals**

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

## **AND**

#### $\mathbf{OM}$

Meditation OR "mental training" OR "open monitoring meditation" OR mindfulness OR mindful OR "mindfulness-based stress reduction" OR Zen OR Vipassana OR Sahaja OR "Mindfulness-based cognitive therapy" OR "mindfulness based relapse prevention" OR "mindful attention"

#### OR

"focused attention meditations" OR "focused attention meditation" OR "compassion meditation" OR "compassion meditations" OR "loving kindness" OR metta OR tonlen OR qigong OR "Qi Gong"

## OR

"automatic self-transcending meditations" OR "automatic self-transcending meditation" OR "Mantra meditations" OR "mantra meditation" OR "mantram repetition program" OR "transcendental meditation" OR "relaxation response training"

## OR

"movement meditation" OR "movement meditations" OR yoga OR "tai chi" OR "meditative movement"

#### OR

zazen OR "one-pointed meditation" OR "progressive muscle relaxation"

# Cochrane Databases (CDSR, CENTRAL, DARE)

## Abstract, Title, Keyword search

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

## **AND**

#### $\mathbf{OM}$

Meditation OR "mental training" OR "open monitoring meditation" OR mindfulness OR mindful OR "mindfulness-based stress reduction" OR Zen OR Vipassana OR Sahaja OR "Mindfulness-based cognitive therapy" OR "mindfulness based relapse prevention" OR "mindful attention"

## OR

"focused attention meditations" OR "focused attention meditation" OR "compassion meditation" OR "compassion meditations" OR "loving kindness" OR metta OR tonlen OR qigong OR "Qi Gong"

## OR

"automatic self-transcending meditations" OR "automatic self-transcending meditation" OR "Mantra meditations" OR "mantra meditation" OR "mantram repetition program" OR "transcendental meditation" OR "relaxation response training"

#### OR

"movement meditation" OR "movement meditations" OR yoga OR "tai chi" OR "meditative movement"

## OR

zazen OR "one-pointed meditation" OR "progressive muscle relaxation"

# PILOTS (Published International Literature on Traumatic Stress)

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder" AND

Meditation OR "mental training" OR "open monitoring meditation" OR mindfulness OR mindful OR "mindfulness-based stress reduction" OR Zen OR Vipassana OR Sahaja OR "Mindfulness-based cognitive therapy" OR "mindfulness based relapse prevention" OR "mindful attention"

#### OR

"focused attention meditations" OR "focused attention meditation" OR "compassion meditation" OR "compassion meditations" OR "loving kindness" OR metta OR tonlen OR qigong OR "Qi Gong"

## OR

"automatic self-transcending meditations" OR "automatic self-transcending meditation" OR "Mantra meditations" OR "mantra meditation" OR "mantram repetition program" OR "transcendental meditation" OR "relaxation response training"

## OR

"movement meditation" OR "movement meditations" OR yoga OR "tai chi" OR "meditative movement"

#### OR

zazen OR "one-pointed meditation" OR "progressive muscle relaxation"

# Updated Search Focusing on Mindfulness-Based Cognitive Therapy

Update 15 May 2015

## PubMed

Filters: Randomized Controlled Trial; Publication date from 2006/01/01 to 2014/12/31; English

"mbct" OR "m-bct" OR "mindfulness based cognitive therapy" OR "mindfulness-based CT" OR mindfulness based cognitive therapy

**AND** 

(depress\* OR depression[MeSH] OR "depressive disorder" [MeSH] OR "mood disorders" [MeSH] OR "mood disorders" OR "depressive disorders" OR "depressive disorders" OR "depressive disorders" OR ("mood" [Title/Abstract] AND "disturbance" [Title/Abstract]) OR "affective disorders" OR "affective disorders")

Results: 84; duplicates=0

## Web of Science

Refined by: [excluding] DOCUMENT TYPES: (EDITORIAL MATERIAL OR LETTER OR BOOK REVIEW) Indexes=SCI-EXPANDED, SSCI, A&HCI Timespan=2006-2014

"mbct" OR "m-bct" OR "mindfulness based cognitive therapy" OR "mindfulness-based CT" OR mindfulness based cognitive therapy

**AND** 

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

Results: 458; duplicates = 41

## **Embase**

[english]/lim AND [embase]/lim AND [2006-2014]/py

"mbct" OR "m-bct" OR "mindfulness based cognitive therapy" OR "mindfulness-based CT" OR mindfulness based cognitive therapy

**AND** 

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

Results: 219; duplicates = 5

# CINAHL (Cumulative Index to Nursing and Allied Health Literature)

Date of Publication: 20060101-20141231; Exclude MEDLINE records; Language: English

"mbct" OR "m-bct" OR "mindfulness based cognitive therapy" OR "mindfulness-based CT" OR mindfulness based cognitive therapy

**AND** 

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

Results: 12; duplicates = 0

# **PsycInfo**

# Limiters - Date of Publication: 20060101-20141231; Publication Type: Peer Reviewed Journal; Language: English

"mbct" OR "m-bct" OR "mindfulness based cognitive therapy" OR "mindfulness-based CT" OR mindfulness based cognitive therapy

**AND** 

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

Results: 200; duplicates = 4

# Cochrane Databases (CDSR, CENTRAL, DARE)

## Publication Year from 2006 to 2014

"mbct" OR "m-bct" OR "mindfulness based cognitive therapy" OR "mindfulness-based CT" OR mindfulness based cognitive therapy

**AND** 

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

Results: 139; duplicates = 6

(CDSR: 2; DARE: 8; CENTRAL: 127)

# PILOTS (Published International Literature on Traumatic Stress)

Limits: 2006-2014

"mbct" OR "m-bct" OR "mindfulness based cognitive therapy" OR "mindfulness-based CT" OR mindfulness based cognitive therapy

**AND** 

depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder"

Results:11; duplicates = 1

# ClinicalTrials.gov

("mbct" OR "m-bct" OR "mindfulness based cognitive therapy" OR "mindfulness-based CT" OR mindfulness based cognitive therapy)

**AND** 

(depress\* OR "mood disorder" OR "Mood disorders" OR "depressive disorder" OR "depressive disorders" OR "mood disturbance" OR "affective disorders" OR "affective disorder")

Results: 55

# Appendix B: Excluded Full-Text Articles

## Reason Excluded: Abstract Only

- Dempsey, C., M. Chesney, L. Lao, P. Vegella, T. Magyari, M. B. Robertson, B. Berman, and E. Kimbrough, "Acupuncture and Mindfulness-Based Stress Reduction Among Female Child Abuse Survivors: A Randomized Waitlist-Controlled Pilot Study," *Journal of Alternative and Complementary Medicine*, Vol. 20, No. 5, 2014, p. A87.
- Feldman, M. D., E. P. Gillung, K. Delucchi, and S. J. Eisendrath, "Mindfulness Based Cognitive Therapy Versus a Health Enhancement Program for Treatment Resistant Depression: A Randomized Controlled Trial," *Journal of General Internal Medicine*, Vol. 29, April 2014, pp. S150–S151.
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## Reason Excluded: Background

- Friedberg, M. W., "Mindfulness-Based Cognitive Therapy: A Potential New Alternative to Medication for Recurrent Depression," *Journal of Clinical Outcomes Management*, Vol. 16, No. 2, 2009, pp. 63–64.
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- Yoga Better for Chronic Back Pain and Associated Depression, *BackCare Journal*, Vol. 4, Winter 2009, p. 4.

## Reason Excluded: Background or Commentary

- Evans, S., "Review: Mindfulness-Based Therapies Effective for Anxiety and Depression," *Evididence Based Mental Health*, Vol. 13, No. 4, November 2010, p. 116. doi: 10.1136/ebmh.13.4.116
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## Reason Excluded: Case Report

- Deatherage, G., "The Clinical Use of 'Mindfulness' Meditation Techniques in Short-Term Psychotherapy," *Journal of Transpersonal Psychology*, Vol. 7, No. 2, 1975, pp. 133–143.
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## Appendix C: Evidence Table of Included Studies

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Barnhofer et	Number of participants: 31 initial, 28 final	<b>MBCT:</b> Followed standardized	Depressive symptoms, BDI (full sample):
al., 2009		manual (Segal, Williams, and	Difference in change in depressive symptom
	Method of identifying patients with MDD: Current	Teasdale, 2002) with	score (BDI) in MBCT + TAU vs. TAU: SMD
Study design: Single-	diagnosis of MDD or presence of residual symptoms	adjustments to address	-0.92; 95% CI −1.66 to -0.17
site RCT	following a full episode, defined as either meeting	suicidality and acute	
	DSM-IV criteria for only four instead of at least five	symptoms	Response:
ITT analysis: Yes	symptoms of depression over the past two weeks or		Response rate was not significantly different
		Dosage: 8 weekly 2-hour	between MBCT + TAU and TAU: RR 0.18; 95%
Purpose: To investigate			CI 0.02, 1.31
the effects of MBCT in	the days over the past two weeks. Assessed via the	6 days each week	
patients suffering from	Structured Clinical Interview for DSM-IV.		Remission: NA
chronic forms of		Co-interventions: TAU:	
depression using a	Baseline depressive symptom score:	Encouraged to continue any	Relapse: NA
randomized controlled	BDI (full sample):	current medication and to	L
design with blind	MBCT + TAU: 29.36 (9.66); TAU: 31.32 (10.79)		Health-related quality of life: NA
assessments		mental health practitioners or	
•	Average age in years (standard deviation [SD]):	other services over the	Adverse events: Study authors reported that
Country: United	MBCT + TAU: 42.07 (11.34); TAU: 41.79 (9.52)	treatment phase as they	there were no adverse events that were deemed
Kingdom	O	would have done otherwise.	to be related to treatment
Overlife and in my Coord	Gender: MBCT + TAU: 28.6% male; TAU: 35.7% male	0 TALL	A national name and trans.
Quality rating: Good	Including suitaging History of at least three greations	Comparator(s): TAU alone	Antidepressant use:
	Inclusion criteria: History of at least three previous	Fallery van. At and of	Changes in antidepressant use:
	episodes of MDD or chronic depression; current	Follow-up: At end of intervention	MBCT + TAU: 2 (14%)
	diagnosis of MDD or presence of residual symptoms	Intervention	TAU: 7 (50%) p=0.052
	following a full episode, defined as either meeting		p=0.052
	DSM-IV criteria for only four instead of at least five symptoms of depression over the past two weeks or		
	suffering from five or more symptoms for at least half of		
	the days, if symptoms had not been present for most of		
	the days over the past two weeks; history of suicidal		
	ideation (including thoughts of methods of suicide) or		
	suicidal behavior; absence of current mania or		
	hypomania, psychosis, obsessive-compulsive disorder,		
	eating disorder, pervasive developmental disorder or		
	habitual self-harming, or substance abuse or		
	dependence that would significantly interfere with the		
	ability to engage in meditation; adequate written and		
	pability to engage in meditation, adequate written and		<u>L</u>

Study Details	Patients	Intervention/Treatment	Outcomes/Results
	spoken English to complete all study measures; not currently in individual or group psychotherapy; no current ongoing meditation practice; and age between 18 and 65.		
	Exclusion criteria: None reported		

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Batink et al.,	Number of participants: 130 initial, 125 final	MBCT: Followed standard	Depressive symptoms, HRSD-17:
2013; Geschwind et al.,		protocol (Segal, Williams, and	Full sample:
2012; Forkmann et al.,	Method of identifying patients with MDD: Residual	Teasdale, 2002). Sessions	Difference in change in depressive symptom
2014	depression symptomatology (HRSD <sub>17</sub> ≥7) after at least	included guided meditation,	score in MBCT + TAU vs. TAU: SMD -0.60;
	one episode of MDD, as assessed by the Structured	experiential exercises, and	95% CI -0.95, -0.24
Study design: Single-	Clinical Interview for DSM-IV	discussions. Participants	
site RCT		received CDs with guided	1–2 previous MD episodes:
	Baseline depressive symptom score:	exercises.	Difference in change in depressive symptom
TT analysis: Yes	HRSD <sub>17</sub> :		score in MBCT + TAU vs. TAU: SMD -0.93;
-	1–2 episodes: MBCT: 9.6 (3.2); TAU: 10.5 (3.7)		95% CI -1.42, -044.
Purpose: To investigate	3+ episodes: MBCT: 11.1 (4.1); TAU: 9.9 (3.4)	Dosage: 8 sessions, 2.5	,
he effect of MBCT on	Full sample: MBCT: 10.3 (3.7); TAU: 10.2 (3.6)	hours once a week, plus daily	3+ previous MD episodes:
esidual depressive		homework exercises (30 to 60	Difference in change in depressive symptom
symptoms and whether	Inventory of Depressive Symptomatology–Self-Report	minutes)	score in MBCT + TAU vs. TAU: SMD -0.19;
he effect is contingent	(IDS-SR):	,	95% CI -0.71, 0.32
on the number of	1–2 episodes: MBCT 19.3 (9.4); TAU: 23.8 (8.8)	Co-interventions:	0070 01 011 1, 0102
previous depressive	3+ episodes: MBCT: 26.0 (11.1); TAU: 20.5 (8.2)	Psychological or	Depressive symptoms, IDS-SR:
episodes	Full sample: MBCT 22.4 (10.7); TAU: 22.5 (8.7)	pharmacological treatment	Full sample:
spicodoo	Tall balliple: MB 0 1 22:1 (10:17); 17 (0:17)	priamacological acatment	Difference in change in depressive symptom
Country: Netherlands	Average age in years (SD):	Comparator: TAU: Received	score in MBCT + TAU vs. TAU: SMD -0.53;
Journal y. Hearterlands	2 or fewer episodes: 42.8 (1.7); 3+ prior episodes: 45.2		95% CI -0.88, -0.18
Quality rating: Fair	(1.2); Overall: 43.9 (9.6); MBCT: 44.6 (9.7); TAU: 43.2	pharmacological treatment	0.00, 0.10
guanty runnig. r an	(9.5)	pharmacological treatment	1–2 previous MD episodes:
	(0.0)	Follow-up: At end of	Difference in change in depressive symptom
	<b>Gender:</b> 2 or fewer prior episodes: 30% male;	intervention	score in MBCT + TAU vs. TAU: SMD -0.93;
	3+ prior episodes: 19% male; Overall: 25% male;	intervention	95% CI -1.42, -0.44
	MBCT: 21.9% male; TAU: 27.3% male		0070 01 1.42, 0.44
	1770. 27.070 maic, 1770. 27.070 maic		3+ previous MD episodes:
	Inclusion criteria: Residual depression		Difference in change in depressive symptom
	symptomatology (HRSD <sub>17</sub> ≥7) after at least one		score in MBCT + TAU vs. TAU: SMD 0.07; 95%
	episode of MDD.		CI -0.44, 0.58
	lepisode of MDD.		0.44, 0.36
	Exclusion criteria: Fulfilling criteria for a current major		Response: NA
	depressive episode, a lifetime diagnosis of		Response. NA
	schizophrenia, psychotic episodes in the past year,		Remission: NA
	general conditions that made participation in a group		Remission. NA
			Polonos, NA
	intervention impossible, and recent (past four weeks)		Relapse: NA
	or upcoming changes in ongoing psychological or pharmacological treatment.		Health related quality of life, NA
	priarmacological treatment.		Health-related quality of life: NA
			Adverse events: Study reported that there were
			no adverse events.
			IN AUVEISE EVEIRS.
			Antidoprossant uso: NA
			Antidepressant use: NA

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Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Bondolfi et	Number of participants:	MBCT: Followed standardized	
al., 2010; Jermann et al.,	Bondolfi et al. (2010): 60 initial, 55 final		3-Month Follow-Up
2013	Jermann et al. (2013): 36 initial and 36 final	Teasdale, 2002)	Difference in change in depressive symptom
Ctudu docimo Multicito	Mathad of identifying nations with MDD. Clinical	Bassas Oweekly Oherr	score (BDI) in MBCT + TAU vs. TAU between
Study design: Multisite	Method of identifying patients with MDD: ≤Clinical	Dosage: 8 weekly 2-hour	baseline and 3-month postintervention follow-up:
(2) RCT	diagnosis of MDD in remission at time of inclusion	sessions	SMD 0.49; 95% CI -0.17, 1.15
ITT analysis:	Baseline depressive symptom score:	Co-interventions: TAU, but	9-Month Follow-Up
Bondolfi et al. (2010):	Bondolfi et al. (2010): NA	no antidepressants	Difference in change in depressive symptom
Yes	Jermann et al. (2013):	no antidepressants	score in MBCT + TAU vs. TAU between
Jermann et al. (2013):	BDI:	Comparator(s): TAU:	baseline and 9-month postintervention follow-up:
NA, no dropout	MBCT + TAU: 9.8 (9.8)	Unrestricted access to any	SMD 0.82; 95% CI 0.14, 1.51
NA, no dropout	TAU: 6.9 (6.9)	treatment or help service	SWD 0.02, 93 /0 Cl 0.14, 1.31
Purpose:	170.0.9 (0.9)	liteatifient of fleip service	Depressive symptoms, MADRS:
Bondolfi et al. (2010): To	Montgomery-Åsberg Depression Rating Scale	Follow-up: At end of	3-Month Follow-Up
test if MBCT would	(MADRS):	intervention and 3, 6, 9, and	Difference in change in depressive symptom
reduce the risk of	MBCT + TAU: 5.4 (4.8)	12 months postintervention	score (BDI) in MBCT + TAU vs. TAU between
depressive relapse when	· ·	12 months postintervention	baseline and 3-month postintervention follow-up:
compared with TAU in	17.0.0.0 (1.0)		SMD 0.31; 95% CI -0.35, 0.97
the context of the Swiss	Average age in years:		0.01, 00% of 0.00, 0.01
health care system in a	Bondolfi et al. (2010): MBCT + TAU: Median=46 (min-		9-Month Follow-Up
sample of remitted	max 27–63); TAU: Median=49 (min-max 24–66)		Difference in change in depressive symptom
depressed patients with	Jermann et al. (2013): MBCT: 45.4 (SD=11.6); TAU:		score in MBCT + TAU vs. TAU between
three or more past	48.2 (SD=9.4)		baseline and 9-month postintervention follow-up:
depressive episodes			SMD 0.72; 95% CI 0.05, 1.39
	Gender:		,
Jermann et al. (2013):	Bondolfi et al. (2010): MBCT + TAU: 26% male; TAU:		Response: NA
To determine whether	31% male		·
cognitive functioning was	Jermann et al. (2013): 31% male		Remission: NA
altered among patients			
remitted from depression	Inclusion criteria: History of recurrent major		Relapse (determined through clinical
and investigate the	depression according to DSM-IV, assessed with the		interview):
possible impact of MBCT	Structured Clinical Interview for DSM-IV; at least 3 past		In ITT sample (over 14 months), relapse in
on these functions from	depressive episodes (2 episodes in the past 5 years		MBCT + TAU vs. TAU:
a longitudinal	and at least one in the past 2 years); remission for at		RR 0.84; 95% CI 0.40, 1.77
perspective	least 3 months at time of enrollment; MADRS≤13,		
	corresponding to the baseline score of 10 on the		Health-related quality of life: NA
Country: Switzerland	HRSD <sub>17</sub> ; history of treatment with antidepressants but		
	currently off medication for at least 3 months before		Adverse events: Not reported
Quality rating: Good	enrollment.		
			Antidepressant use:
	Exclusion criteria: History of schizophrenia or		Antidepressant reinstatement:
	schizoaffective disorder, current substance abuse,		MBCT + TAU: 36%
	eating disorder, obsessive compulsive		TAU: 31%

Study Details	Patients	Intervention/Treatment	Outcomes/Results
	disorder, organic mental disorder, pervasive		p=0.78
	developmental disorder, borderline personality		
	disorder, dysthymia with onset before age 20, more		
	than four sessions of CBT ever, current psychotherapy		
	or counseling more frequently than once per month,		
	current practice of meditation more than once per week		
	or yoga more than twice per week.		

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Britton et al.,	Number of participants: 26 initial, 20 final	MBCT: Followed standardized	
2010		protocol (Segal, Williams, and	Difference in change in depressive symptom
	Method of identifying patients with MDD: Diagnosis	Teasdale, 2002). Focused on	score (BDI) in MBCT vs. waitlist:
Study design: Single-	of MDD in past 60 months, but in full or partial	cultivating mindfulness or	SMD -1.11; 95% CI -2.07, -0.15
site RCT	remission in the past 8 weeks, as assessed with the	nonjudgmental present-	
	Structured Clinical Interview for DSM-IV	moment awareness of mental	Response: NA
ITT analysis: No		content and everyday	
	Baseline depressive symptom score:	activities, including sitting,	Remission: NA
Purpose: To examine	BDI:	lying down, breathing,	
whether mindfulness	MBCT: 10.3 (6.2); Waitlist control: 8.1 (4.8)	walking, and other simple	Relapse: NA
meditation was		movements.	
associated with changes	Average age in years (SD): MBCT: 45.4 (7.1); Waitlist		Health-related quality of life: NA
in objectively measured	control: 48.1 (9.6)	Dosage: 8 weekly 3-hour	
polysomnographic		sessions plus one-day retreat	Adverse events: Study authors reported that
sleep profiles and to	Gender: MBCT: 30.8% male; Waitlist control: 12.5%	and home practice	there were no adverse events.
relate changes in	male		
polysomnographic sleep		Co-interventions: None	Antidepressant use: NA
to subjectively reported	Inclusion criteria: Met the DSM-IV		
changes in sleep and	criteria for major depression in the past 60 months and	Comparator(s): Waitlist	
depression within the	had a lifetime history of at least three episodes but was		
context of a randomized	in full or partial remission during the past 8 weeks with	provided during wait time	
controlled trial	varying degree of residual symptoms. Partial remission		
	defined as subjective symptom improvement,	Follow-up: At end of	
Country: United States	HRSD <sub>24</sub> ≤20, and the exclusion of individuals with	intervention	
	severely depressed mood, severe anhedonia, or active		
Quality rating: Poor	suicidal ideation. Eligible participants reported		
	difficulties with either sleep initiation, sleep		
	maintenance, or early awakening, but not hypersomnia		
	in the past 2 months.		
	Exclusion criteria: History of bipolar disorder,		
	cyclothymia, schizophrenia, schizoaffective disorder,		
	persistent antisocial behavior, repeated self-harm,		
	borderline personality disorder, or organic brain		
	damage; current panic, obsessive compulsive disorder,		
	eating disorder, or substance abuse/dependence;		
	inability to read and write in English; receiving current		
	psychotherapy; already had a regular meditation		
	practice; or had taken antidepressant medication in the		
	past 3 months. Participants were also excluded if they		
	had or suspected an untreated sleep disorder besides		
	insomnia.	1	

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Chiesa,	Number of participants: 18 initial, 16 final	MBCT: Followed standard	Depressive symptoms, HRSD <sub>21</sub> :
Mandelli, and Seretti,		manualized protocol (Segal,	Difference in change in depressive symptom
2012	Method of identifying patients with MDD: Clinical	Williams, and Teasdale, 2002)	score (HRSD <sub>21</sub> ) in MBCT plus antidepressants
	diagnosis of MDD according to DSM-IV criteria		vs. psycho-education plus antidepressants:
Study design: Single-		Dosage: 8 weekly 2-hour	SMD -0.81; 95% CI -1.83, 0.22
site RCT	Baseline depressive symptom score:	sessions; encouraged home	
	HRSD <sub>21</sub> :	practice of 30-45 minutes, 6	Response: NA
ITT analysis: Yes	MBCT: 16.11 (7.01)	times a week	·
•	Control: 14.14 (4.98)		Remission: NA
Purpose: To compare	,	Co-interventions:	
MBCT with a psycho- educational control	Average age in years (SD): Not reported	Antidepressants	Relapse: NA
	O - m - d - m - O - m - m   0.50/ m - d - MDOT - 0.00/ m - d - m	O D	Hardth malatad musika at itta
group for the treatment	Gender: Overall: 25% male; MBCT: 22% male;	Comparator: Psycho-	Health-related quality of life:
of patients with major	Psycho-education: 29% male	education: Similar to MBCT	Difference in change in quality-of-life score
depression		but no emphasis on	(Psychological General Well-Being Index) in
0 t It-l	Inclusion criteria: Aged 18 years or over; meeting	mindfulness skills. 8 weekly	MBCT plus antidepressants vs. psycho-
Country: Italy	DSM-IV criteria for MDD; being on treatment with	2-hour sessions. Encouraged	education plus antidepressants:
<b>0</b> III II E :	antidepressants at adequate dosages for at least 8	stretching or aerobic activity	SMD -0.81; 95% CI -1.84, 0.22
Quality rating: Fair	weeks; and a failure to achieve remission, defined as	for 30–45 minutes, 6 times a	
	HRSD <sub>21</sub> ≥8.	week.	Adverse events: Not reported
	Exclusion criteria: Current or past psychosis, bipolar	Follow-up: At end of	Antidepressant use: NA
	disorder, or substance abuse; severe physical or	intervention	
	neurological conditions that could interfere with the		
	engagement in mindfulness practices; and concurrent		
	psychotherapy or engagement in any meditation or		
	yoga practice.		

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Godfrin and	Number of participants: 106 initial, 76 final	MBCT: Followed standardized	
van Heeringen, 2010		protocol (Segal, Williams, and	End of intervention:
	Method of identifying patients with MDD: Past	Teasdale, 2002) with aim to	Difference in change in depressive symptom
Study design: Single-	history of MDD according to DSM-IV criteria with at	attend, nonjudgmentally and	score in MBCT + TAU vs. TAU + waitlist:
site RCT		moment-by-moment, to	SMD -0.98; 95% CI -1.39, -0.58
	at least 8 weeks prior to study participation	patterns of thoughts, bodily	
ITT analysis: Yes		sensations, and feelings	8 Months:
	Baseline depressive symptom score:		Difference in change in depressive symptom
Purpose: To study the	BDI:	Dosage: 8 weekly 2.75-hour	score in MBCT + TAU vs. TAU + waitlist at 8-
efficacy of MBCT in	MBCT: 17.59 (11.65)	sessions and at-home	month follow-up:
preventing relapse or	TAU + waitlist: 20.44 (12.46)	exercises 6 times a week for	SMD -0.80; 95% CI -1.19, -0.40
recurrence of depression		45 minutes	
in patients with a history	HRSD <sub>17</sub> :		14 Months:
of at least three	MBCT: 6.59 (3.99)	Co-interventions: TAU	Difference in change in depressive symptom
	TAU + waitlist: 7.32 (3.65)		score in MBCT + TAU vs. TAU + waitlist at 14-
who are currently in		Comparator(s): Waitlist	month follow-up:
remission or recovery,	Average age in years (SD): MBCT + TAU: 44.9	control group continued TAU,	SMD -0.43; 95% CI -0.82, -0.05
MBCT's effect on the	(10.78); TAU + waitlist: 46.4 (10.37)	which could include	
time since study		antidepressants and	Depressive symptoms, BDI:
participation until first	Gender: MBCT + TAU: 17.3% male; TAU + waitlist:	nonintensive psychotherapy	End of intervention:
relapse in depression,	20.4% male		Difference in change in depressive symptom
and short-term and		Follow-up: At end of	score in MBCT + TAU vs. TAU + waitlist:
longer-term effects on	Inclusion criteria: Aged 18 years or older and had a	intervention, as well as 8 and	SMD -1.47; 95% CI -1.90, -1.04
mood states and quality	history of at least 3 depressive episodes according to	14 months post-baseline	
of life	DSM-IV-TR (text revision) criteria, the end of the last		8 Months:
	episode being at least 8 weeks before study		Difference in change in depressive symptom
Country: Belgium	participation; did not suffer from a current depressive		score in MBCT + TAU vs. TAU + waitlist at 8-
	episode according to DSM-IV-TR criteria; HRSD <sub>17</sub> ≤14.		month follow-up:
Quality rating: Fair			SMD -0.80; 95% CI -1.19, -0.40
	Exclusion criteria: Current DSM-IV-TR diagnoses of		
	chronic depression or dysthymia, substance use		14 Months:
	disorder, obsessive-compulsive disorder, bipolar		Difference in change in depressive symptom
	disorder, acute psychosis, schizophrenia or		score in MBCT + TAU vs. TAU + waitlist at 14-
	schizoaffective disorder, cognitive disorder, organic		month follow-up:
	mental disorder, pervasive developmental disorder,		SMD -0.90; 95% CI -1.29, -0.50
	mental retardation, or a primary diagnosis of an axis-II		
	disorder or risk of suicide; an extended experience with		Response: NA
	zen- or vipassana-meditation (or mindfulness) in the		
	past; more than 1 psychiatric consultation per 3-4		Remission: NA
	weeks or intensive psychotherapy; meditation practices		
	other than MBCT during the training and/or follow-up;		Relapse:
	and physical problems that hampered participation in		Relapse in MBCT + TAU vs. TAU + waitlist:
	the program. Only patients living in a well-defined study		RR 0.45; 95% CI 0.29, 0.70
	region were included in order to prevent dropout due to		

Study Details	Patients	Intervention/Treatment	Outcomes/Results
	geographical reasons.		Mean time to first relapse/recurrence since
			study participation:
			MBCT + TAU: 39.5 weeks
			TAU + waitlist: 53.7 weeks
			Significant difference between groups in mean
			time to first relapse (p≤0.001).
			Health-related quality of life (HRQOL):
			Quality of Life in Depression Scale:
			Difference in change in HRQOL in MBCT + TAU
			vs. TAU + waitlist:
			SMD -1.02; 95% CI -1.42, -0.61
			8 Months:
			Difference in change in HRQOL in MBCT + TAU
			vs. TAU + waitlist at 8-month follow-up:
			SMD -0.67; 95% CI -1.06, -0.28
			14 Months:
			Difference in change in HRQOL in MBCT + TAU
			vs. TAU + waitlist at 14-month follow-up:
			SMD -0.68; 95% CI -1.07, -0.29
			Adverse events: Not reported
			Antidepressant use:
			Baseline:
			MBCT + TAU: n=38, 73.1%
			TAU + waitlist: n=33, 61.1%
			End of intervention:
			MBCT + TAU: n=34, 75.6%
			TAU + waitlist: n=29, 60.4%
			8 Months:
			MBCT + TAU: n=27, 64.3%
			TAU + waitlist: n=26, 56.5%
			44 Martha
			14 Months:
			MBCT + TAU: n=25, 64.1%
			TAU + waitlist: n=28, 62.2%
			No group time significance reported.

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Hepburn et	Number of participants: 68 initial, 43 final	MBCT: Program for	Depressive symptoms, BDI:
al., 2009; Crane et al.,		suicidality, 2-hour weekly	Difference in change in depressive symptom
2008	Method of identifying patients with MDD: BDI	classes plus 1 day-long	score (BDI) in MBCT + TAU vs. TAU:
		session and daily homework	SMD -0.30; 95% CI -0.91, 0.30
Study design:	Baseline depressive symptom score:		
Participants in remission	BDI:	Dosage: 8 weekly 2-hour	Response: NA
or recovery with	MBCT: 15.62 (13.84)	sessions plus one-day retreat	
suicidality randomized to	TAU: 12.83 (9.59)		Remission: NA
MBCT or waitlist control		Co-interventions:	
using stratification	Average age in years (SD): MBCT: 48.77 (9.04);	Psychotherapy and	Relapse: NA
(suicidal history and past	TAU: 41.24 (9.00)	medication	
depressive episodes)			Health-related quality of life: NA
	Gender: 26.5% male	Comparator(s): TAU:	
ITT analysis: No		Including medication and any	Adverse events: Not reported
	Inclusion criteria: Had experienced both depression	help-seeking during wait	
Purpose: To compare	(minimum one episode) and suicidality (suicide attempt	period	Antidepressant use: NA
short-term effects of	or severe ideation with a plan); met criteria for		
MBCT and TAU on	depression recovery.	Follow-up: At end of	
thought supression in		intervention	
individuals with past	<b>Exclusion criteria:</b> Non-fluent English, receiving CBT		
suicidal depression	without subsequent depressive relapse, and symptoms		
	of substance misuse, psychosis, or mania in the past 6		
Country: United	months.		
Kingdom			
Quality rating: Poor			

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Keune et al.,	Number of participants: 91 initial, 78 final	MBCT: Followed standardized	
2011; Bostanov et al.,		protocol (Segal, Williams, and	Difference in change in depressive symptom
2012	Method of identifying patients with MDD: At least	Teasdale, 2002)	score (BDI) in MBCT + TAU vs. TAU + waitlist:
	three past major depressive episodes, with the most		SMD -1.85; 95% CI -2.38, -1.31
Study design: Single-	recent episode in remission for at least 4 weeks.	Dosage: 8 weekly sessions	
site RCT	Assessed via the German version of the Structured		Response: NA
	Clinical Interview for DSM-IV.	Co-interventions: TAU	
ITT analysis: No			Remission: NA
	Baseline depressive symptom score:	Comparator(s): Waitlist	
Purpose: To explore the		control: Advised to consult	Relapse: NA
psychological and	MBCT: 9.05 (8.60)	with their medical doctor or	
psychophysiological	TAU + Waitlist: 12.70 (9.19)	other sources of help if	Health-related quality of life: NA
effects of MBCT in		needed	
recurrently depressed	Average age in years (SD): MBCT: 48.93 (9.68);		Adverse events: Not reported
patients, especially the	TAU + Waitlist: 45.24 (10.50)	Follow-up: At end of	
effect of MBCT on		intervention	Antidepressant use: NA
rumination and	Gender: Overall: 26% male; MBCT: 25% male;		
mindfulness as	TAU + waitlist: 27% male		
indicators of global			
cognitive style, as well	Inclusion criteria: Ages 18 to 65; met criteria for at		
as on depressive	least three major depressive episodes in the past; in at		
symptomatology	least partial remission (defined as not meeting the		
•	minimum criteria for a major depressive episode within		
Country: Germany	the past 4 weeks); had stopped using medication at		
Overlife and the second	least 4 weeks prior to the interview; agreed not to start		
Quality rating: Poor	medication during the course of the study, unless		
	advised otherwise by a psychiatrist. If medicated,		
	medication had to be stable for at least one month, and		
	participants needed to agree not to change medication		
	or dose during the course of therapy until the		
	completion of the last electroencephalogram		
	assessment, unless dose or type was recommended to		
	be changed by a psychiatrist.		
	Exclusion criteria: Not giving or		
	withdrawing informed consent, presence or history of		
	substance abuse, eating or obsessive-compulsive		
	disorder during the past three years, a history of		
	schizophrenia or schizoaffective disorder, any		
	neurological disorder, and borderline personality		
	disorder. Participants also were not included if they had		
	ever practiced any form of meditation on a regular		
	basis.		
	Dasis.	1	

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Kuyken,	Number of participants: 123 initial, 104 final	MBCT: Followed standardized	Depressive symptoms, HRSD <sub>17</sub> :
Byford, et al., 2008;		protocol (Segal, Williams, and	3 Months:
Kuyken, Watkins, et al.,	Method of identifying patients with MDD: Clinical	Teasdale, 2002). Content	Difference in change in depressive symptom
2010	diagnosis of MDD in full or partial remission according	included guided mindfulness	score (HRSD) in MBCT + m-ADM vs. m-ADM at
	to DSM-IV criteria	practices, inquiry into patients'	3 months:
Study design: Single-		experience of these practices,	SMD -0.30; 95% CI -0.66, 0.05
site RCT	Baseline depressive symptom score:	review of weekly homework,	
	BDI-II:	and teaching/discussion of	15 Months:
ITT analysis: Yes	MBCT: 18.51 (10.91)	cognitive-behavioral skills,	Difference in change in depressive symptom
	m-ADM: 20.15 (12.86)	plus support for tapering and	score in MBCT + m-ADM vs. m-ADM at 15
Purpose: To examine		discontinuation of m-ADM	months:
whether MBCT provides	HRSD <sub>17</sub> :	after 4–5 weeks of treatment.	SMD -0.23; 95% CI -0.58, 0.13
an alternative approach	MBCT: 5.62 (4.3)		
to maintenance	m-ADM: 5.76 (4.69)	Dosage: 8 weekly 2-hour	Depressive symptoms: BDI-II
antidepressant		sessions plus 4 follow-up	3 Months:
medication (m-ADM) in	Average age in years (SD): MBCT: 48.95 (10.55);	sessions in the following year	Difference in change in depressive symptom
preventing depressive	m-ADM: 49.37 (11.84)		score in MBCT + m-ADM vs. m-ADM at 3
relapse/recurrence and		Co-interventions:	months:
to compare MBCT and	Gender: MBCT: 23%; m-ADM: 24%	Antidepressants tapered over	SMD -0.36; 95% CI -0.72, 0.00
m-ADM in terms of		course of MBCT	
residual depressive	<b>Inclusion criteria:</b> Three or more previous episodes of		15 Months:
symptoms, comorbid	depression meeting criteria for depression according to		Difference in change in depressive symptom
psychiatric diagnoses,	the DSM-IV; 18 years of age or older; on a therapeutic	Patients' physicians were	score in MBCT + m-ADM vs. m-ADM at 15
quality of life, and cost-	dose of m-ADM in line with the British National	asked to manage m-ADM in	months:
effectiveness	Formulary for at least the previous 6 months; and in	line with standard clinical	SMD -0.33; 95% CI -0.69, 0.03
	either full or partial remission from the most recent	practice and ensure that the	
Country: United	episode of depression.	dose remained within	Response: NA
Kingdom		therapeutic limits	Remission: NA
	Exclusion criteria: Comorbid diagnoses of current		
Quality rating: Fair	substance dependence; organic brain damage;	<b>Follow-up:</b> 3, 6, 9, 12, and 15	
	current/past psychosis; bipolar disorder; persistent	months after baseline	Mean total # of relapses/recurrences:
	antisocial behavior; persistent self-injury requiring		MBCT: 1.45 (95% CI 1.21, 1.69)
	clinical management/therapy; unable to engage with		m-ADM: 1.57 (95% CI 1.32, 1.81)
	MBCT for physical, practical, or other reasons (e.g.,		
	very disabling physical problem, unable to comprehend		<u>Duration of relapses/recurrences (in months):</u>
	materials); and formal concurrent psychotherapy.		MBCT: 3.36 (95% CI 2.2, 4.5)
			m-ADM: 3.0 (95% CI 2.1, 3.9)
			Severity of relapses/recurrences (DSM-IV
			severity specifier, 0-4):
			MBCT: 1.79 (95% CI 1.56, 2.02)
			m-ADM: 1.72 (95% CI 1.48, 1.95)
			Relapse in MBCT + m-ADM vs. m-ADM at 15

Study Details	Patients	Intervention/Treatment	Outcomes/Results
			month follow-up:
			RR 0.80; 95% CI 0.57, 1.11
			Health-related quality of life: WHO Quality of Life – Brief, Physical:
			3 Months:
			Difference in change in physical HRQOL in
			MBCT + m-ADM vs. m-ADM at 3 months:
			SMD -0.10; 95% CI -0.46, 0.25
			15 Months:
			Difference in change in physical HRQOL in
			MBCT + m-ADM vs. m-ADM at 15 months:
			SMD -0.08; 95% CI -0.44, 0.27
			WHO Quality of Life – Brief, Psychological: 3 Months:
			Difference in change in psychological HRQOL in
			MBCT + m-ADM vs. m-ADM at 3 months:
			SMD -0.16; 95% CI -0.51, 0.19
			15 Months:
			Difference in change in psychological HRQOL in
			MBCT + m-ADM vs. m-ADM at 15 months:
			SMD -0.13; 95% CI -0.48, 0.22
			WHO Quality of Life – Brief, Social:
			3 Months:
			Difference in change in social HRQOL in MBCT
			+ m-ADM vs. m-ADM at 3 months:
			SMD -0.21; 95% CI -0.56, 0.15
			15 Months:
			Difference in change in social HRQOL in MBCT
			+ m-ADM vs. m-ADM at 15 months:
			SMD -0.08; 95% CI -0.44, 0.27
			Adverse events: Study authors reported that
			there were no adverse events recorded through
			the oversight of the Trial Steering Committee.
			Antidepressant costs:
			Mean difference of MBCT vs. m-ADM:
			-\$103 (95% CI -\$191, -\$14)

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Ma and	Number of participants: 75 initial, 68 final	MBCT: Followed standardized	Depressive symptoms: NA
Teasdale, 2004		protocol (Segal, Williams, and	
	Method of identifying patients with MDD: History of	Teasdale, 2002)	Response: NA
Study design: Single-	recurrent MDD according to DSM-IV criteria, currently		
site RCT	in remission or recovery	Dosage: 8 weekly 2-hour	Remission: NA
		sessions plus daily homework;	
TT analysis: Yes	Baseline depressive symptom score:	follow-up meetings 1 and 6	Relapse:
	BDI:	months after intervention	Full sample (2+ previous major depressive
Purpose: To compare	MBCT: 13.49 (7.16)		episodes) in ITT sample:
esponse to MBCT in a	TAU: 15.13 (9.51)	Co-interventions: TAU	Relapse in MBCT + TAU vs. TAU:
group of patients with			RR 0.63; 95% CI 0.39, 1.01
hree or more episodes	HRSD <sub>17</sub> :	Comparator(s): TAU:	
of depression versus a	MBCT: 5.70 (3.02)	Instructed to seek help as	2 previous major depressive episodes in the ITT
group with only two	TAU: 5.68 (2.97)	usual	sample:
recent) episodes			Relapse in MBCT + TAU vs. TAU:
	Average age in years (SD): MBCT 42.9 (8.4);	Follow-up: At the end of the	RR 2.50; 95% CI 0.60, 10.34
Country: United	TAU: 46.1 (9.3)	intervention and 3, 6, 9, and	
Kingdom		12 months postintervention	3 or more previous major depressive episodes
	Gender: MBCT: 27% male; TAU: 21% male		in the ITT sample:
Quality rating: Good			Relapse in MBCT + TAU vs. TAU:
	Inclusion criteria: 18–65 years of age; meet		RR 0.46; 95% CI 0.27, 0.79
	enhanced DSM-IV criteria for a history of recurrent		
	major depression—these normally require a history of		Health-related quality of life: NA
	two or more previous episodes of DSM–IV major		
	depression in the absence of a history of mania or		Adverse events: Not reported
	hypomania; at least two episodes of major depression		
	occurred within the past 5 years, and at least one of		Antidepressant use during study period:
	those episodes was within the past 2 years; had a		2 previous major depressive episodes:
	history of treatment by a recognized antidepressant		MBCT + TAU: 13%; TAU: 36%
	medication, but off antidepressant medication and in		p>0.10
	recovery/remission at the time of baseline assessment		
	and for at least the preceding 12 weeks; and		3 or more previous major depressive episodes:
	HSRD <sub>17</sub> <10 at baseline assessment.		MBCT + TAU: 21%; TAU: 33%;
			p>0.10
	Exclusion criteria: History of schizophrenia or		
	schizoaffective disorder, current substance abuse,		Duration in weeks:
	borderline personality disorder, organic mental disorder		2 previous major depressive episodes:
	or pervasive developmental delay, current obsessive-		MBCT + TAU: 27.0 (0); TAU: 27.5 (14.5)
	compulsive disorder, current eating disorder, dysthymia		p>0.10
	before age 20, more than four lifetime sessions of CBT,		
	and current psychotherapy or counseling more		3 or more previous major depressive episodes:
	frequently than once per month.		MBCT + TAU: 25.4 (8.2); TAU: 34.6 (20.2)
			p>0.10

Study Details	Patients	Intervention/Treatment	Outcomes/Results
			Dosage SSI (mg) 2 previous major depressive episodes: MBCT + TAU: 26.7 (0); TAU: 22.5 (5.0)
			p>0.10
			3 or more previous major depressive episodes: MBCT + TAU: 27.0 (5.4); TAU: 23.6 (8.9)

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference:	Number of participants: 69 initial, 45 final	MBCT: Modified MBCT	Depressive symptoms, BDI-II:
Manicavasgar, Parker,		protocol (Segal, Williams, and	Postintervention:
and Perich, 2011	Method of identifying patients with MDD: Met DSM-	Teasdale, 2002). Yoga	Difference in change in depressive symptom
	IV criteria for MDD as assessed by the computerized	instruction and DVD-based	score in MBCT + TAU vs. CBT + TAU:
Study design:	version of the Composite International Diagnostic	mindfulness-based stress	SMD -0.15; 95% CI -0.74, 0.44
Participants in eight of	Interview	reduction program were	
the 11 treatment groups		omitted. Purchase of program	6 Months:
were randomly assigned	Baseline depressive symptom score:	book made optional rather	Difference in change in depressive symptom
to the CBT or MBCT	BDI-II:	than compulsory.	score in MBCT + TAU vs. CBT + TAU at 6
condition. Three of the	MBCT: 32.42 (9.01)		months: SMD 0.70; 95% CI -0.26, 1.65
11 treatment groups	CBT: 36.23 (11.11)	Dosage: 8-week course,	
were run according to		group sessions for 2–2.5	12 Months:
therapist availability, and	Average age in years (SD): MBCT: 47 (13.84);	hours 1 time a week, plus	Difference in change in depressive symptom
group participants were	CBT: 45 (12.94)	home practice	score in MBCT + TAU vs. CBT + TAU at 15
assigned sequentially.			months: SMD 0.18; 95% CI -0.58, 0.93
	Gender: MBCT: 37% male; CBT: 34% male	Co-interventions: TAU	
ITT analysis: No			Response: NA
	Inclusion criteria: Aged 18 years or over; meeting	Comparator: CBT based on	
Purpose: To examine	DSM-IV criteria for MDD on the computerized version	standardized protocol (Beck et	Remission: NA
the comparative	of the Composite International Diagnostic Interview;	al., 1979), 8 weekly sessions	
effectiveness of MBCT	BDI-II≥20 at telephone screening; reporting low mood	of 2–2.5 hours, plus home	Relapse: NA
and CBT as treatments	for at least three preceding months; being proficient in	practice	
for nonmelancholic	English; not having engaged in CBT, mindfulness, or		Health-related quality of life:
depression	meditation/relaxation (operationalized as more than	Follow-up: At end of	Social and Occupational Functioning Scale:
	four sessions of regular meditation/relaxation) over the	intervention and 6 and 12	Difference in change in health-related quality of
Country: Australia	preceding 12 months; being under supervision of a	months postintervention	life score in MBCT + TAU vs. CBT + TAU:
	case manager/clinician; not commencing		SMD -0.04; 95% CI -0.63, 0.56
Quality rating: Poor	antidepressant medication or, if medicated, not		
	changing their antidepressant medication regime over		Adverse events: Not reported
	the preceding three months; and preparedness to		
	commit to an 8-week group program.		Antidepressant use: NA
	Exclusion criteria: Current diagnosis of melancholic		
	depression or bipolar disorder; a history of any		
	psychotic illness; dementia; current active suicidal		
	ideation; being hospitalized; concurrent treatment using		
	meditation or CBT; drug/alcohol dependence; daytime		
	anxiolytic medication (which could potentially impair		
	concentration); current antenatal or postnatal		
	depression (which could be related to hormonal		
	factors); currently in receipt of antipsychotic or mood		
	stabilizing medication; and history of treatment with		
	more than two antidepressant drugs.		

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Omidi et al.,	Number of participants: 90 initial, 90 final	MBCT: Standardized MBCT	Depressive symptoms, Brief Symptom
2013		program (Segal, Williams, and	Inventory Depression Scale:
	Method of identifying patients with MDD: Clinical	Teasdale, 2002) with the	Difference in change in depressive symptom
Study design: Single-	diagnosis of MDD	addition of behavioral	score in MBCT + TAU vs. TAU:
site RCT		enhancement components of	SMD -1.53; 95% CI -2.11, -0.96
	Baseline depressive symptom score:	CBT for depression	
ITT analysis: NA, no	Brief Symptom Inventory, depression subscale:	·	Difference in change in depressive symptom
drop out	MBCT: 2.05(0.84)	Dosage: 8 2-hour sessions,	score in MBCT + TAU vs. CBT + TAU:
•	CBT: 2.18 (0.57)	once a week	SMD -0.00; 95% CI -0.51, -0.51
Purpose: To evaluate	TAU: 2.18(0.85)		
the efficacy of MBCT	, ,	Co-interventions: Usual care	Response: NA
and traditional CBT with	Average age in years (SD): MBCT: 32 (6.3); CBT: 30		·
TAU to reduce	(5.2); TAU: 35 (4.8)	Comparators (2):	Remission: NA
psychiatric symptoms in		CBT: Standardized treatment	
a sample of patients with	Gender: MBCT: 20% male; CBT: 34% male; TAU:	protocol developed by Emery	Relapse: NA
MDD	47% male	(2000)	•
		TAU: Continued under the	Health-related quality of life: NA
Country: Iran	Inclusion criteria: Meet DSM-IV criteria for MDD.	care of a therapist and/or	. ,
•		psychiatrist	Adverse events: Not reported
Quality rating: Poor	Exclusion criteria: BMD (acronym undefined),	. ,	'
3 3	psychosis, drug abuse, organic history, eating disorder,	Follow-up: At end of	Antidepressant use: NA
	and suicidality.	intervention	'

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Segal et al.,	Number of participants: 84 initial, 64 final	MBCT: Followed standardized	Depressive symptoms: NA
2010		protocol (Segal, Williams, and	
	Method of identifying patients with MDD: Prior to	Teasdale, 2002).	Response: NA
Study design: 2-stage	stage 1, diagnosis of MDD as assessed with the	Antidepressants discontinued	
study	Structured Clinical Interview for DSM-IV	via 4-week taper.	Remission Relapse:
			Structured Clinical Interview for DSM-IV
Stage 1: acute treatment	Baseline depressive symptom score:	Dosage: 8 weekly 2-hour	(assessing relapse);
of depression with	HRSD <sub>17</sub> :	sessions, plus a retreat and	At 18 Months Follow-Up:
antidepressants	m-ADM: 2.0 (2.3)	daily at-home exercises	Relapse in MBCT vs. m-ADM:
	MBCT: 3.0 (2.8)		RR 0.80; 95% CI 0.39, 1.62
Stage 2: Among stage 1	Pla + Clin: 3.3 (3.0)	Co-interventions: Bimonthly	
participants who		meetings with study	Relapse in MBCT and clinical management vs.
remitted, RCT with 3	Quick Inventory of Depressive Symptomatology:	psychiatrists	placebo and clinical management:
arms: (1) maintenance	m-ADM: 3.0 (1.7)		RR 0.65; 95% CI 0.34, 1.62
antidepressant	MBCT: 3.4 (2.4)	Comparator(s): 2 comparison	
medication (m-ADM),	Pla + Clin: 2.9 (2.3)	groups:	In stable remitters (maintained an HRSD <sub>17</sub> score
(2) discontinuation of		(1) m-ADM: Remained on	of 7 or less across this interval):
antidepressant and	Average age in years (SD): Overall: 44 (11); m-ADM:	same drug regimen at	Relapse in MBCT vs. m-ADM:
addition of MBCT, and	45.8 (11.4); MBCT: 44.8 (9.4); Pla + Clin: 41.9 (11.6)	maximum tolerated effective	RR 1.06; 95% CI 0.54, 2.07
(3) discontinuation of		dose	
antidepressant,	Gender: Overall: 42% male; m-ADM: 29% male;	(2) Pla + Clin: Patients	Relapse in MBCT and clinical management vs.
•	MBCT: 50% male; Pla + Clin: 33% male	tapered off antidepressant	placebo and clinical management:
pills and clinical		with placebo replacements,	RR 1.25; 95% CI 0.54, 2.07
management (Pla + Clin)	Inclusion criteria: Diagnosis of MDD according to	plus clinical management	
	DSM-IV criteria; a score of 16 or higher on the		In unstable remitters (achieved an HRSD <sub>17</sub>
ITT analysis: Yes	HRSD <sub>17</sub> ; 2 or more previous episodes of MDD (to	Follow-up: At the end of the	score of 7 or less but had occasional elevated
	ensure that those randomized would have a minimum	intervention, monthly for the	scores between 8 and 14 across this interval):
Purpose: To test the	of 3 past episodes); age between 18 and 65 years;	next 3months, and bimonthly	Relapse in MBCT vs. m-ADM:
relative efficacy of	English-speaking; and the ability to provide informed	for the remainder of the 18-	RR 1.02; 95% CI 0.30, 3.45
MBCT, m-ADM), and	consent.	month maintenance phase	
placebo plus clinical			Relapse in MBCT and clinical management vs.
management for	Exclusion criteria: Current diagnosis of bipolar		placebo and clinical management:
prevention of relapse or	disorder, substance abuse disorder, schizophrenia, or		RR 0.39; 95% CI 0.17, 0.88
recurrence in patients	borderline or antisocial personality disorder; a trial of		
with recurrent	electroconvulsive therapy within the past 6 months;		Health-related quality of life: NA
depression who have	depression secondary to a concurrent medical		
achieved remission	disorder; current or planned pregnancy within the 6		Adverse events: Not reported
through antidepressant	months of acute-phase treatment; and current practice		Andidonnescont vect NA
pharmacotherapy	of meditation more than once per week or yoga more		Antidepressant use: NA
O	than twice per week.		
Country: Canada			
Quality rating: Fair			
Quality rating. Fall		1	

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Shahar et	Number of participants: 52 initial, 45 final	MBCT: Followed standardized	
al., 2010			Difference in change in depressive symptom
	Method of identifying patients with MDD: Diagnosis	Teasdale, 2002). Sessions	score (BDI) in MBCT + TAU vs. TAU + waitlist
Study design: Single-	of MDD in the past 60 months, with lifetime history of at		control: SMD -1.14; 95% CI -1.78, -0.51
site RCT	least 3 episodes, as assessed by the Structured	mindfulness or nonjudgmental	
	Clinical Interview for DSM-IV. In partial remission in	present-moment awareness of	Response: NA
ITT analysis: No	last 2 months.	mental content and everyday	
		activities, including sitting,	Remission: NA
Purpose: To examine	Baseline depressive symptom score:	lying down, breathing,	
the immediate (pre- to	BDI:	walking, and other simple	Relapse: NA
postintervention) effects	MBCT: 9.10 (6.10)	movements.	
of MBCT on reductions	Waitlist control: 10.16 (6.20)	<b>5</b> 0 11 01	Health-related quality of life: NA
in depressive symptoms	(OD) MDOT 40 50 (7.77)	Dosage: 8 weekly 3-hour	A decourse account to Acade and an account of the et the annual
•	Average age in years (SD): MBCT: 46.58 (7.77);	sessions, plus a one-day	Adverse events: Authors reported that there
Country: United States	Waitlist control: 46.74 (11.70)	retreat and at-home practice	were no adverse events during the trial.
Quality rating: Poor	Gender: MBCT: 23.08% male; Waitlist control: 5.26% male	Co-interventions: TAU	Antidepressant use: NA
		Comparator(s): Waitlist	
	Inclusion criteria: Met DSM-IV criteria for major	control group	
	depression in the past 60 months and had a lifetime	3	
	history of at least 3 episodes, but was in partial	Follow-up: At end of	
	remission during the past 8 weeks with a varying	intervention	
	degree of residual symptoms. Partial remission was		
	defined by a subjectively reported improvement in		
	symptoms in the past 2 months, HRSD <sub>24</sub> ≤20, and the		
	exclusion of severely depressed mood, severe		
	anhedonia, or active suicidal ideation. No change in		
	antidepressant type or dose during the 3 months prior		
	to enrollment or during the active phase of the study.		
	Exclusion criteria: History of bipolar disorder,		
	cyclothymia, schizophrenia, schizoaffective disorder,		
	persistent antisocial behavior or repeated self-harm,		
	borderline personality disorder, organic brain damage;		
	current panic, obsessive-compulsive disorder, eating		
	disorder, or substance abuse/dependence; inability to		
	read and write in English; receiving current		
	psychotherapy; already had a regular meditation		
	practice.		
	Ipradioo.	1	<u>l</u>

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Teasdale,	Number of participants: 145 initial, 137 final	MBCT: Manualized 2-hour	Depressive symptoms: NA
Segal, et al., 2000;		weekly sessions + daily	
reasdale, Moore, et al.,	Method of identifying patients with MDD:	homework, weekly for first 8	Response: NA
2002; Williams,	HRSD <sub>17</sub> ≤10, BDI, Clinical diagnosis	weeks, and monthly for final 4	
Teasdale, et al., 2000	· · ·	sessions	Remission: NA
	Baseline depressive symptom score: NA		
Study design: Multisite		Dosage: 12 sessions	Relapse:
3) RCT. Patients	Average age in years (SD): MBCT: 40.7 (10.3);		2 episodes of depression (23% of sample):
andomized to MBCT +	TAU: 46.2 (9.6)	Co-interventions: Care from	Relapse in MBCT + TAU vs. TAU:
ΓAU or TAU + waitlist		general practitioner,	RR 1.80; 95% CI 0.77, 4.19
control at three sites.	Gender: MBCT: 26% male; TAU: 22% male	psychiatric treatment	, , , , , , , , , , , , , , , , , , , ,
Randomization stratified	,	(out/inpatient), counseling,	3 or more episodes of depression (77% of
y "recency of recovery	Inclusion criteria: 18 to 65 years of age; meeting	medication	sample):
rom last episode of	enhanced DSM-III criteria for a history of recurrent		Relapse in MBCT + TAU vs. TAU:
depression and number	major depression—these normally require a history of	Comparator(s): TAU:	RR 0.61; 95% CI 0.41, 0.89
of previous episodes of	two or more previous episodes of DSM-III major	Instructed to seek help as	
MDD."	depression in the absence of a history of mania or	needed	Health-related quality of life: NA
	hypomania; at least two episodes of major depression		Trouble quality of more we
TT analysis: Yes	within the past 5 years, with at least one of those	Follow-up: Bimonthly for 1	Adverse events: Not reported
unungolo. 1 ee	episodes within the past 2 years; a history of treatment		That or
Purpose: To evaluate	by a recognized antidepressant medication, but off	) oa.	Antidepressant use:
MBCT as a mediator for	antidepressant medication; in recovery/remission at the		MBCT: 40%
relapse/recurrence	time of baseline assessment and for at least the		TAU: 45%
ciapserrecuirence	preceding 12 weeks (it was not possible to determine		p=0.10
Country: Canada/Linited	the adequacy of treatment by antidepressant		P 0.10
Kingdom	medication; rather, this criterion was used as an		
angaom	indicator that, in the naturalistic course of service		
Quality rating: Good	delivery, patients had been judged as appropriate for		
adanty rating. 0000	pharmacotherapy by a treating physician); and,		
	HRSD <sub>17</sub> ≤10 at baseline assessment.		
	TINOD172 TO at baseline assessment.		
	Exclusion Criteria: History of schizophrenia or		
	schizoaffective disorder; current substance abuse,		
	eating disorder, or obsessive compulsive disorder;		
	organic mental disorder, pervasive developmental		
	delay, or borderline personality disorder; dysthymia		
	before age 20; more than four sessions of CBT ever;		
	current psychotherapy or counseling more frequently		
	than once per month; and current practice of		
	meditation more than once per week or yoga more		
	than twice per week.		

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Van	Number of participants: 219 initial, 205 final	MBCT: MBCT was delivered	Depressive symptoms, HRSD <sub>17</sub> :
Aalderen et al., 2012		according to guidelines	Full sample:
	Method of identifying patients with MDD: Recurrent	(Segal, Williams, and	Difference in change in depressive symptom
Study design: Single-	depression according to the Structural Clinical	Teasdale, 2002)	score in MBCT + TAU vs. TAU:
site RCT	Interview for DSM-IV		SMD -0.47; 95% CI -0.75, -0.20
		Dosage: 9 sessions, 8 weekly	
ITT analysis: Yes	Baseline depressive symptom score:	2.5-hour sessions and a silent	<u> </u>
	HRSD <sub>17</sub> :	day of 6 hours of meditation.	Difference in change in depressive symptom
Purpose: To examine	MBCT + TAU: 9.5 (6.2)	Home practice 6 times a week	score in MBCT + TAU vs. TAU:
he efficacy of MBCT in	TAU: 9.2 (5.6)	for 45 minutes.	SMD -0.43; 95% CI -0.71, -0.15
representative sample			
of patients with recurrent	BDI:	Co-interventions: TAU	Depressive symptoms, BDI:
depression; to examine	MBCT + TAU: 14.9 (9.2)		Full sample:
whether MBCT was	TAU: 16.2 (9.4)	Comparator:	Difference in change in depressive symptom
effective for patients with	. ,	TAU, including	score in MBCT + TAU vs. TAU:
or without a current	Average age in years (SD): MBCT: 47.3 (11.5);	antidepressants	SMD -0.03; 95% CI -0.30, 0.25
depressive episode; and	TAU: 47.7 (11.1)		
to investigate rumination,	, ,	Follow-up: At end of	Currently depressed group:
worry, and mindfulness	Gender: MBCT: 30% male; TAU: 28% male	intervention	Difference in change in depressive symptom
skills as possible	,		score in MBCT + TAU vs. TAU:
mediators for the	<b>Inclusion criteria:</b> Three or more previous depressive		SMD -0.63; 95% CI -0.91, -0.35
reduction of depressive	episodes according to DSM-IV criteria. Patients using		
symptoms in the MBCT	antidepressant medication were required to be on a		Response: NA
condition	stable dose for at least 6 weeks and were asked to		The period of the territory of the terri
	maintain this dosage for the study period.		Remission: NA
Country: Netherlands	maintain the decage for the study period.		
- Court of the state of the sta	Exclusion criteria: Any previous (hypo)manic		Relapse: NA
Quality rating: Poor	episodes according to DSM-IV criteria; current alcohol		Totapoo. 177
quanty running.	or drug abuse; urgent need for psychiatric treatment—		WHO Quality of Life - Brief, Physical:
	for example, suicidality or psychotic symptoms;		Full sample:
	problems impeding participating in a group, such as		Difference in change in physical HRQOL score
	severe borderline personality disorder; problems		in MBCT + TAU vs. TAU:
	impeding completing the questionnaires, such as		SMD -0.38; 95% CI -0.66, -0.11
	cognitive dysfunctions.		SMD 0.30, 93 /0 Cl 0.00, 0.11
	cognitive dystatictions.		Currently depressed subsample:
			Difference in change in physical HRQOL score
			lin MBCT + TAU vs. TAU:
			SMD -0.17; 95% CI -0.44, 0.11
			WHO Quality of Life - Brief Baychologicals
			WHO Quality of Life – Brief, Psychological: Full sample:
			Difference in change in psychological HRQOL
			score in MBCT + TAU vs. TAU:
			SMD -0.42; 95% CI -0.70, -0.14

Study Details	Patients	Intervention/Treatment	Outcomes/Results
			Currently depressed subsample: Difference in change in psychological HRQOL score in MBCT + TAU vs. TAU: SMD -0.49; 95% CI -0.77, -0.21
			WHO Quality of Life - Brief, Social: Full sample: Difference in change in social HRQOL score in MBCT + TAU vs. TAU: SMD -0.09; 95% CI -0.36, 0.18
			Currently depressed subsample: Difference in change in social HRQOL score in MBCT + TAU vs. TAU: SMD -0.26; 95% CI -0.53, 0.02
			Adverse events: Not reported
			Antidepressant use: NA

Study Details	Patients	Intervention/Treatment	Outcomes/Results
Reference: Williams,	Number of participants: 274 initial, 255 final	MBCT: Manualized group	Depressive symptoms: NA
Crane, et al., 2014		skills training program (Segal,	
	Method of identifying patients with MDD: Diagnosis	Williams, and Teasdale, 2002)	Response: NA
Study design: Multisite	of MDD currently in remission as assessed with the	that integrates psychological	
RCT	Structured Clinical Interview for DSM-IV	educational aspects of CBT	Remission: NA
		for depression with meditation	
ITT analysis: No	Baseline depressive symptom score:	components of mindfulness-	Relapse (meeting relevant Structured
_	HRSD:	based stress reduction.	Clinical Interview for DSM-IV criteria for at
Purpose: To compare	MBCT: 3.17 (3.61)	Followed MBCT manual,	least 2 weeks since previous assessment):
MBCT with both	CPE: 3.55 (3.50)	except for greater emphasis	Relapse in MBCT + TAU vs. TAU:
cognitive psychological	TAU: 2.57 (3.47)	on factors that might be	RR 0.88; 95% CI 0.63, 1.22
education (CPE) and		associated with suicidal	
TAU in preventing	BDI:	planning and actions.	Relapse in MBCT + TAU vs. CPE + TAU:
relapse to MDD in	MBCT: 7.72 (6.68)		RR 0.93; 95% CI 0.70, 1.24
people currently in	CPE: 8.86 (9.27)	Dosage: 8 weekly 2-hour	
remission following at	TAU: 7.05 (6.94)	classes, plus 2 follow-up	Health-related quality of life: NA
least 3 previous		classes	
episodes, using time to	Average age in years (SD): 43 (12)		Adverse events:
relapse to major		Co-interventions:	15 severe adverse events were reported to the
depression as the main	Gender: 28% male	Encouraged participants to	research team (MBCT=5, CPE=10)
outcome		continue current medication	
	Inclusion criteria: Age between 18 and 70 years;	and attend their mental health	There was only 1 "serious adverse reaction"
Country: United	history of at least three episodes of major depression	practitioners or other services	potentially arising from a trial treatment— an
Kingdom	meeting DSM-IV criteria, of which two must have	as usual during the trial (TAU)	episode of serious suicidal ideation following
O !!	occurred within the past 5 years, and one within the	0	discussion of different coping responses to low
Quality rating: Poor	past 2 years; remission for the previous 8 weeks, with	Comparators (2):	mood in CPE. There were 14 overnight
	potential trial participants deemed not to be in recovery		admissions, 13 for physical health problems and
	or remission, and hence ineligible, if they reported that	program excluding the	1 following an overdose during follow-up in a
		experiential cultivation of	patient who had received MBCT. 1 participant
	either a core symptom of depression (depressed mood,	mindfulness through	died from an unrelated medical condition after
	anhedonia) or suicidal feelings and at least one other	meditation practice	partially withdrawing from trial follow-up due to
	symptom of depression, which together were not	TALL Not on a siting but	illness.
	attributable to bereavement, substances, or medical	TAU: Not specified, but therapist stressed the	Antidepressant use: NA
	condition, but were impairing functioning; informed	importance of seeking	Antidepressant use: NA
	consent from participants and their primary care		
	physicians.	treatment as needed	
	Evaluaion aritaria: History of achizophropia	Follow-up: At the end of the	
	<b>Exclusion criteria:</b> History of schizophrenia, schizoaffective disorder, bipolar disorder, current	intervention and 3, 6, 9, and	
	abuse of alcohol or other substances, organic mental	12 months postintervention	
	disorder, pervasive developmental delay, primary	12 months postintervention	
	diagnosis of obsessive-compulsive disorder or eating		
	disorder, or regular nonsuicidal self-injury; positive		
	continuing response to CBT—that is, no relapse to		

Study Details	Patients	Intervention/Treatment	Outcomes/Results
	depression since treatment with CBT, due to the known		
	effects of CBT in reducing risk of relapse; current		
	psychotherapy or counseling more than once a month;		
	regular meditation practice (meditating more than once		
	per month); or inability to complete research		
	assessments through difficulty with English, visual		
	impairment, or cognitive difficulties.		

NOTES: Unless otherwise noted, numbers in parentheses are standard errors. CPE = cognitive psychological education; HRQOL = health-related quality of life; m-ADM = maintenance antidepressant medication; MADRS = Montgomery-Asberg Depression Rating Scale; NA = not available; SD = standard deviation.

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