

**Table 1: Systematic reviews of mindfulness for cancer**

Source: Cramer H, Moenaert AC, CAM-Cancer Consortium. [Mindfulness \[online document\]](#). October 2016.

Study year (ref)	Design and methods	Inclusion criteria	Included studies and participants	Included interventions and outcomes	Main results/Conclusions	Comments
<b>Overviews of systematic reviews</b>						
Gotink, 2015 (31)	Type of review: Overview of SRs Search strategy: PubMed, Embase, PsycInfo, Cochrane, Medline, Web of Science through January 12, 2015, restricted to systematic reviews and meta-analyses Quality assessment: Checklist based on PRISMA Measure of treatment effect: SMD Data synthesis: meta-analysis of meta-analyses	Studies: SRs of RCTs Participants: Any Interventions/comparator: MBSR or MBCT compared to any comparator Outcomes: Any health outcome measure	Studies: 23 SRs including 6 on cancer patients; 23 RCTs including 16 on cancer patients Participants: 1,668 mixed cancer patients	Intervention: MBSR/MBCT Control: Active treatment, UC, WL Concurrent treatment: Not reported  Outcome measures: Not reported	Results for outcome measures: Significant improvements for depression, anxiety, stress, quality of life, but not for physical health Results quality assessment: 10 out of 12 items (Cramer 2012), 9 out of 12 items (Piet 2012) met Conclusions: MBSR/MBCT are associated with improvements in depressive symptoms, anxiety, stress, quality of life, selected physical outcomes in the adjunct treatment of cancer	Meta-analysis of meta-analyses not differentiated by patient groups; quality assessment tool not validated; quality assessment not reflected in conclusions
<b>Systematic reviews</b>						
Cramer, 2012 (33)	Type of review: SR and MA Search strategy: MEDLINE, Cochrane, EMBASE, CAMBASE, PsycInfo, through November 2011, Quality assessment: Cochrane RoB tool Measure of treatment effect: SMD Data synthesis: meta-analysis	Studies: RCTs Participants: BC Interventions/comparator: MBSR or MBCT compared to any comparator Outcomes: Any	Studies: 3 RCTs Participants: 327 breast cancer patients	Intervention: MBSR Control: free choice of stress management techniques, nutrition education, UC Concurrent treatment: Active radiation and/or chemotherapy for a subset of patients in 1 RCT  Outcome measures: 7DDR, BAI, BDI, CARS, CES-D, COC, DWI, FACT-B, FACT-Sp, LOT, Mini-MAC, MOS-SF, MOS-SSS, PENN, POMS, PSS, RSES, SCI, SCL-90-R, STAI, SOC	Results for outcome measures: Small short-term effects on depression, moderate short-term effects on anxiety, no short-term effects on spirituality for MBSR compared to UC. Other outcomes only assessed in single RCTs. Results quality assessment: Unclear methods randomization and allocation concealment; blinding unclear or high RoB; high risk of selective reporting; low risk of attrition and other bias Conclusions: Some evidence of effectiveness but more research needed	Paucity of included RCTs; only 2 RCTs in each MA; no grey literature included; publication bias could not be assessed.

Huang, 2015 (32)	<p>Type of review: SR and MA Search strategy: PubMed, EMBASE, Cochrane though June 30, 2014 Quality assessment: Cochrane RoB tool, NOS Measure of treatment effect: MD Data synthesis: meta-analysis</p>	<p>Studies: RCTs and non-randomized studies Participants: BC Interventions/comparator: MBSR compared to UC or SC Outcomes: Quality of life, psychological function</p>	<p>Studies: 3 RCTs, 1 non-randomized CCTs, 4 uncontrolled trials Participants: 880 BC (728 in RCTs)</p>	<p>Intervention: MBSR Control: free choice of stress management techniques, nutrition education, UC Concurrent treatment: Active radiation and/or chemotherapy for a subset of patients in 1 RCT</p> <p>Outcome measures: BAI, BDI, CES-D, C-SOSI, FACT-B, MMOS, PSS, SCL-90</p>	<p>Results for outcome measures: Short-term innergroup effects on depression, anxiety, and stress. Results quality assessment: Only 1 RCT had adequate randomization and blinding of outcome assessors Conclusions: Positive effect of MBSR in decreasing anxiety, depression and stress and improving overall quality of life among breast cancer survivors. This approach should be recommended to breast cancer patients.</p>	<p>Search strategy incompletely reported; MD used although different outcome measures were used (MA biased); no group comparisons but only innergroup comparisons in MA; safety not assessed.</p>
Piet, 2012 (35)	<p>Type of review: SR and MA Search strategy: EMBASE, PubMed, PsycInfo, Web of Science, Scopus, Cochrane though March 5, 2012 Quality assessment: Jadad Score Measure of treatment effect: SMD Data synthesis: meta-analysis</p>	<p>Studies: RCTs and non-randomized studies Participants: Any cancer Interventions/comparator: MBSR or MBCT compared to any comparator Outcomes: Anxiety, depression, mindfulness</p>	<p>Studies: 9 RCTs, 2 non-randomized CCTs, 11 uncontrolled trials Participants: 1,403 mixed cancer patients (995 in RCTs)</p>	<p>Intervention: MBSR/MBCT Control: healing through the creative arts, UC, WL Concurrent treatment: Active radiation and/or chemotherapy for a subset of patients in 7 studies (including 4 RCTs)</p> <p>Outcome measures: BDI, CES-D, C-SOSI, GAD, HADS, HAM-A, HAM-D, MDI, PHQ, POMS, SCL-90, SOSI, STAI</p>	<p>Results for outcome measures: Moderate short- and long-term effects on anxiety, small short- and long-term effects on depression, small short-term effects on mindfulness (non-randomized studies); small short- and long-term effects on depression and anxiety, small short-term effects on mindfulness (RCTs) Results quality assessment: Mean Jadad Score 0.5 (non-randomized studies), 2.9 (RCTs) Conclusions: Some positive evidence to support the use of MBSR/MBCT in cancer patients and survivors</p>	<p>Effect estimates for individual studies unclear; validity of Jadad Score under discussion; safety not assessed; no conflict of interest statement.</p>
Rush, 2016 (36)	<p>Type of review: SR and MA Search strategy: Medline, Alt Health Watch, CINAHL between October 2009 and November 2015, restricted to adults and English language Quality assessment: None Measure of treatment effect: NA Data synthesis: qualitative</p>	<p>Studies: Any Participants: Any cancer Interventions/comparator: MBSR compared to any comparator Outcomes: Stress, anxiety</p>	<p>Studies: 8 RCTs, 2 non-randomized CCTs, 3 uncontrolled trials Participants: 1,575 mixed cancer patients (1,143 in RCTs)</p>	<p>Intervention: MBSR Control: nutrition education, UC, WL Concurrent treatment: None (not reported for some studies)</p> <p>Outcome measures: BAI, BDI, blood pressure, CES-D, CSES, Cortisol, C-SOSI; FACT, FACT-Sp, FFMQ, HADS, heart rate IES, MAAS, MAC, MSCL, POMS, respiratory rate, RRQ, RSES, SCL-90, UCLA Loneliness Scale</p>	<p>Results for outcome measures: Not synthesized Results quality assessment: None Conclusions: MBSR is a promising modality for stress management among cancer patients. All practitioners must include MBSR as one of the approaches for stress reduction as part of cancer care.</p>	<p>Studies not indexed in the searched databases were excluded; search strategy inadequate; no RoB assessment; results not synthesized but only listed in a table; safety not assessed; conclusions not based on evidence (too strong).</p>

Zainal, 2012 (34)	Type of review: SR Search strategy: PubMed, EMBASE, CINAHL, PsyArticles, PsycInfo, Scopus, Ovid, Web of Science, Cochrane through October 31, 2011, no restrictions Quality assessment: None Measure of treatment effect: SMD Data synthesis: meta-analysis	Studies: Any Participants: BC Interventions/comparator: MBSR compared to any comparator Outcomes: Stress, depression, anxiety, quality of life	Studies: 2 RCTs, 1 non-randomized CCT, 6 uncontrolled trials Participants: 470 BC	Intervention: MBSR Control: Nutrition education, UC Concurrent treatment: Active radiation and/or chemotherapy for a subset of patients in 4 studies (including 1 RCT)  Outcome measures: CES-D, current level of stress, C-SOSI, PSS, , SCL-90, STAI	Results for outcome measures: Moderate short-term effects on stress, depression, anxiety (uncontrolled); small short-term effects on anxiety, depression, no effect on stress (RCTs) Results quality assessment: None Conclusions: MBSR can be recommended to breast cancer patients as an option as part of their rehabilitation to help maintain a better quality of life in the longer term.	Search strategy incomplete; no quality/ROB assessment; analysis of effects on quality of life planned but not reported; suggested long-term effects in the conclusions not based on evidence; no conflict of interest statement; safety not assessed.
Zhang, 2015 (37)	Type of review: SR and MA Search strategy: Medline, Cochrane, EMBASE, Google Scholar through November 2014, no restrictions Quality assessment: Cochrane RoB tool Measure of treatment effect: SMD Data synthesis: meta-analysis	Studies: RCTs Participants: Any cancer Interventions/comparator: Mindfulness-based interventions compared to UC Outcomes: Depression, anxiety	Studies: 7 RCTs Participants: 888 mixed cancer patients	Intervention: MBSR/MBCT/MBAT Control: UC Concurrent treatment: Not reported  Outcome measures: HADS, HAM-D, POMS, SCL-90-R	Results for outcome measures: Moderate short-term effects on anxiety; large short-term effects on depression; no medium-term effects on anxiety or depression Results quality assessment: Low RoB except for blinding of participants Conclusions: Mindfulness-based interventions can relieve anxiety and depression among patients with cancer. Further research is warranted.	No grey literature included; search strategy incomplete; treatment status unclear; RoB assessment not in line with other reviews (overly positive); safety not assessed.
Zhang, 2016 (38)	Type of review: SR and MA Search strategy: PubMed, Cochrane, SCI, EBSCO, Chinese Biomedical Literature Database, Chinese Digital Journals Fulltext Database through January 2015, no restrictions Quality assessment: Jadad Score, baseline comparability, allocation concealment Measure of treatment effect: MD or SMD Data synthesis: meta-analysis	Studies: RCTs Participants: BC Interventions/comparator: MBSR or MBCT compared to UC, WL or placebo Outcomes: Physical health, psychological health, quality of life	Studies: 7 RCTs Participants: 951 BC	Intervention: MBSR, Mindful Awareness Practices Control: UC, WL Concurrent treatment: Not reported  Outcome measures: BCPT, CES-D, CRS, FACT, FACT-B, FSI, MDASI, POMS, PSS, PSQI, SCL-90, STAI, QLACS	Results for outcome measures: Small short-term effects of MBSR compared to WL or UC on anxiety or emotional well-being, moderate short-term effects on fear of recurrence, large short-term effects on depression, no short-term effects on stress or spirituality. Results quality assessment: 2 RCTs $\geq$ 4 on Jadad Score; 2 RCTs adequate randomization and allocation concealment; 2 RCTs blinded outcome assessors Conclusions: Clear support for the efficacy of MBT as adjunctive treatment of BC. More research is needed	No grey literature included; validity of Jadad Score under discussion; overestimation of the findings in light of the limited study quality; publication bias not assessed; safety not assessed.

**Abbreviations:** 7DDR, 7-Day Diet Recall; BAI, Beck Anxiety Index; BC, women diagnosed with breast cancer; BCPT, Breast Cancer Prevention Trial Symptom Checklist; BDI, Beck Depression Index; CARS, Concerns About Recurrence Scale; CCT, controlled clinical trial; CES-D, Center for Epidemiological Studies Depression Scale; COC, Courtauld Emotional Control Scale; CSES, Coping Self-efficacy Scale; C-SOSI, Calgary Symptoms of Stress Inventory; DWI, Dealing with Illness Questionnaire; FACT, Functional Assessment of Cancer Therapy; FACT-B, Functional Assessment of Cancer Therapy-Breast; FACT-Sp, Functional Assessment of Cancer Therapy-Spirituality; FFMQ, Five-Facet Mindfulness Questionnaire; FSI, Fatigue Symptom Inventory; GAD, Generalized Anxiety Disorder; HADS, Hospital Anxiety and Depression Scale; HAM-A, Hamilton Anxiety Rating Scale; HAM-D, Hamilton Depression Rating Scale; IES, Impact of Event Scale; LOT, Life Orientation Test; MA, meta-analysis; MAAS, Mindful attention Awareness Scale; MAC, Mental Adjustment to Cancer Scale; MBAT, Mindfulness-based Art Therapy; MBCT, Mindfulness-based Cognitive Therapy; MBSR, Mindfulness-based Stress Reduction; MD, mean difference; MDI, Major Depression Inventory; MDASI, MD Anderson Symptom Inventory; Mini-MAC, Mental Adjustment to Cancer Scale short form; MOS-SF, Medical Outcomes Studies Short-form General Health Survey; MOS-SSS, Medical Outcomes Social Support Survey; MSCL, Medical Symptom Checklist; NOS, Newcastle-Ottawa Assessment Scale; PENN, Penn State Worry Questionnaire; PHQ, Patient Health Questionnaire Depression Scale; POMS, Profile of Mood Scale; PRISMA, Preferred reporting items for systematic review and meta-analysis protocols, PSS, Perceived Stress Scale; PSQI, Pittsburgh Sleep Quality Index; QLACS, Quality of Life in Adult Cancer Survivors; RCT, randomized controlled trial; RoB, risk of bias; RRQ, Rumination-Reflection Questionnaire; RSES, Rosenberg Self-Esteem Scale; SC, standard care; SCI, Shapiro Control Inventory; SCL-90-R, Symptom Checklist-90-Revised; SMD, standardized mean difference; SOC, Sense of Coherence Scale; SOSI, Symptoms of Stress Inventory; SR, systematic review; STAI, State-Trait Anxiety Inventory; UC, usual care; WL, wait list