1. Support Care Cancer. 2016 Oct;24(10):4085-96. **Randomized controlled pilot trial of mindfulness-based stress reduction compared to psychoeducational support for persistently fatigued breast and colorectal**

**cancer survivors.** Johns SA, Brown LF, Beck-Coon K, Talib TL, Monahan PO

Author information: Indiana University School of Medicine, Indianapolis, IN

PURPOSE: Cancer-related fatigue (CRF) is a disruptive symptom for many survivors.

Despite promising evidence for efficacy of mindfulness-based stress reduction

(MBSR) in reducing CRF, no trials comparing it to an active comparator for

fatigued survivors have been published. The purpose of this trial was to compare

MBSR to psychoeducation for CRF and associated symptoms.

METHODS: Breast (n = 60) and colorectal (n = 11) cancer survivors (stage 0-III)

with clinically significant CRF after completing chemotherapy and/or radiation

therapy an average of 28 months prior to enrollment were randomized to MBSR or

psychoeducation/support groups (PES). MBSR focused on mindfulness training; PES

focused on CRF self-management. Outcomes included CRF interference (primary), CRF

severity and global improvement, vitality, depression, anxiety, sleep

disturbance, and pain. Outcomes were assessed at baseline (T1), post-intervention

(T2), and 6-month follow-up (T3) using intent-to-treat analysis.

RESULTS: Between-group differences in CRF interference were not significant at

any time point; however, there was a trend favoring MBSR (d = -0.46, p = 0.073)

at T2. MBSR participants reported significantly greater improvement in vitality

(d = 0.53, p = 0.003) and were more likely to report CRF as moderately to

completely improved compared to the PES group (χ2 (1) = 4.1765, p = 0.041) at T2.

MBSR participants also reported significantly greater reductions in pain at T2

(d = 0.53, p = 0.014). In addition, both MBSR and PES produced moderate-to-large

and significant within-group improvements in all fatigue outcomes, depression,

anxiety, and sleep at T2 and T3 compared to T1.

CONCLUSION: MBSR and PES appear efficacious for CRF and related symptoms. Larger

trials including a usual care arm are warranted. PMID: 27189614

2. J Clin Oncol. 2016 Aug 20;34(24):2827-34. **Examination of Broad Symptom Improvement Resulting From Mindfulness-Based Stress Reduction in Breast Cancer Survivors: A Randomized Controlled Trial.**

Lengacher CA, Reich RR), Paterson CL, Ramesar S, Park JY, Alinat

PURPOSE: The purpose of this randomized trial was to evaluate the efficacy of the

Mindfulness-Based Stress Reduction for Breast Cancer (MBSR[BC]) program in

improving psychological and physical symptoms and quality of life among breast

cancer survivors (BCSs) who completed treatment. Outcomes were assessed

immediately after 6 weeks of MBSR(BC) training and 6 weeks later to test efficacy

over an extended timeframe.

PATIENTS AND METHODS: A total of 322 BCSs were randomly assigned to either a

6-week MBSR(BC) program (n = 155) or a usual care group (n = 167). Psychological

(depression, anxiety, stress, and fear of recurrence) and physical symptoms

(fatigue and pain) and quality of life (as related to health) were assessed at

baseline and at 6 and 12 weeks. Linear mixed models were used to assess MBSR(BC)

effects over time, and participant characteristics at baseline were also tested

as moderators of MBSR(BC) effects.

RESULTS: Results demonstrated extended improvement for the MBSR(BC) group

compared with usual care in both psychological symptoms of anxiety, fear of

recurrence overall, and fear of recurrence problems and physical symptoms of

fatigue severity and fatigue interference (P < .01). Overall effect sizes were

largest for fear of recurrence problems (d = 0.35) and fatigue severity (d =

0.27). Moderation effects showed BCSs with the highest levels of stress at

baseline experienced the greatest benefit from MBSR(BC).

CONCLUSION: The MBSR(BC) program significantly improved a broad range of symptoms

among BCSs up to 6 weeks after MBSR(BC) training, with generally small to

moderate overall effect sizes. PMID: 27247219

3. Clin J Oncol Nurs. 2016 Aug 1;20(4):357-9. **Mindfulness as an Intervention for Breast Cancer Survivors.**

Kiely D, Schwartz S.

Breast cancer survivors often turn to complementary health approaches (CHAs) to

address the effects of treatment. Mindfulness-based stress reduction (MBSR) is a

type of CHA that uses attentional and meditative exercises to minimize stress and

increase awareness of the present. This article aims to determine whether

adequate evidence-based research with uniform methodologies and outcomes to

support MBSR as an intervention for breast cancer survivors exists. PMID: 27441505

4. Breast Cancer. 2016 Jul;23(4):568-76. **A meta-analysis of the benefits of mindfulness-based stress reduction (MBSR) on psychological function among breast cancer (BC) survivors.**

Huang HP, He M, Wang HY, Zhou M

Author information: Department of Nursing Administration, Mianyang Central Hospital, China.

BACKGROUND: Psychological issue is the most common co-morbidity of women with

breast cancer (BC) after receiving treatment. Effective coping with this problem

is significant importance. The aim of this meta-analysis is to evaluate the

benefits of mindfulness-based stress reduction (MBSR) on psychological distress

among breast cancer survivors.

METHODS: PUBMED, EMBASE, and the Cochrane Central Register of Controlled Trials

were systematically searched from their inception to June 30, 2014. Two reviewers

independently reviewed and extracted the data. The primary outcomes of interest

were psychological domains. Review Manager 5.3 was used to pool collected data.

RESULTS: Nine articles involving 964 participants were identified. Compared with

those in control group, patients in MBSR group have a significant improvement on

psychological domains: depression [mean difference (MD), 5.09; 95 % confidence

interval (CI), 3.63-6.55; P < 0.00001], anxiety (MD, 2.79; 95 % CI, 1.62-3.96;

P < 0.00001), stress (MD, 4.10; 95 % CI, 2.46-5.74; P < 0.00001). MBSR can also

improve the overall quality of life (QOL) (MD, -1.16; 95 % CI, -2.21 to -0.12; P = 0.03).

CONCLUSIONS: On the basis of our findings, MBSR shows a positive effect on

psychological function and QOL of breast cancer survivors. This approach can be

recommended to breast cancer patients as a part of their rehabilitation. PMID: 25820148

5. Psychooncology. 2016 Jul;25(7):750-9. **Randomized-controlled trial of mindfulness-based cancer recovery versus supportive expressive group therapy among distressed breast cancer survivors**

**(MINDSET): long-term follow-up results.** Carlson LE, Tamagawa R, Stephen J, Drysdale

Author information: Department of Oncology, University of Calgary, Calgary, Alberta, Canada.

BACKGROUND: Mindfulness-based cancer recovery (MBCR) and supportive expressive

group therapy (SET) are two well-validated psychosocial interventions, but they

have not been directly compared, and little is known about long-term outcomes.

This comparative effectiveness study measured the effects of these two

interventions immediately following the groups and for 1 year thereafter in

distressed breast cancer survivors.

METHODS: Two hundred fifty-two distressed Stage I-III breast cancer survivors

were randomized into either MBCR or SET. Women completed questionnaires

addressing mood, stress symptoms, quality of life, social support, spirituality

and post-traumatic growth before and after the interventions, and 6 and 12 months later.

RESULTS: Immediately following the intervention, women in MBCR reported greater

reduction in mood disturbance (primarily fatigue, anxiety and confusion) and

stress symptoms including tension, sympathetic arousal and cognitive symptoms

than those in SET. They also reported increased emotional and functional quality

of life, emotional, affective and positive social support, spirituality (feelings

of peace and meaning in life) and post-traumatic growth (appreciation for life

and ability to see new possibilities) relative to those in SET, who also improved

to a lesser degree on many outcomes. Effect sizes of the time × group

interactions were small to medium, and most benefits were maintained over

12 months of follow-up.

CONCLUSIONS: This study is the first and largest to demonstrate sustained

benefits of MBCR in distressed breast cancer survivors relative to an active

control. MBCR was superior to SET for improving psychological well-being with

lasting benefits over 1 year, suggesting these women gained long-lasting and

efficacious tools to cope with cancer. PMID: 27193737

6. Explore (NY). 2016 Jun 21. pii: S1550-8307(16)30065-9. **Beneficial Effect of Mindfulness-Based Art Therapy in Patients With Breast Cancer-A Randomized Controlled Trial.**

Jang SH, Kang SY, Lee H, Lee SY

Author information: Department of Psychiatry, School of Medicine, Wonkwang University, Republic of Korea.

BACKGROUND: Mindfulness-based art therapy (MBAT) induces emotional relaxation in

cancer patients and is a treatment known to improve psychological stability. The

objective of this research was to evaluate the treatment effects of MBAT for

breast cancer patients.

METHODS: Overall, 24 breast cancer patients were selected as subjects of the

study. Two groups, the MBAT group and control group with 12 patients each, were

randomly assigned. The patients in the MBAT group were given 12 sessions of

treatments. To measure depression and anxiety, low scales of the personality

assessment inventory (PAI) was used. Health-related quality of life was evaluated

using the European Organization for Research and Treatment of Cancer Quality of

Life Questionnaire (EORTCQLQ-C30). The treatment results were analyzed using

analysis of covariance (ANCOVA) and two-way repeated measures analysis of

variance (ANOVA).

RESULTS: The results showed that depression and anxiety decreased significantly

and health-related quality of life improved significantly in the MBAT group. In

the control group, however, there was no significant change.

CONCLUSIONS: MBAT can be seen as an effective treatment method that improves

breast cancer patients׳ psychological stability and quality of life. Evaluation

of treatment effects using program development and large-scale research for

future clinical application is needed. PMID: 27473311

7. J Clin Oncol. 2016 Jun 20. pii: JCO650770. [Epub ahead of print] **Efficacy of Mindfulness-Based Cognitive Therapy on Late Post-Treatment Pain in Women Treated for Primary Breast Cancer: A Randomized Controlled Trial.** Johannsen M, O'Connor M, O'Toole MS, Jensen AB, Højris I

PURPOSE: To assess the efficacy of mindfulness-based cognitive therapy (MBCT) for

late post-treatment pain in women treated for primary breast cancer.

METHODS: A randomized wait list-controlled trial was conducted with 129 women

treated for breast cancer reporting post-treatment pain (score ≥ 3 on pain

intensity or pain burden assessed with 10-point numeric rating scales).

Participants were randomly assigned to a manualized 8-week MBCT program or a

wait-list control group. Pain was the primary outcome and was assessed with the

Short Form McGill Pain Questionnaire 2 (SF-MPQ-2), the Present Pain Intensity

subscale (the McGill Pain Questionnaire), and perceived pain intensity and pain

burden (numeric rating scales). Secondary outcomes were quality of life (World

Health Organization-5 Well-Being Index), psychological distress (the Hospital

Depression and Anxiety Scale), and self-reported use of pain medication. All

outcome measures were assessed at baseline, postintervention, and 3-month and

6-month follow-up. Treatment effects were evaluated with mixed linear models.

RESULTS: Statistically significant time × group interactions were found for pain

intensity (d = 0.61; P = .002), the Present Pain Intensity subscale (d = 0.26; P

= .026), the SF-MPQ-2 neuropathic pain subscale (d = 0.24; P = .036), and

SF-MPQ-2 total scores (d = 0.23; P = .036). Only pain intensity remained

statistically significant after correction for multiple comparisons.

Statistically significant effects were also observed for quality of life (d =

0.42; P = .028) and nonprescription pain medication use (d = 0.40; P = .038).

None of the remaining outcomes reached statistical significance.

CONCLUSION: MBCT showed a statistically significant, robust, and durable effect

on pain intensity, indicating that MBCT may be an efficacious pain rehabilitation

strategy for women treated for breast cancer. In addition, the effect on

neuropathic pain, a pain type reported by women treated for breast cancer,

further suggests the potential of MBCT but should be considered preliminary. PMID: 27325850

8. Ann N Y Acad Sci. 2016 Jun;1373(1):5-12. **Mindfulness-based interventions for coping with cancer.**

Carlson LE

Author information: Division of Psychosocial Oncology, Department of Oncology, Cumming School of

Medicine, University of Calgary, and Department of Psychosocial Resources, Tom Baker Cancer Centre, Alberta Health Services CancerControl, Calgary, Alberta, Canada.

Work in the development and evaluation of mindfulness-based interventions (MBIs)

for cancer care has been underway for the last 20 years, and a growing body of

literature now supports their efficacy. MBIs are particularly helpful in dealing

with common experiences related to cancer diagnosis, treatment, and survivorship,

including loss of control, uncertainty about the future, and fears of recurrence,

as well as a range of physical and psychological symptoms, including depression,

anxiety, insomnia, and fatigue. Our adaptation, mindfulness-based cancer recovery

(MBCR), has resulted in improvements across a range of psychological and

biological outcomes, including cortisol slopes, blood pressure, and telomere

length, in various groups of cancer survivors. In this paper, I review the

rationale for MBIs in cancer care and provide an overview of the state of the

current literature, with a focus on results from three recent clinical trials

conducted by our research group. These include a comparative efficacy trial

comparing MBCR to supportive-expressive therapy in distressed breast cancer

survivors, a non-inferiority trial comparing MBCR to cognitive behavioral therapy

for insomnia in cancer survivors with clinical insomnia, and an online adaptation

of MBCR for rural and remote cancer survivors without access to in-person groups.

I conclude by outlining work in progress and future directions for MBI research

and applications in cancer care. PMID: 26963792

9. Complement Ther Med. 2016 Jun;26:1-10. **Effects of mindfulness-based therapy for patients with breast cancer: A systematic review and meta-analysis.** Zhang J, Xu R, Wang B, Wang J

Author information: School of Nursing, Gansu University of Chinese Medicine, China.

OBJECTIVE: To quantify the effects of mindfulness-based therapy (MBT) on physical

health, psychological health and quality of life (QOL) in patients with breast cancer.

METHOD: Studies were identified through a systematic search of six electronic

databases. Randomized control trials (RCTs) examining the effects of MBT, versus

a control group receiving no intervention on physical health, psychological

health and QOL in breast cancer patients were included. Two authors independently

assessed the methodological quality of included studies using a quality-scoring

instrument developed by Jadad et al. and extracted relevant information according

to a predesigned extraction form. Data was analysed using the Cochrane

Collaboration's Revman5.1.

RESULT: Finally, seven studies involving 951 patients were included. While

limited in power, the results of meta-analysis indicated a positive effect of MBT

in reducing anxiety [SMD -0.31, 95% CI -0.46 to -0.16, P<0.0001], depression[SMD

-1.13, 95% CI -1.85 to -0.41, P=0.002], fear of recurrence[SMD -0.71, 95% CI

-1.05 to -0.38, P<0.0001], and fatigue[SMD -0.88, 95% CI -1.71 to -0.05, P=0.04]

associated with breast cancer, and improving emotional well-being [SMD 0.39, 95%

CI 0.19-0.58, P=0.0001], physical function[SMD 0.42, 95% CI 0.19-0.65, P=0.0004],

and physical health [SMD 0.31, 95% CI 0.08-0.54, P=0.009] in these patients.

Although the effects on stress, spirituality, pain and sleep were in the expected

direction, they were not statistically significant (P>0.05). Moreover, there is

limited evidence from a narrative synthesis that MBT can improve QOL of breast

cancer patients.

CONCLUSION: The present data indicate that MBT is a promising adjunctive therapy

for patients with breast cancer. Due to some methodological flaws in the

literature, further well-designed RCTs with large sample sizes are needed to

confirm these preliminary estimates of effectiveness. PMID: 27261975

10. Psychooncology. 2015 Aug;24(8):885-93. **Randomized controlled pilot study of mindfulness-based stress reduction for persistently fatigued cancer survivors.**

Johns SA, Brown LF, Beck-Coon K, Monahan PO, Tong Y, Kroenke K

Author information: Indiana University School of Medicine, Indianapolis, IN

OBJECTIVE: Cancer-related fatigue (CRF) is one of the most common, persistent,

and disabling symptoms associated with cancer and its treatment. Evidence-based

treatments that are acceptable to patients are critically needed. This study

examined the efficacy of mindfulness-based stress reduction (MBSR) for CRF and

related symptoms.

METHOD: A sample of 35 cancer survivors with clinically significant CRF was

randomly assigned to a 7-week MBSR-based intervention or wait-list control group.

The intervention group received training in mindfulness meditation, yoga, and

self-regulatory responses to stress. Fatigue interference (primary outcome) and a

variety of secondary outcomes (e.g., fatigue severity, vitality, disability,

depression, anxiety, and sleep disturbance) were assessed at baseline,

post-intervention, and 1-month follow-up. Bonferroni correction was employed to

account for multiple comparisons. Controls received the intervention after the

1-month follow-up. Participants in both groups were followed for 6 months after

completing their respective MBSR courses to assess maintenance of effects.

RESULTS: Compared to controls, the MBSR group reported large post-intervention

reductions as assessed by effect sizes (d) in the primary outcome, fatigue

interference (d = -1.43, p < 0.001), along with fatigue severity (d = -1.55,

p < 0.001), vitality (d = 1.29, p < 0.001), depression (d = -1.30, p < 0.001),

and sleep disturbance (d = -0.74, p = 0.001). Results were maintained or

strengthened at 1-month follow-up, the point at which significant improvements in

disability (d = -1.22, p < 0.002) and anxiety (d = -0.98, p = 0.002) occurred.

Improvements in all outcomes were maintained 6 months after completing the

course. MBSR adherence was high, with 90% attendance across groups and high rates

of participant-reported home practice of mindfulness.

CONCLUSIONS: Mindfulness-based stress reduction is a promising treatment for CRF

and associated symptoms. PMID: 25132206

11. Nurs Econ. 2015 Jul-Aug;33(4):210-8, 232. **A Cost-Effective Mindfulness Stress Reduction Program: A Randomized Control Trial for Breast Cancer Survivors.** Lengacher CA, Kip KE, Reich RR, Craig BM

Many breast cancer survivors continue to experience residual symptoms including

anxiety, cognitive impairment, depression, fatigue, and pain. In this study, the

cost-effectiveness of a Mindfulness-Based Stress Reduction intervention for

breast cancer survivors was examined. The cost of the program was assessed from

the societal perspective, accounting for both direct medical and patient

opportunity costs. The cost per quality-adjusted life year was relatively low

compared to the cost-utility findings of other published breast cancer

interventions. The program appears to provide for significantly improved

health-related quality of life at a comparativelv low cost. PMID: 26477119

12. Cancer. 2015 Jun 1;121(11):1873-81. **Long-term psychological benefits of cognitive-behavioral stress management for women with breast cancer: 11-year follow-up of a randomized controlled trial.**

Stagl JM, Bouchard LC, Lechner SC, Blomberg BB, Gudenkauf

Author information: Massachusetts General Hospital/Harvard Medical School, Boston, Massachusetts.

BACKGROUND: Breast cancer survivors experience long-term physical and

psychological sequelae after their primary treatment that negatively influence

their quality of life (QOL) and increase depressive symptoms. Group-based

cognitive-behavioral stress management (CBSM) delivered after surgery for

early-stage breast cancer was previously associated with better QOL over a

12-month follow-up and with fewer depressive symptoms up to 5 years after study

enrollment. This 8- to 15-year follow-up (median, 11 years) of a previously

conducted trial (NCT01422551) evaluated whether women in this cohort receiving

CBSM had fewer depressive symptoms and better QOL than controls at an 8- to 15-year follow-up.

METHODS: Women with stage 0 to IIIb breast cancer were initially recruited 2 to

10 weeks after surgery and randomized to a 10-week CBSM intervention or a 1-day

psychoeducational control group. One hundred women (51 CBSM patients and 49

controls) were recontacted 8 to 15 years after study enrollment to participate in

a follow-up assessment. The Center for Epidemiologic Studies-Depression (CES-D)

scale and the Functional Assessment of Cancer Therapy-Breast (FACT-B) were

self-administered. Multiple regression was employed to evaluate group differences

on the CES-D scale and FACT-B over and above effects of confounding variables.

RESULTS: Participants assigned to CBSM reported significantly lower depressive

symptoms (d, 0.63; 95% confidence interval [CI], 0.56-0.70) and better QOL (d,

0.58; 95% CI, 0.52-0.65) above the effects of the covariates.

CONCLUSIONS: Women who received CBSM after surgery for early-stage breast cancer

reported lower depressive symptoms and better QOL than the control group up to 15

years later. Early implementation of cognitive-behavioral interventions may

influence long-term psychosocial functioning in breast cancer survivors. PMID: 25809235

13. Acta Oncol. 2015 May;54(5):712-9. **Effect of mindfulness-based stress reduction on somatic symptoms, distress, mindfulness and spiritual wellbeing in women with breast cancer: Results of a randomized controlled trial.** Würtzen H, Dalton SO, Christensen J, Andersen KK, Elsass P, Flyger HL

Author information: Survivorship, Danish Cancer Society Research Center , Copenhagen , Denmark.

BACKGROUND: Women with breast cancer experience different symptoms related to

surgical or adjuvant therapy. Previous findings and theoretical models of

mind-body interactions suggest that psychological wellbeing, i.e. levels of

distress, influence the subjective evaluation of symptoms, which influences or

determines functioning. The eight-week mindfulness-based stress reduction (MBSR)

program significantly reduced anxiety and depression in breast cancer patients in

a randomized controlled trial (NCT00990977). In this study we tested the effect

of MBSR on the burden of breast cancer related somatic symptoms, distress,

mindfulness and spiritual wellbeing and evaluated possible effect modification by

adjuvant therapy and baseline levels of, distress, mindfulness and spiritual wellbeing.

MATERIAL AND METHODS: A population-based sample of 336 women Danish women

operated for breast cancer stages I-III were randomized to MBSR or usual care and

were followed up for somatic symptoms, distress, mindfulness skills and spiritual

wellbeing post-intervention and after six and 12 months. Effect was tested by

general linear regression models post-intervention, and after six and 12 months

follow-up and by mixed effects models for repeated measures of continuous

outcomes. Effect size (Cohen's d) was calculated to explore clinical significance

of effects among intervention group. Finally, modification of effect of MBSR on

burden of somatic symptoms after 12 months' follow-up by adjuvant therapy and

baseline levels of, distress, mindfulness and spiritual wellbeing were estimated.

RESULTS: General linear regression showed a significant effect of MBSR on the

burden of somatic symptoms post-intervention and after 6 months' follow-up. After

12 months' follow-up, no significant effect of MBSR on the burden of somatic

symptoms was found in mixed effect models. A statistically significant effect of

MBSR on distress was found at all time-points and in the mixed effect models.

Significant effects on mindfulness were seen after six and 12 months and no

significant effect was observed for spiritual wellbeing. No significant

modification of MBSR effect on somatic symptom burden was identified.

CONCLUSION: This first report from a randomized clinical trial on the long-term

effect of MBSR finds an effect on somatic symptom burden related to breast cancer

after six but not 12 months follow-up providing support for MBSR in this patient

group. PMID: 25752972

14. Cancer. 2015 Apr 15;121(8):1231-40. **Mindfulness meditation for younger breast cancer survivors: a randomized controlled trial.** Bower JE, Crosswell AD, Stanton AL, Crespi CM, Winston D, Arevalo J, Ma J

Author information: Department of Psychology, University of California-Los Angeles, Los Angeles

BACKGROUND: Premenopausal women diagnosed with breast cancer are at risk for

psychological and behavioral disturbances after cancer treatment. Targeted

interventions are needed to address the needs of this vulnerable group.

METHODS: This randomized trial provided the first evaluation of a brief,

mindfulness-based intervention for younger breast cancer survivors designed to

reduce stress, depression, and inflammatory activity. Women diagnosed with early

stage breast cancer at or before age 50 who had completed cancer treatment were

randomly assigned to a 6-week Mindful Awareness Practices (MAPS) intervention

group (n = 39) or to a wait-list control group (n = 32). Participants completed

questionnaires before and after the intervention to assess stress and depressive

symptoms (primary outcomes) as well as physical symptoms, cancer-related

distress, and positive outcomes. Blood samples were collected to examine genomic

and circulating markers of inflammation. Participants also completed

questionnaires at a 3-month follow-up assessment.

RESULTS: In linear mixed models, the MAPS intervention led to significant

reductions in perceived stress (P = .004) and marginal reductions in depressive

symptoms (P = .094), as well as significant reductions in proinflammatory gene

expression (P = .009) and inflammatory signaling (P = .001) at postintervention.

Improvements in secondary outcomes included reduced fatigue, sleep disturbance,

and vasomotor symptoms and increased peace and meaning and positive affect (P

< .05 for all). Intervention effects on psychological and behavioral measures

were not maintained at the 3-month follow-up assessment, although reductions in

cancer-related distress were observed at that assessment.

CONCLUSIONS: A brief, mindfulness-based intervention demonstrated preliminary

short-term efficacy in reducing stress, behavioral symptoms, and proinflammatory

signaling in younger breast cancer survivors. PMID: 25537522

15. Psychooncology. 2015 Apr;24(4):424-32. **The effects of mindfulness-based stress reduction on objective and subjective sleep parameters in women with breast cancer: a randomized controlled trial.**

Lengacher CA, Reich RR, Paterson CL, Jim HS, Ramesar S, Alinat CB, Budhrani

Author information: College of Nursing, University of South Florida, Tampa, FL

OBJECTIVE: The purpose of this study was to investigate the effects of

mindfulness-based stress reduction for breast cancer survivors (MBSR(BC)) on

multiple measures of objective and subjective sleep parameters among breast

cancer survivors (BCS).

METHODS: Data were collected using a two-armed randomized controlled design among

BCS enrolled in either a 6-week MBSR(BC) program or a usual care (UC) group with

a 12-week follow-up. The present analysis is a subset of the larger parent trial

(ClinicalTrials.gov Identifier: NCT01177124). Seventy-nine BCS participants (mean

age 57 years), stages 0-III, were randomly assigned to either the formal

(in-class) 6-week MBSR(BC) program or UC. Subjective sleep parameters (SSP)

(i.e., sleep diaries and the Pittsburgh Sleep Quality Index (PSQI)) and objective

sleep parameters (OSP) (i.e., actigraphy) were measured at baseline, 6 weeks, and

12 weeks after completing the MBSR(BC) or UC program.

RESULTS: Results showed indications of a positive effect of MBSR(BC) on OSP at 12

weeks on sleep efficiency (78.2% MBSR(BC) group versus 74.6% UC group, p = 0.04),

percent of sleep time (81.0% MBSR(BC) group versus 77.4% UC group, p = 0.02), and

less number waking bouts (93.5 in MBSR(BC) group versus 118.6 in the UC group,

p < 0.01). Small nonsignificant improvements were found in SSP in the MBSR(BC)

group from baseline to 6 weeks (PSQI total score, p = 0.09). No significant

relationship was observed between minutes of MBSR(BC) practice and SSP or OSP.

CONCLUSIONS: These data suggest that MBSR(BC) may be an efficacious treatment to

improve objective and subjective sleep parameters in BCS. PMID: 24943918

16. Support Care Cancer. 2015 Apr;23(4):1063-71. **Comparison of the acceptability and benefits of two mindfulness-based interventions in women with breast or gynecologic cancer: a pilot study.**

Stafford L, Thomas N, Foley E, Judd F, Gibson P, Komiti A, Couper J, Kiropoulos L.

Author information: Centre for Women's Mental Health, Royal Women's Hospital, Parkville, Australia

PURPOSE: The aim of this study was to compare the relative benefits and

acceptability of two different group-based mindfulness psychotherapy

interventions among women with breast and gynecologic cancer.

METHODS: Data from 42 women who completed an 8-week mindfulness-based cognitive

therapy (MBCT) program comprising 22 contact hours were compared to data from 24

women who completed a 6-week mindfulness meditation program (MMP) comprising 9

contact hours. Distress, quality of life (QOL), and mindfulness were evaluated

pre- (T1) and post-intervention (T2). ANCOVA was used to analyse the relationship

between intervention type and T1 score on outcome variable change scores.

Participants' perceptions of benefit and acceptability were assessed.

RESULTS: The participants did not differ on clinical or demographic variables

other than MBCT participants were more likely than MMP participants to have a

past history of anxiety or depression (p = .01). Scores on distress, QOL, and

mindfulness improved from T1 to T2 with medium to large effect sizes for the MMP

(p=.002, d=.7; p=.001, d=.8; p=.005, d=.6, respectively) and MBCT (p<.001,d = .6;

p=.008, d = .4; p<.001, d=.9, respectively) interventions. [correted]. ANCOVA

showed no main effect for intervention type on outcome change scores and no

interaction between intervention type and respective T1 score. Distress and

mindfulness scores at T1 had a main effect on respective change scores (p = .02,

ηp (2) = .87; p = .01, ηp (2) = .80, respectively). Both programs were perceived

as beneficial and acceptable with no differences between the intervention types.

CONCLUSIONS: Within the limits of a small, non-randomized study, these findings

provide preliminary support for the utility of a brief mindfulness intervention

for improving distress and QOL in a heterogeneous group of women with cancer.

Abbreviated interventions are less resource intensive and may be attractive to

very unwell patients. PMID: 25281227

17. Integr Cancer Ther. 2015 Jan;14(1):42-56. **Mindfulness for the self-management of fatigue, anxiety, and depression in women with metastatic breast cancer: a mixed methods feasibility study.**

Eyles C, Leydon GM, Hoffman CJ, Copson ER, Prescott P, Chorozoglou

Author information: University of Southampton, Southampton, England

The impact of living with metastatic breast cancer (MBC) is considerable and

psychosocial support can be beneficial. Mindfulness-based stress reduction (MBSR)

can help self-management of anxiety, depression, quality of life (QoL), and

fatigue and has been evaluated in early-stage breast cancer but not MBC. This

study investigated the acceptability and feasibility of providing MBSR for women

with MBC and of introducing MBSR into a National Health Service (NHS) setting. A

mixed methods convergent design was used. Eligible women with MBC, an Eastern

Cooperative Oncology Group (ECOG) score of 0 to 2, stable disease, and life

expectancy of at least 6 months were invited to attend (by their oncologist) an

8-week MBSR course. Qualitative interviews with patients, a focus group, and

interview with NHS staff were held to explore acceptability and feasibility of

MBSR. Questionnaires at baseline, during (weeks 4, 8), and after (weeks 16, 24)

the course measured fatigue, anxiety and depression, mindfulness,

disease-specific QoL, and generic preference based QoL. Of 100 women approached,

20 joined the study. One woman dropped out prior to the intervention due to

illness progression. Nineteen women took part in 3 MBSR courses. Recruitment to 2

of the 3 courses was slow. Commitment to 8 weeks was a reason for

non-participation, and proved challenging to participants during the course.

Participants found the course acceptable and reported many cumulative and ongoing

benefits. These included feeling less reactive to emotional distress and more

accepting of the disruption to life that occurs with living with MBC. There was

high attendance, completion of course sessions, adherence to home practice,

excellent follow-up rates, and high questionnaire return rates. MBSR was

acceptable to MBC patients, who perceived benefits such as improved anxiety and

QoL; but the MBSR course requires a considerable time commitment. There is scope

to tailor the intervention so that it is less intensive. PMID: 25161198

18. J Natl Cancer Inst Monogr. 2014 Nov;2014(50):346-58. **Clinical practice guidelines on the use of integrative therapies as supportive care in patients treated for breast cancer.**

Greenlee H, Balneaves LG, Carlson LE, Cohen M, Deng G, Hershman

Author information: Department of Epidemiology, Mailman School of Public Health, Herbert Irving Comprehensive Cancer Center and Department of Medicine, College of Physicians and Surgeons, Columbia University, New York

BACKGROUND: The majority of breast cancer patients use complementary and/or

integrative therapies during and beyond cancer treatment to manage symptoms,

prevent toxicities, and improve quality of life. Practice guidelines are needed

to inform clinicians and patients about safe and effective therapies.

METHODS: Following the Institute of Medicine's guideline development process, a

systematic review identified randomized controlled trials testing the use of

integrative therapies for supportive care in patients receiving breast cancer

treatment. Trials were included if the majority of participants had breast cancer

and/or breast cancer patient results were reported separately, and outcomes were

clinically relevant. Recommendations were organized by outcome and graded based

upon a modified version of the US Preventive Services Task Force grading system.

RESULTS: The search (January 1, 1990-December 31, 2013) identified 4900 articles,

of which 203 were eligible for analysis. Meditation, yoga, and relaxation with

imagery are recommended for routine use for common conditions, including anxiety

and mood disorders (Grade A). Stress management, yoga, massage, music therapy,

energy conservation, and meditation are recommended for stress reduction,

anxiety, depression, fatigue, and quality of life (Grade B). Many interventions

(n = 32) had weaker evidence of benefit (Grade C). Some interventions (n = 7)

were deemed unlikely to provide any benefit (Grade D). Notably, only one

intervention, acetyl-l-carnitine for the prevention of taxane-induced neuropathy,

was identified as likely harmful (Grade H) as it was found to increase

neuropathy. The majority of intervention/modality combinations (n = 138) did not

have sufficient evidence to form specific recommendations (Grade I).

CONCLUSIONS: Specific integrative therapies can be recommended as evidence-based

supportive care options during breast cancer treatment. Most integrative

therapies require further investigation via well-designed controlled trials with

meaningful outcomes. PMID: 25749602

19. J Natl Cancer Inst Monogr. 2014 Nov;2014(50):308-14. **Tailoring mind-body therapies to individual needs: patients' program preference and psychological traits as moderators of the effects of mindfulness-based cancer recovery and supportive-expressive therapy in distressed breast cancer survivors.**

Carlson LE, Tamagawa R, Stephen J, Doll R, Faris P, Dirkse D

Author information: Department of Psychosocial Resources, Tom Baker Cancer Centre, Alberta Health

Services-Cancer Care, Calgary, AB, Canada; Department of Oncology, Faculty of Medicine, University of Calgary, Calgary, AB, Canada; British Columbia Cancer Agency, Vancouver, BC, Canada

BACKGROUND: Mindfulness-based cancer recovery (MBCR) and supportive-expressive

therapy (SET) are well-validated psycho-oncological interventions, and we have

previously reported health benefits of both programs. However, little is known

about patients' characteristics or program preferences that may influence

outcomes. Therefore, this study examined moderators of the effects of MBCR and

SET on psychological well-being among breast cancer survivors.

METHODS: A multi-site randomized controlled trial was conducted between 2007 and

2012 in two Canadian cities (Calgary and Vancouver). A total of 271 distressed

stage I-III breast cancer survivors were randomized into MBCR, SET or a 1-day

stress management seminar (SMS). Baseline measures of moderator variables

included program preference, personality traits, emotional suppression, and

repressive coping. Outcome measures of mood, stress symptoms, quality of life,

spiritual well-being, post-traumatic growth, social support, and salivary

cortisol were measured pre- and post intervention. Hierarchical regression

analyses were used to assess moderator effects on outcomes.

RESULTS: The most preferred program was MBCR (55%). Those who were randomized to

their preference improved more over time on quality of life and spiritual

well-being post-intervention regardless of the actual intervention type received.

Women with greater psychological morbidity at baseline showed greater improvement

in stress symptoms and quality of life if they received their preferred versus

nonpreferred program.

CONCLUSIONS: Patients' program preference and baseline psychological functioning,

rather than personality, were predictive of program benefits. These results

suggest incorporating program preference can maximize the efficacy of integrative

oncology interventions, and emphasize the methodological importance of assessing

and accommodating for preferences when conducting mind-body clinical trials. PMID: 25749597

20. Biol Res Nurs. 2014 Oct;16(4):438-47. **Influence of mindfulness-based stress reduction (MBSR) on telomerase activity in women with breast cancer (BC).** Lengacher CA, Reich RR, Kip KE, Barta

Author information: College of Nursing, University of South Florida, Tampa, FL

Mindfulness-based stress reduction (MBSR) reduces symptoms of depression,

anxiety, and fear of recurrence among breast cancer (BC) survivors. However, the

effects of MBSR (BC) on telomere length (TL) and telomerase activity (TA), known

markers of cellular aging, psychological stress, and disease risk, are not known.

This randomized, wait-listed, controlled study, nested within a larger trial,

investigated the effects of MBSR (BC) on TL and TA. BC patients (142) with Stages

0-III cancer who had completed adjuvant treatment with radiation and/or

chemotherapy at least 2 weeks prior to enrollment and within 2 years of

completion of treatment with lumpectomy and/or mastectomy were randomly assigned

to either a 6-week MBSR for BC program or a usual care. Assessments of TA and TL

were obtained along with psychological measurements at baseline, 6 weeks, and 12

weeks after completing the MBSR(BC) program. The mean age of 142 participants was

55.3 years; 72% were non-Hispanic White; 78% had Stage I or II cancer; and 36%

received both chemotherapy and radiation. In analyses adjusted for baseline TA

and psychological status, TA increased steadily over 12 weeks in the MBSR(BC)

group (approximately 17%) compared to essentially no increase in the control

group (approximately 3%, p < .01). In contrast, no between-group difference was

observed for TL (p = .92). These results provide preliminary evidence that

MBSR(BC) increases TA in peripheral blood mononuclear cells from BC patients and

have implications for understanding how MBSR(BC) may extend cell longevity at the

cellular level. PMID: 24486564

21. Integr Cancer Ther. 2014 Jul;13(4):341-50. **Beneficial Effects of Pranic Meditation on the Mental Health and Quality of Life of Breast Cancer Survivors.** Castellar J, Fernandes CA, Tosta CE

Author information: Universidade de Brasília, Brasilia, Brazil.

BACKGROUND: Breast cancer survivors frequently present long-lasting impairments,

caused either by the disease or its treatment, capable of compromising their

emotional health and quality of life. Meditation appears to be a valuable

complementary measure for overcoming some of these impairments. The purpose of

the present investigation was to assess the effect of pranic meditation on the

quality of life and mental health of breast cancer survivors.

DESIGN: This study was a prospective single-arm observational study using before

and after measurements.

METHODS: The subjects were 75 women submitted either to breast cancer therapy or

to posttherapy control who agreed to practice pranic meditation for 20 minutes,

twice a day, during 8 weeks, after receiving a formal training. The quality of

life of the practitioners was assessed by the European Organization for Research

and Treatment of Cancer (EORTC) QLQ-C30 and EORTC BR-023 questionnaires, and the

mental health status by the Goldberg's General Health Questionnaire.

RESULTS: After 8 weeks of pranic meditation practice, the subjects showed a

significant improvement of their quality of life scores that included physical (P

= .0007), role (P = .01), emotional (P = .002), and social functioning (P =

.004), as well as global health status (P = .005), fatigue (P < .0001), pain (P =

.007), sleep disturbances (P = .01), body image (P = .001), arm symptoms (P =

.007), and breast symptoms (P = .002). They also showed a reduction of the side

effects of systemic therapy (P = .02) and being upset by hair loss (P = .02).

Moreover, meditation was associated with improvement of the mental health

parameters of the practitioners that included psychic stress (P = .001), death

ideation (P = .02), performance diffidence (P = .001), psychosomatic disorders (P

= .02), and severity of mental disorders (P = .0003). The extension of the

meditation period from 8 to 15 weeks caused no substantial extra benefits in practitioners.

CONCLUSIONS: The results of this pilot study showed that breast cancer survivors

presented significant benefits related to their mental health and quality of life

scores after a short period of practice of pranic meditation, consisting of

simple and easy-to-learn exercises. However, because of the limitations of the

study, further research is required using a more rigorous experimental design to

ascertain whether pranic meditation may be an acceptable adjunct therapy for

cancer patients. PMID: 24906909

22. Psychoneuroendocrinology. 2014 May;43:20-9. **Yoga reduces inflammatory signaling in fatigued breast cancer survivors: a randomized controlled trial.**

Bower JE, Greendale G, Crosswell AD, Garet D, Sternlieb B, Ganz

Author information: UCLA Department of Psychology, Los Angeles, CA

BACKGROUND: Yoga is a popular mind-body therapy that has demonstrated beneficial

effects on psychological, behavioral, and functional outcomes. However, few

studies have investigated effects on inflammatory processes. This study tested

the hypothesis that an Iyengar yoga intervention specifically designed for

fatigued breast cancer survivors would lead to decreases in inflammation-related

gene expression and circulating markers of proinflammatory cytokine activity.

METHODS: Breast cancer survivors with persistent cancer-related fatigue were

randomized to a 12-week Iyengar yoga intervention (n=16) or a 12-week health

education control condition (n=15). Blood samples were collected at baseline,

post-intervention, and at a 3-month follow-up for genome-wide transcriptional

profiling and bioinformatic analyses. Plasma inflammatory markers and salivary

cortisol were also assessed.

RESULTS: In promoter-based bioinformatics analyses, the yoga group showed reduced

activity of the pro-inflammatory transcription factor nuclear factor kappa B

(NF-κB), increased activity of the anti-inflammatory glucocorticoid receptor, and

reduced activity of cAMP response element-binding protein (CREB) family

transcription factors relative to controls (all ps<.05). There was also a

significant intervention effect on the soluble tumor necrosis factor receptor

type II (sTNF-RII), a marker of TNF activity; plasma levels of sTNF-RII remained

stable in the yoga group, whereas levels of this marker increased in the health

education group (p=.028). A similar, non-significant trend was observed for the

interleukin 1 receptor antagonist (p=.16). No significant changes in C reactive

protein (CRP), interleukin 6 (IL-6), or diurnal cortisol measures were observed.

CONCLUSIONS: A 12-week restorative Iyengar yoga intervention reduced

inflammation-related gene expression in breast cancer survivors with persistent

fatigue. These findings suggest that a targeted yoga program may have beneficial

effects on inflammatory activity in this patient population, with potential

relevance for behavioral and physical health. PMID: 24703167

23. Psychooncology. 2014 Jan;23(1):9-19. **Positive psychology interventions in breast cancer. A systematic review.** Casellas-Grau A, Font A, Vives J.

Author information: Universitat Autònoma de Barcelona, Cerdanyola del Vallès (Barcelona), Spain.

OBJECTIVE: Positive psychology is an emerging area of empirical study, not only

in clinical, but also in health psychology. The present systematic review aims to

synthesize the evidence about the positive psychology interventions utilized in breast cancer.

METHODS: Relevant studies were identified via Pubmed, PsycINFO, Web of Science,

Scopus, Cochrane, CINAHL, Wiley Online Library, TDX, and DIALNET databases (up to

April 2013). Only those papers focused on interventions related to positive

psychology and carried out on breast cancer patients were included.

RESULTS: Of the 7266 articles found through databases, 16 studies were finally

included in this review. Five groups of therapies were found: mindfulness-based

approaches, expression of positive emotions, spiritual interventions, hope

therapy, and meaning-making interventions. These specific interventions promoted

positive changes in breast cancer participants, such as enhanced quality of life,

well-being, hope, benefit finding, or optimism. However, the disparity of the

interventions and some methodological issues limit the outcomes.

CONCLUSIONS: Some studies provided relevant evidence about the clear development

of positive aspects from the breast cancer experience. Positive interventions

applied to patients and survivors of breast cancer were found to be able to

promote positive aspects. A global consensus of a positive therapies

classification is needed to take one more step in structuring positive psychology. PMID: 23897834

24. Complement Ther Clin Pract. 2013 Nov;19(4):227-9. **Yoga therapy for breast cancer patients: a prospective cohort study.** Sudarshan M, Petrucci A, Dumitra S, Duplisea J, Wexler S, Meterissian S.

Author information: Division of General Surgery and the Cedars Breast Clinic, The McGill University Health Center, Montreal, Quebec Canada.

We sought to study the impact of yoga therapy on anxiety, depression and physical

health in breast cancer patients. Stage I-III post-operative breast cancer

patients were recruited with twelve 1-h weekly yoga sessions completed with an

experienced yoga instructor. Before and after each module completion, assessments

were obtained with the Hospital Anxiety and Depression scale (HADS), the Dallas

pain scale and shoulder flexibility measurements. Fourteen patients completed the

entire yoga session with 42.8% having a total mastectomy and 15.4% having breast

reconstruction. Both right and left shoulder abduction flexibility significantly

improved (p = 0.004; p = 0.015 respectively) as well as left shoulder flexion (p

= 0.046). An improvement trend in scores for the HADS and Dallas questionnaires

pre- and post-intervention was found, although it was not statistically

significant. Our data indicates an improvement in physical function in addition

to a consistent amelioration in anxiety, depression and pain symptoms after a

yoga intervention. PMID: 24199978

25. Psychooncology. 2013 Nov;22(11):2565-75. **Psychosocial benefits of a novel mindfulness intervention versus standard support in distressed women with breast cancer.**

Monti DA, Kash KM, Kunkel EJ, Moss A, Mathews M, Brainard G, Anne R, Leiby BE

Author information: Jefferson-Myrna Brind Center of Integrative Medicine, Thomas Jefferson University, Philadelphia, PA

OBJECTIVE: It is well documented that stress is associated with negative health

outcomes in cancer patients. The purpose of this study was to assess the effects

of a novel mindfulness intervention called mindfulness-based art therapy (MBAT)

versus standard educational support, on indices of stress and quality of life in

breast cancer patients with high stress levels.

METHODS: A total of 191 women were enrolled, stratified by age and stress level,

and randomized to receive either an 8-week MBAT intervention or a breast cancer

educational support program of equal time and duration. Psychosocial stress was

measured using the Symptoms Checklist-90-Revised, and quality of life was

measured using the Medical Outcomes Study Short-Form Health Survey at baseline,

immediately post-intervention, and at 6 months.

RESULTS: Results showed overall significant improvements in psychosocial stress

and quality of life in both the MBAT and educational support groups immediately

post-intervention; however, participants with high stress levels at baseline had

significantly improved overall outcomes only in the MBAT group, both immediately

post-intervention and at 6 months. In addition, at 6 months follow-up,

participants attending five or more sessions trended toward retaining treatment

effects better in the MBAT than in the control group. Finally, black women and

white women were similar in terms of how they benefited from the MBAT

intervention, even though white participants tended to have higher educational

level and marital status.

CONCLUSIONS: In conclusion, MBAT is associated with significant, sustained

benefits across a diverse range of breast cancer patients, particularly those

with high stress levels. PMID: 23873790

26. Support Care Cancer. 2013 Nov;21(11):3009-19. **Mindfulness-based cognitive group therapy for women with breast and gynecologic cancer: a pilot study to determine effectiveness and feasibility.**

Stafford L, Foley E, Judd F, Gibson P, Kiropoulos L, Couper J.

Author information: Centre for Women's Mental Health, Royal Women's Hospital, Victoria, Australia

PURPOSE: Group-based mindfulness training is frequently described in

psycho-oncology literature, but little is known of the effectiveness of

mindfulness-based cognitive therapy (MBCT). We investigated the effectiveness and

acceptability of MBCT for women with breast and gynecologic cancer.

METHODS: Fifty women were recruited to participate in eight weekly 2-h

mindfulness sessions. Outcomes of distress, quality of life (QOL), post-traumatic

growth, and mindfulness were assessed pre-intervention, post-intervention, and

again 3 months later using validated measures. Data were analyzed with repeated

measures ANOVAs with a Bonferroni correction. Participant satisfaction and

evaluation were also assessed.

RESULTS: Forty-two women completed the program, and complete data were available

for 36 women. Significant improvements with large effect sizes (ηρ(2)) were

observed for distress (P < 0.001; ηρ(2) = 0.238), QOL (P = 0.001; ηρ(2) = 0.204),

mindfulness (P < 0.001; ηρ(2) = 0.363) and post-traumatic growth (P < 0.001;

ηρ(2) = 0.243). Gains were maintained 3 months post-intervention. Improvements in

outcomes did not differ based on diagnostic group, psychological status, or

physical well-being at entry. Change indices further support these findings.

Scores on measures of distress, QOL, and post-traumatic growth decreased as a

function of increased mindfulness at each time point (all P < 0.05). Participants

reported experiencing the program as beneficial, particularly its group-based

nature, and provided positive feedback of the therapy as a whole as well as its

individual components.

CONCLUSIONS: Within the limits of a non-randomized trial, these findings provide

preliminary support for the potential psychosocial benefits of MBCT in a

heterogeneous group of women with cancer. Future, more comprehensive trials are

needed to provide systematic evidence of this therapy in oncology settings. PMID: 23775158

27. BMC Complement Altern Med. 2013 Oct 2;13:248. **Mindfulness based stress reduction study design of a longitudinal randomized controlled complementary intervention in women with breast cancer.**

Kenne Sarenmalm E, Mårtensson LB, Holmberg SB, Andersson BA, Odén A, Bergh I.

Author information: Research and Development Centre, Skaraborg Hospital, Skövde, Sweden.

BACKGROUND: The stress of a breast cancer diagnosis and its treatment can produce

a variety of psychosocial sequelae including impaired immune responses.

Mindfulness Based Stress Reduction (MBSR) is a structured complementary program

that incorporates meditation, yoga and mind-body exercises. Despite promising

empirical evidence for the efficacy of MBSR, there is a need for randomized

controlled trials (RCT). There is also a need for RCTs investigating the efficacy

of psychosocial interventions on mood disorder and immune response in women with

breast cancer. Therefore, the overall aim is to determine the efficacy of a

Mindfulness Based Stress Reduction (MBSR) intervention on well-being and immune

response in women with breast cancer.

METHODS AND DESIGN: In this RCT, patients diagnosed with breast cancer, will

consecutively be recruited to participate. Participants will be randomized into

one of three groups: MBSR Intervention I (weekly group sessions +

self-instructing program), MBSR Intervention II (self-instructing program), and

Controls (non-MBSR). Data will be collected before start of intervention, and 3,

6, and 12 months and thereafter yearly up to 5 years. This study may contribute

to evidence-based knowledge concerning the efficacy of MBSR to support patient

empowerment to regain health in breast cancer disease.

DISCUSSION: The present study may contribute to evidence-based knowledge

concerning the efficacy of mindfulness training to support patient empowerment to

regain health in a breast cancer disease. If MBSR is effective for symptom relief

and quality of life, the method will have significant clinical relevance that may

generate standard of care for patients with breast cancer. PMID: 24088535

28. J Clin Oncol. 2013 Sep 10;31(26):3233-41. **Multicenter, randomized controlled trial of yoga for sleep quality among cancer survivors.** Mustian K, Sprod LK, Janelsins M, Peppone LJ, Palesh OG, Chandwani K

Author information: James P. Wilmot Cancer Center, University of Rochester Medical Center, Rochester, NY

PURPOSE: Thirty percent to 90% of cancer survivors report impaired sleep quality

post-treatment, which can be severe enough to increase morbidity and mortality.

Lifestyle interventions, such as exercise, are recommended in conjunction with

drugs and cognitive behavioral therapy for the treatment of impaired sleep.

Preliminary evidence indicates that yoga-a mind-body practice and form of

exercise-may improve sleep among cancer survivors. The primary aim of this

randomized, controlled clinical trial was to determine the efficacy of a

standardized yoga intervention compared with standard care for improving global

sleep quality (primary outcome) among post-treatment cancer survivors.

PATIENTS AND METHODS: In all, 410 survivors suffering from moderate or greater

sleep disruption between 2 and 24 months after surgery, chemotherapy, and/or

radiation therapy were randomly assigned to standard care or standard care plus

the 4-week yoga intervention. The yoga intervention used the Yoga for Cancer

Survivors (YOCAS) program consisting of pranayama (breathing exercises), 16

Gentle Hatha and Restorative yoga asanas (postures), and meditation. Participants

attended two 75-minute sessions per week. Sleep quality was assessed by using the

Pittsburgh Sleep Quality Index and actigraphy pre- and postintervention.

RESULTS: In all, 410 survivors were accrued (96% female; mean age, 54 years; 75%

had breast cancer). Yoga participants demonstrated greater improvements in global

sleep quality and, secondarily, subjective sleep quality, daytime dysfunction,

wake after sleep onset, sleep efficiency, and medication use at postintervention

(all P ≤ .05) compared with standard care participants.

CONCLUSION: Yoga, specifically the YOCAS program, is a useful treatment for

improving sleep quality and reducing sleep medication use among cancer survivors. PMID: 23940231

29. Integr Cancer Ther. 2013 Sep;12(5):404-13. **A randomized controlled trial of mindfulness-based stress reduction for women with early-stage breast cancer receiving radiotherapy.**

Henderson VP, Massion AO, Clemow L, Hurley TG, Druker S, Hébert JR.

Author information: University of South Carolina, Columbia, SC

PURPOSE: To testthe relative effectiveness of a mindfulness-based stress

reduction program (MBSR) compared with a nutrition education intervention (NEP)

and usual care (UC) in women with newly diagnosed early-stage breast cancer

(BrCA)undergoing radiotherapy.

METHODS: Datawere available from a randomized controlled trialof 172 women, 20 to

65 years old, with stage I or II BrCA. Data from women completing the 8-week MBSR

program plus 3 additional sessions focuses on special needs associated with BrCA

were compared to women receiving attention control NEP and UC. Follow-up was

performed at 3 post-intervention points: 4 months, and 1 and 2 years.

Standardized, validated self-administered questionnaires were used to assess

psychosocial variables. Descriptive analyses compared women by randomization

assignment. Regression analyses, incorporating both intention-to-treat and post

hoc multivariable approaches, were used to control for potential confounding variables.

RESULTS: A subset of 120 women underwent radiotherapy; 77 completed treatment

prior to the study, and 40 had radiotherapy during the MBSR intervention. Women

who actively received radiotherapy (art) while participating in the MBSR

intervention (MBSR-art) experienced a significant (P < .05) improvement in 16

psychosocial variables compared with the NEP-art, UC-art, or both at 4 months.

These included health-related, BrCA-specific quality of life and psychosocial

coping, which were the primary outcomes, and secondary measures, including

meaningfulness, helplessness, cognitive avoidance, depression, paranoid ideation,

hostility, anxiety, global severity, anxious preoccupation, and emotional control.

CONCLUSIONS: MBSR appears to facilitate psychosocial adjustment in BrCA patients

receiving radiotherapy, suggesting applicability for MBSR as adjunctive therapy

in oncological practice. PMID: 23362338

30. J Clin Oncol. 2013 Sep 1;31(25):3119-26. **Randomized controlled trial of Mindfulness-based cancer recovery versus supportive expressive group therapy for distressed survivors of breast cancer.**

Carlson LE, Doll R, Stephen J, Faris P, Tamagawa R, Drysdale E, Speca M.

Author information: University of Calgary, Alberta, Canada

PURPOSE: To compare the efficacy of the following two empirically supported group

interventions to help distressed survivors of breast cancer cope:

mindfulness-based cancer recovery (MBCR) and supportive-expressive group therapy (SET).

PATIENTS AND METHODS: This multisite, randomized controlled trial assigned 271

distressed survivors of stage I to III breast cancer to MBCR, SET, or a 1-day

stress management control condition. MBCR focused on training in mindfulness

meditation and gentle yoga, whereas SET focused on emotional expression and group

support. Both intervention groups included 18 hours of professional contact.

Measures were collected at baseline and after intervention by assessors blind to

study condition. Primary outcome measures were mood and diurnal salivary cortisol

slopes. Secondary outcomes were stress symptoms, quality of life, and social support.

RESULTS: Using linear mixed-effects models, in intent-to-treat analyses, cortisol

slopes were maintained over time in both SET (P = .002) and MBCR (P = .011)

groups relative to the control group, whose cortisol slopes became flatter. Women

in MBCR improved more over time on stress symptoms compared with women in both

the SET (P = .009) and control (P = .024) groups. Per-protocol analyses showed

greater improvements in the MBCR group in quality of life compared with the

control group (P = .005) and in social support compared with the SET group (P =.012).

CONCLUSION: In the largest trial to date, MBCR was superior for improving stress

levels, quality of life and social support [CORRECTED] for distressed survivors

of breast cancer. Both SET and MBCR also resulted in more normative diurnal

cortisol profiles than the control condition. The clinical implications of this

finding require further investigation. PMID: 23918953

31. Complement Ther Med. 2013 Aug;21(4):379-87. **Effects of meditation on anxiety, depression, fatigue, and quality of life of women undergoing radiation therapy for breast cancer.**

Kim YH, Kim HJ, Ahn SD, Seo YJ, Kim SH.

Author information: Department of Nursing, Asan Medical Center, Seoul, Republic of Korea.

OBJECTIVE: To investigate the effects of meditation on anxiety, depression,

fatigue, and quality of life in women who are receiving radiation therapy for breast cancer.

DESIGN: Randomized, non-program controlled, parallel intervention clinical trial.

SETTING: The ASAN Cancer Center located in Seoul, Korea.

INTERVENTION: The subjects of this study included 102 female breast cancer

patients who had undergone breast-conserving surgery; these female patients were

randomized into equally assigned meditation control groups, with each group

consisting of 51 patients. The test group received a total of 12 meditation

therapy sessions during their 6-week radiation therapy period, and the control

group underwent only a conventional radiation therapy.

OUTCOME: The tools used to evaluate the effects of meditation were Hospital

Anxiety and Depression scale, Revised Piper Fatigue scale, and European

Organization for Research and Treatment of Cancer-Quality of Life Core-30. The

results were analyzed based on the principles of intention-to-treat analysis,

and, as a corollary analysis, per-protocol analysis was conducted.

RESULTS: The breast cancer patients who received meditation therapy compared with

the non-intervention group saw improvements in reduction of anxiety (p=.032),

fatigue (p=.030), and improvement in global quality of life (p=.028).

CONCLUSIONS: Based on the results of this study, an affirmation can be made that

meditation can be used as a non-invasive intervention treatment for improving

fatigue, anxiety, quality of life, and emotional faculties of women with breast cancer. PMID: 23876569

32. J Complement Integr Med. 2013 Jul 16;10. pii: **Impact of relaxation training according to the Yoga In Daily Life® system on anxiety after breast cancer surgery.** Kovačič T, Zagoričnik M, Kovačič M.

Author information: Centre for Education, Work and Care Dobrna, Slovenia.

The purpose of this pilot study was to gather information on the immediate and

short-term effects of relaxation training according to the Yoga In Daily Life®

(YIDL®) system on anxiety of breast cancer patients. The YIDL® system is a

holistic system being practised and taught worldwide and has been proven to be

highly effective in the prevention and treatment of various diseases. The system

aims to establish physical, mental, spiritual, and social health. Thirty-two

patients at the Institute for Oncology Ljubljana were randomized to the

experimental (n=16) and to the control groups (n=16). Both groups received the

same standard physiotherapy for 1 week, while the experimental group additionally

received 1-hour group relaxation training session according to the YIDL® system

per day. At discharge, the experimental group was issued with audiocassette

recordings containing similar instructions for relaxation training to be

practiced for 3 weeks individually at home. Anxiety measures were obtained by

blinded assessors using standardized questionnaires. The results indicate that

relaxation training according to the YIDL® system could be a useful clinical

physiotherapy intervention for breast cancer patients experiencing anxiety. PMID: 23934515

33. Explore (NY). 2013 Jul-Aug;9(4):232-43. **Effects of yoga interventions on fatigue in cancer patients and survivors: a systematic review of randomized controlled trials.** Sadja, Mills PJ.

Author information: San Diego State University (SDSU) & University of California, San Diego Joint Doctoral Program in Clinical Psychology, San Diego, CA

BACKGROUND: Fatigue is one of the most frequently reported, distressing side

effects reported by cancer survivors and often has significant long-term

consequences. Research indicates that yoga can produce invigorating effects on

physical and mental energy, and thereby may improve levels of fatigue. The

objective of this systematic review was to examine the literature that reports

the effects of randomized, controlled yoga interventions on self-reported fatigue

in cancer patients and survivors. The online electronic databases, PubMed and

PsycINFO, were used to search for peer-reviewed research articles studying the

effects of yoga interventions on fatigue in cancer survivors. Combinations of

yoga, cancer, and fatigue-related search terms were entered simultaneously to

obtain articles that included all three elements. Studies were included if they

met the following inclusion criteria: participants were male or female cancer

patients or survivors participating in randomized, controlled yoga interventions.

The main outcome of interest was change in fatigue from pre- to

post-intervention. Interventions of any length were included in the analysis.

Risk of bias using the format of the Cochrane Collaboration's tool for assessing

risk of bias was also examined across studies.

RESULTS: Ten articles met inclusion criteria and involved a total of 583

participants who were predominantly female, breast cancer survivors. Four studies

indicated that the yoga intervention resulted in significant reductions in

self-reported fatigue from pre- to post-intervention. Three of the studies

reported that there were significant reductions of fatigue among participants who

attended a greater number of yoga classes. Risk of bias was high for areas of

adequate selection, performance, detection, and patient-reported bias and mixed

for attrition and reporting bias. Risk of bias was uniformly low for other forms

of bias, including financial conflicts of interest.

CONCLUSIONS: Results of the studies included in this review suggest that yoga

interventions may be beneficial for reducing cancer-related fatigue in women with

breast cancer; however, conclusions should be interpreted with caution as a

result of levels of bias and inconsistent methods used across studies. More

well-constructed randomized controlled trials are needed to determine the impact

of yoga interventions on fatigue in cancer patients and survivors. PMID: 23906102

34. Psychooncology. 2013 Jul;22(7):1457-65. **The efficacy of mindfulness-based stress reduction on mental health of breast cancer patients: a meta-analysis.** Zainal NZ, Booth S, Huppert FA.

Author information: Department of Psychological Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

OBJECTIVE: This study aims to investigate the evidence of the efficacy of

mindfulness-based stress reduction (MBSR) in improving stress, depression and

anxiety in breast cancer patients.

METHODS: An extensive systematic electronic review (PubMed, Embase, CINAHL,

PsyArticles, PsycINFO, Scopus, Ovid, Web of Science and The Cochrane Library) and

a hand search were carried out from 15 October 2011 to 30 November 2011 to

retrieve relevant articles using 'mindfulness' or 'mindfulness-based stress

reduction' and 'breast cancer' as keywords. Information about the baseline

characteristics of the participants, interventions and findings on perceived

stress, depression and anxiety was extracted from each study.

RESULTS: Nine published studies (two randomised controlled trials, one

quasi-experimental case-control study and six one-group, pre-intervention and

post-intervention studies) up to November 2011 that fulfilled the inclusion

criteria were analysed. The pooled effect size (95% CI) for MBSR on stress was

0.710 (0.511-0.909), on depression was 0.575 (0.429-0.722) and on anxiety was

0.733 (0.450-1.017).

CONCLUSION: On the basis of these findings, MBSR shows a moderate to large

positive effect size on the mental health of breast cancer patients and warrants

further systematic investigation because it has a potential to make a significant

improvement on mental health for women in this group. PMID: 22961994

35. J Cancer Surviv. 2013 Jun;7(2):165-82. **Investigating efficacy of two brief mind-body intervention programs for managing sleep disturbance in cancer survivors: a pilot randomized controlled trial.**

Nakamura Y, Lipschitz DL, Kuhn R, Kinney AY, Donaldson GW.

Author information: Utah Center for Exploring Mind-Body Interactions, Pain Research Center,

Department of Anesthesiology, School of Medicine, University of Utah, Salt Lake City, UT

PURPOSE: After completing treatment, cancer survivors may suffer from a multitude

of physical and mental health impairments, resulting in compromised quality of

life. This exploratory study investigated whether two mind-body interventions,

i.e., Mind-Body Bridging (MBB) and Mindfulness Meditation (MM), could improve

posttreatment cancer survivors' self-reported sleep disturbance and comorbid

symptoms, as compared to sleep hygiene education (SHE) as an active control.

METHODS: This randomized controlled trial examined 57 cancer survivors with

clinically significant self-reported sleep disturbance, randomly assigned to

receive MBB, MM, or SHE. All interventions were conducted in three sessions, once

per week. Patient-reported outcomes were assessed via the Medical Outcomes Study

Sleep Scale and other indicators of psychosocial functioning relevant to quality

of life, stress, depression, mindfulness, self-compassion, and well-being.

RESULTS: Mixed effects model analysis revealed that mean sleep disturbance

symptoms in the MBB (p = .0029) and MM (p = .0499) groups were lower than in the

SHE group, indicating that both mind-body interventions improved sleep. In

addition, compared with the SHE group, the MBB group showed reductions in

self-reported depression symptoms (p = .040) and improvements in overall levels

of mindfulness (p = .018), self-compassion (p = .028), and well-being (p = .019)

at postintervention.

CONCLUSIONS: This study provides preliminary evidence that brief sleep-focused

MBB and MM are promising interventions for sleep disturbance in cancer survivors.

Integrating MBB or MM into posttreatment supportive plans should enhance care of

cancer survivors with sleep disturbance. Because MBB produced additional

secondary benefits, MBB may serve as a promising multipurpose intervention for

posttreatment cancer survivors suffering from sleep disturbance and other

comorbid symptoms.

IMPLICATIONS FOR CANCER SURVIVORS: Two brief sleep-focused mind-body

interventions investigated in the study were effective in reducing sleep

disturbance and one of them further improved other psychosocial aspects of the

cancer survivors' life. Management of sleep problems in survivors is a high

priority issue that demands more attention in cancer survivorship. PMID: 23338490

36. Eur J Cancer. 2013 Apr;49(6):1365-73. **Mindfulness significantly reduces self-reported levels of anxiety and depression: results of a randomised controlled trial among 336 Danish women treated for stage**

**I-III breast cancer.** Würtzen H, Dalton SO, Elsass P, Sumbundu AD, Steding-Jensen M, Karlsen RV

Author information: Danish Cancer Society Research Center, Survivorship, Denmark.

INTRODUCTION: As the incidence of and survival from breast cancer continue to

raise, interventions to reduce anxiety and depression before, during and after

treatment are needed. Previous studies have reported positive effects of a

structured 8-week group mindfulness-based stress reduction program (MBSR) among

patients with cancer and other conditions.

PURPOSE: To test the effect of such a programme on anxiety and depression among

women with breast cancer in a population-based randomised controlled study.

METHODS: A total of 336 women who had been operated on for breast cancer (stage

I-III) were randomised to usual care or MBSR+usual care. Questionnaires including

the Symptom Checklist-90r anxiety and depression subscales and the Center for

Epidemiological Studies-Depression scale were administered before randomisation

and immediately, 6 and 12 months after the intervention.

RESULTS: Intention-to-treat analyses showed differences between groups in levels

of anxiety (p=0.0002) and depression (SCL-90r, p<0.0001; CES-D, p=0.0367) after

12 months. Graphical comparisons of participants with higher levels of anxiety

and depression at baseline showed a significantly greater decrease in the

intervention group throughout follow-up and no differences among least affected

participants. Medium-to-large effects were found for all outcomes in the

intervention group in analyses of change scores after 12 months' follow-up.

CONCLUSION: The 8-week group based MBSR intervention had clinically meaningful,

statistically significant effects on depression and anxiety after 12 months'

follow-up, and medium-to-large effect sizes. Our findings support the

dissemination of MBSR among women with breast cancer. PMID: 23265707

37. Integr Cancer Ther. 2013 Jan;12(1):31-40. **Increased mindfulness is related to improved stress and mood following participation in a mindfulness-based stress reduction program in individuals with**

**cancer.** Garland SN, Tamagawa R, Todd SC, Speca M, Carlson LE.

Author information: University of Calgary, Alberta, Canada.

BACKGROUND: Mindfulness-based stress reduction (MBSR) has demonstrated efficacy

for alleviating cancer-related distress. Although theorized to be the means by

which people improve, it is yet to be determined whether outcomes are related to

the development or enhancement of mindfulness among participants. This study

examined the effect of participation in an MBSR program on levels of mindfulness

in a heterogeneous sample of individuals with cancer, and if these changes were

related to improvements in stress and mood outcomes.

METHODS: In all, 268 individuals with cancer completed self-report assessments of

stress and mood disturbances before and after participation in an 8-week MBSR

program. Of these, 177 participants completed the Mindful Attention Awareness

Scale and 91 participants completed the Five Facet Mindfulness Questionnaire, at

both time points.

RESULTS: Levels of mindfulness on both measures increased significantly over the

course of the program. These were accompanied by significant reductions in mood

disturbance (55%) and symptoms of stress (29%). Increases in mindfulness

accounted for a significant percentage of the reductions in mood disturbance

(21%) and symptoms of stress (14%). Being aware of the present moment and

refraining from judging inner experience were the 2 most important mindfulness

skills for improvements of psychological functioning among cancer patients.

CONCLUSIONS: These results add to a growing literature measuring the impact of

mindfulness and its relationship to improved psychological health. Moreover,

specific mindfulness skills may be important in supporting these improvements. PMID: 22505593

38. Complement Ther Clin Pract. 2012 Nov;18(4):221-6. **Mindfulness-based stress reduction in breast cancer: a qualitative analysis.** Hoffman CJ, Ersser SJ, Hopkinson JB.

Author information: The Haven, Effie Road, London UK.

There have been few qualitative investigations evaluating Mindfulness-Based

Stress Reduction (MBSR) in breast cancer populations. The nested qualitative

analysis reported here explores the acceptability and the perceived effect of

MBSR. As part of a larger randomised controlled evaluative trial, 92 participants

with stages 0 to III breast cancer completed a short proforma following week 8 of

a MBSR programme conducted at The Haven, an integrated cancer support centre in

London, UK in 2005-2006. Following thematic analysis, the most positive

experiences from participants (n = 92) were reported to be; 1) being calmer,

centred, at peace, connected and more confident; 2) the value of mindfulness

practice; 3) being more aware; 4) coping with stress, anxiety and panic; 5)

accepting things as they are, being less judgemental of myself and others; 6)

improved communication and personal relationships and 7) making time and creating

space for myself. All participants asked (n = 39) said that following MBSR

training they had become more mindful. These understandings will be able to help

shape the future teaching of MBSR in breast cancer. PMID: 23059436

39. J Clin Oncol. 2012 Apr 20;30(12):1335-42. **Effectiveness of mindfulness-based stress reduction in mood, breast- and endocrine-related quality of life, and well-being in stage 0 to III breast cancer: a randomized, controlled trial.** Hoffman CJ, Ersser SJ, Hopkinson JB, Nicholls PG, Harrington JE, Thomas PW.

Author information: The Haven, Effie Rd, London, United Kingdom.

PURPOSE: To assess the effectiveness of mindfulness-based stress reduction (MBSR)

for mood, breast- and endocrine-specific quality of life, and well-being after

hospital treatment in women with stage 0 to III breast cancer.

PATIENTS AND METHODS: A randomized, wait-listed, controlled trial was carried out

in 229 women after surgery, chemotherapy, and radiotherapy for breast cancer.

Patients were randomly assigned to the 8-week MBSR program or standard care.

Profile of Mood States (POMS; primary outcome), Functional Assessment of Cancer

Therapy-Breast (FACT-B), Functional Assessment of Cancer Therapy-Endocrine

Symptoms (FACT-ES) scales and the WHO five-item well-being questionnaire (WHO-5)

evaluated mood, quality of life, and well-being at weeks 0, 8, and 12. For each

outcome measure, a repeated-measures analysis of variance model, which

incorporated week 0 measurements as a covariate, was used to compare treatment

groups at 8 and 12 weeks.

RESULTS: There were statistically significant improvements in outcome in the

experimental group compared with control group at both 8 and 12 weeks (except as

indicated) for POMS total mood disturbance (and its subscales of anxiety,

depression [8 weeks only], anger [12 weeks only], vigor, fatigue, and confusion

[8 weeks only]), FACT-B, FACT-ES, (and Functional Assessment of Cancer Therapy

subscales of physical, social [8 weeks only], emotional, and functional

well-being), and WHO-5.

CONCLUSION: MSBR improved mood, breast- and endocrine-related quality of life,

and well-being more effectively than standard care in women with stage 0 to III

breast cancer, and these results persisted at three months. To our knowledge,

this study provided novel evidence that MBSR can help alleviate long-term

emotional and physical adverse effects of medical treatments, including endocrine

treatments. MBSR is recommended to support survivors of breast cancer. PMID: 22430268

40. J Behav Med. 2012 Feb;35(1):86-94. **Mindfulness based stress reduction in post-treatment breast cancer patients: an examination of symptoms and symptom clusters.**

Lengacher CA, Reich RR, Post-White J, Moscoso M, Shelton MM, Barta M, Le N, Budhrani P.

Author information: College of Nursing, University of South Florida, Tampa, FL

To investigate prevalence and severity of symptoms and symptom clustering in

breast cancer survivors who attended MBSR(BC). Women were randomly assigned into

MBSR(BC) or Usual Care (UC). Eligible women were ≥ 21 years, had been diagnosed

with breast cancer and completed treatment within 18 months of enrollment.

Symptoms and interference with daily living were measured pre- and post-MBSR(BC)

using the M.D. Anderson Symptom Inventory. Symptoms were reported as highly

prevalent but severity was low. Fatigue was the most frequently reported and

severe symptom among groups. Symptoms clustered into 3 groups and improved in

both groups. At baseline, both MBSR(BC) and the control groups showed similar

mean symptom severity and interference; however, after the 6-week

post-intervention, the MBSR(BC) group showed statistically-significant reduction

for fatigue and disturbed sleep (P < 0.01) and improved symptom interference

items, compared to the control group. For the between-group comparisons, 11 of 13

symptoms and 5 of 6 interference items had lower means in the MBSR(BC) condition

than the control condition. These results suggest that MBSR(BC) modestly

decreases fatigue and sleep disturbances, but has a greater effect on the degree

to which symptoms interfere with many facets of life. Although these results are

preliminary, MBSR intervention post-treatment may effectively reduce fatigue and

related interference in QOL of breast cancer survivors. PMID: 21506018

41. Breast Cancer Res Treat. 2012 Jan;131(1):99-109. **The effects of mindfulness-based stress reduction on psychosocial outcomes and quality of life in early-stage breast cancer patients: a randomized trial.**

Henderson VP, Clemow L, Massion AO, Hurley TG, Druker S, Hébert JR.

Author information: Department of Family and Preventive Medicine, School of Medicine, University

of South Carolina, Columbia, SC

The aim of this study was determine the effectiveness of a mindfulness-based

stress-reduction (MBSR) program on quality of life (QOL) and psychosocial

outcomes in women with early-stage breast cancer, using a three-arm randomized

controlled clinical trial (RCT). This RCT consisting of 172 women, aged 20-65

with stage I or II breast cancer consisted of the 8-week MBSR, which was compared

to a nutrition education program (NEP) and usual supportive care (UC). Follow-up

was performed at three post-intervention points: 4 months, 1, and 2 years.

Standardized, validated self-administered questionnaires were adopted to assess

psychosocial variables. Statistical analysis included descriptive and regression

analyses incorporating both intention-to-treat and post hoc multivariable

approaches of the 163 women with complete data at baseline, those who were

randomized to MBSR experienced a significant improvement in the primary measures

of QOL and coping outcomes compared to the NEP, UC, or both, including the

spirituality subscale of the FACT-B as well as dealing with illness scale

increases in active behavioral coping and active cognitive coping. Secondary

outcome improvements resulting in significant between-group contrasts favoring

the MBSR group at 4 months included meaningfulness, depression, paranoid

ideation, hostility, anxiety, unhappiness, and emotional control. Results tended

to decline at 12 months and even more at 24 months, though at all times, they

were as robust in women with lower expectation of effect as in those with higher

expectation. The MBSR intervention appears to benefit psychosocial adjustment in

cancer patients, over and above the effects of usual care or a credible control

condition. The universality of effects across levels of expectation indicates a

potential to utilize this stress reduction approach as complementary therapy in

oncologic practice. PMID: 21901389

42. J Holist Nurs. 2011 Jun;29(2):107-17. **Feasibility of a mindfulness-based stress reduction program for early-stage breast cancer survivors.** Lengacher CA, Johnson-Mallard V, Barta M, Fitzgerald S, Moscoso MS

Author information: University of South Florida, College of Nursing, Tampa, FL

PURPOSE: To assess the feasibility of whether mindfulness-based stress reduction

(MBSR) has a positive effect on breast cancer survivors' psychological status,

psychosocial characteristics, symptoms, and quality of life (QOL) during the

critical transition period from end of treatment to resumption of daily

activities.

DESIGN: Single-group, quasi-experimental, pretest-posttest design.

METHOD: A sample of 19 women who completed breast cancer treatment with

lumpectomy, radiation, and/or chemotherapy was recruited from the Moffitt Cancer

Center and Research Institute, a National Cancer Institute- designated cancer

center, and the University of South Florida. The authors assessed the

feasibility, compliance, and whether an 8-week MBSR program positively influenced

changes in psychological status (fear of recurrence, perceived stress, anxiety,

depression), psychosocial characteristics (optimism, social support,

spirituality), physical symptoms, and QOL.

FINDINGS: Seventeen women (89.5%) completed the study. The mean age was 57 years;

the majority of participants (94%) were White. The estimated compliance rate for

the program was 67%. Paired t tests indicated significant improvements fear of

recurrence, perceived stress, anxiety, depression, and QOL through MBSR participation.

CONCLUSIONS: Participants enrolled in the MBSR classes generally were compliant.

Significant improvement in psychological status, symptoms, and QOL can be

achieved with MBSR use in this population. PMID: 21041554

43. Psychooncology. 2009 Dec;18(12):1261-72. **Randomized controlled trial of mindfulness-based stress reduction (MBSR) for survivors of breast cancer.** Lengacher CA(1), Johnson-Mallard V, Post-White

Author information: University of South Florida College of Nursing, Tampa, FL

OBJECTIVES: Considerable morbidity persists among survivors of breast cancer (BC)

including high levels of psychological stress, anxiety, depression, fear of

recurrence, and physical symptoms including pain, fatigue, and sleep

disturbances, and impaired quality of life. Effective interventions are needed

during this difficult transitional period.

METHODS: We conducted a randomized controlled trial of 84 female BC survivors

(Stages 0-III) recruited from the H. Lee Moffitt Cancer and Research Institute.

All subjects were within 18 months of treatment completion with surgery and

adjuvant radiation and/or chemotherapy. Subjects were randomly assigned to a

6-week Mindfulness-Based Stress Reduction (MBSR) program designed to

self-regulate arousal to stressful circumstances or symptoms (n=41) or to usual

care (n=43). Outcome measures compared at 6 weeks by random assignment included

validated measures of psychological status (depression, anxiety, perceived

stress, fear of recurrence, optimism, social support) and psychological and

physical subscales of quality of life (SF-36).

RESULTS: Compared with usual care, subjects assigned to MBSR(BC) had

significantly lower (two-sided p<0.05) adjusted mean levels of depression (6.3 vs

9.6), anxiety (28.3 vs 33.0), and fear of recurrence (9.3 vs 11.6) at 6 weeks,

along with higher energy (53.5 vs 49.2), physical functioning (50.1 vs 47.0), and

physical role functioning (49.1 vs 42.8). In stratified analyses, subjects more

compliant with MBSR tended to experience greater improvements in measures of

energy and physical functioning.

CONCLUSIONS: Among BC survivors within 18 months of treatment completion, a

6-week MBSR(BC) program resulted in significant improvements in psychological

status and quality of life compared with usual care. PMID: 19235193