

5-2016

# Mindfulness and the Oncology Patient: A Systematic Review

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## Recommended Citation

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Mindfulness and the Oncology Patient: A Systematic Review

by

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MSW Clinical Research Paper

Presented to the Faculty of the  
School of Social Work  
St. Catherine University and the University of St. Thomas St. Paul, Minnesota  
in Partial fulfillment of the Requirements for the Degree of

Master of Social Work

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The Clinical Research Project is a graduation requirement for MSW students at St. Catherine University/University of St. Thomas School of Social Work in St. Paul, Minnesota and is conducted within a nine-month time frame to demonstrate facility with basic social research methods. Students must independently conceptualize a research problem, formulate a research design that is approved by a research committee and the university Institutional Review Board, implement the project, and publicly present the findings of the study. This project is neither a Master's thesis nor a dissertation.

### **Abstract**

This systematic review was designed to gather and analyze data available regarding the effectiveness of mindfulness practice in decreasing depression or anxiety for oncology/hematology patients. The electronic databases used to identify studies for this review included the University of St. Thomas' Summon Data Base, Psychinfo, Social Work Abstracts, SocINDEX and St. Catherine University's Academic Search Premier. Sixteen quantitative studies met criteria and were reviewed and analyzed. All sixteen studies were divided between the categories of post cancer treatment/cancer survivors or active cancer diagnosis. The three major themes that surfaced within these two categories were depression, anxiety and stress. The studies included in this systematic review find Mindfulness Based Stress Reduction (MBSR) to aid patients and cancer survivors in decreasing their symptoms of anxiety, depression and stress. The research shows MBSR can benefit patients with active cancer diagnoses along with survivors while also being a very powerful tool in the medical setting for not only oncology patients but all patients. Additional research is required to understand the length of ongoing effectiveness MBSR can have on symptoms of depression, anxiety and stress for cancer patients and cancer survivors.

### **Acknowledgments**

First off, I would like to thank Ande Nesmith for her guidance, support and words of wisdom throughout this entire process. Your words of encouragement and belief in us as students means more than words can ever describe. I am truly blessed to have spent the past year learning from you. Thank you to my committee members, Bobbi Losure and Eric Hansen. Your feedback, support and expertise have been instrumental in this project and my journey. I appreciate the valuable time you offered my project. Lastly, I want to thank my husband, family, friends and classmates for their immeasurable amount of support throughout the programs entirety.

In memory of,

James C. "Jim" Ray

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The Centers of Disease Control and Prevention website (2015), informs us that globally, each year, an estimated 14 million patients are diagnosed with cancer and eight million patients lose their lives to the disease. According to cancer.gov, there are over 100 different types of cancer in the world, developing anywhere in the body and affecting all the body organs. Cancer patient's lives are significantly affected physically and emotionally by their diagnosis. Often, treatment can start immediately and be aggressive in nature. Psychosocial changes that can affect cancer patients can include change in work routines and job status, change in relationships, financial stressors due to medical bills and many other dynamics (Matchim et al., 2012). This may be the time when feelings of depression and anxiety present. Mindfulness practice has been researched on its effectiveness in helping to decrease symptoms of depression and anxiety for cancer patients. Mindfulness-Based Stress Reduction (MBSR), a program created by Dr. Jon Kabat-Zinn, is a commonly researched mindfulness practice within the medical field (Gazella, 2005).

### **Depression**

Research shows that depression symptoms are present in 15 to 50 percent of patients with cancer (Rosenstein, 2011). One challenge is that these symptoms occur on a spectrum. Depression can affect a patient's ability to participate in their cancer treatment and may impact their course of cancer (National Institute of Mental Health, 2011). To help practitioners measure depression, assessment tools are used to aid patients in reporting symptoms of depression. The following are the most commonly used depression assessment tools.

The Center for Epidemiological Studies (CES), now known as CES-D, is a 20-item measure, utilizing a four-point scale. This tool looks at reported depression within the past week.

CES was published in 1977 by Radloff and is known for its reporting consistency. This measure is able to be used amongst diverse populations. (American Psychological Association, 2016).

The Patient Health Questionnaire (PHQ-9) is used as an assessment to gauge patient depression in the medical setting. The ten item scale is used by clinicians when diagnosing depression (Center for Quality Assessment and Improvement in Mental Health, n.d.). This ten item self-report questionnaire focuses on the patient's health within the past two weeks. Major depressive disorder's nine diagnostic criteria are included on the PHQ-9 (American Psychiatric Association, 2013). The ten-item questionnaire helps with tracking the severity of the patient's depression and helps identify the effects treatment might be having on specific symptoms (Center for Quality Assessment and Improvement in Mental Health, n.d.).

The Hospital Anxiety and Depression Scale is a 14-item tool used to measure both anxiety and depression. The assessment was developed over 30 years ago, starting off as a 16-item tool. It has since been revised, with the removal of the weakest question for both depression and anxiety. This assessment is based on a three-point self-reporting scale, taking the patient two to five minutes to complete (Oxford Journals, 2016).

The Profile of Mood States, now revised to POMS 2, is a 65-item self-reporting tool used to measure symptoms, depression and anxiety. POMS 2 is available for patients over the age of 18 and POMS 2-Y is available for patients ages 13-17. This tool is diverse and can be used in many different settings, including clinical, research, athletics and medical (Multi-Health Systems, 2016). Both a short and full length version of the assessment is available.

## **Anxiety**

The stress, dread and fear of the unknown can lead to stress for patients with cancer (National Cancer Institute, 2015). Anxiety can lead to disrupted sleep patterns, cause patients to miss appointments, affect their coping, quality of life, increase their level of pain, and may even lead to physical symptoms including vomiting and nausea (National Cancer Institute, 2015). To help practitioners in the medical setting measure anxiety in patients, assessment tools are used to aid patients in reporting symptoms of anxiety. The following assessment tools are commonly used within the medical setting.

The State Trait Anxiety Inventory (STAI) is a 20-item, utilizing Likert-type scales. This assessment is used to measure state and trait anxieties. The STAI is used to diagnose anxiety while differentiating between anxiety and depression symptoms. The State Trait Anxiety Inventory is known for its use in the clinical setting (American Psychological Association, 2016).

The Generalized Anxiety Disorder questionnaire (GAD-7) is frequently completed by the patient. This seven-item self-report anxiety questionnaire focuses on the patient's health within the past two weeks (Williams, 2003). The GAD-7 investigates the patient's degree of feeling nervous, irritable, worrying, feeling afraid, restlessness, anxiousness and level of annoyance (Williams, 2003). These assessments present as a conversation starter for providers and patients in regards to psychosocial needs and health.

Sleep disturbance and insomnia are other prominent factors affecting cancer patients. Study results indicate that insomnia is twice as prevalent in cancer patients as in the general population (Carlson & Garland, 2005). Often times, cancer patients are unable to be prescribed

sleep aids due to other medications and possible interference. Although the causes of sleep disturbances for patients with cancer have not been fully researched, we do know stressful events in one's life can cause sleep disturbance. Cancer, rated one of the most stressful life events someone can experience, would suggest negative effects on sleep patterns (Carlson & Garland, 2005). Research suggests that MBSR programs result in positive effects on patients with cancer and their quality of sleep (Carlson, Speca, Patel, & Goodey, 2002).

### **Mindfulness Based Stress Reduction (MBSR)**

The Mindfulness Based Stress Reduction Program was founded by Dr. Jon Kabat-Zinn in 1979. MBSR uses the methodologies of psychology, medicine and science, combined with Buddhist meditative teachings, traditions and practices (Center for Mindfulness in Medicine, Health Care and Society, 2014). Mindfulness, when broken down, is a combination of wisdom, compassion, attention and awareness (Center for Mindfulness in Medicine, Health Care and Society, 2014). MBSR utilizes yoga, meditation and self-awareness as its core practices (2014). Since the program's beginning, over 22,000 patients have completed the programming while working towards more effective management of pain, the overall illness and stress (2014). Other types of interventions used to help treat depression for cancer patients include cognitive behavioral therapy (CBT) and medications (National Institute of Mental Health, 2011).

### **Conceptual Framework**

Empowerment can be a very effective and prevailing tool when working with patients with a cancer diagnosis. Research suggests that stressful life events can have less of a negative effect when patients are encouraged to identify with similar peers, develop skills, identify institutional or societal elements of their problems and to participate in change (Gutierrez, 2015). The strengths based perspective can be used to help the patient identify their strengths. These

strengths can then be used as tools during empowerment where the focus is on how the patient might take action to change their situation (Gutierrez, 2015). “Information on empowerment can expand our thinking about the relationship between mental health and stress to include the group and community levels of analysis, and suggest ways in which responses to stress can contribute to proactive change” (Gutierrez, 2015).

### **Empowerment**

Empowerment theory is the process of “increasing personal, interpersonal or political power” (Gutierrez, 2015), resulting in individuals, families and communities improving their stressful situations (Gutierrez, 2015). Gutierrez (2015) believes that when working with individuals and empowerment theory, increasing self-efficacy, developing a critical consciousness (the process of connecting the effects political structures have on group and individual experience) and developing skills and involvement with similar others, are the areas to focus on. Practicing a strengths perspective before working on empowerment would allow the patient to build tools of strength to utilize throughout each step of empowerment.

When exploring the application of empowerment theory on individuals with cancer, increasing self efficacy would be the focus on the patient’s ability to regulate events in their life (Bandura, 1982). A patient may not have any power in controlling their cancer diagnosis, however, they may have power to control how they are emotionally handling and processing in their daily life. Pinderhughes (1996) shares that this power plays an important part in human behavior and can be critical to ones’ mental health status. Developing a critical consciousness consists of the patient being able to identify with others with similar experiences, reduce their self blame for any past events and take responsibility towards attempting to solve future problems that may arise (Gutierrez, 2015). It may be helpful with skill building for patients with

cancer to take place in a group setting with peers of similar circumstances. There are various types of cancer support groups available for both patients and caregivers at most healthcare facilities and within communities, putting the empowerment theory into action. Patients are able to develop skills while working with others in a support group setting. Emotional support from others going through similar situations can be very empowering for patients. Both these connections solidify the involvement with similar others concept of the empowerment theory.

According to Jennings et al., 2006, the four components of empowerment include, “a welcoming and safe environment, meaningful participation and engagement, equitable power sharing between patient and provider, engagement in critical reflection on interpersonal and sociopolitical processes, participation in sociopolitical processes to effect change and integrated individual and community level empowerment” (41). The combination of strengths based perspective and empowerment together can be useful in the process of minimizing stress for patients with cancer.

### **Strengths Based Perspective**

In the 1980's, providers began applying the strengths based perspective into their practice. Up until this time, social work practice was predominantly focused on disorders, victimization, deficits, problems and abnormalities (Saleebey, 1996). This new vision of practice continues to require a conscious effort from providers yet today. Providers must be cognizant of client wholeness and aware of how helping organizations are often opposed to this lens. Practitioners have used this perspective with many different client groups, which include medical settings, youth at risk, elderly, schools and addictions (Saleebey, 1996). Like mindfulness practice, the strengths based perspective focuses on the provider and individual working together as a team. This perspective focuses on the therapist being able to assist the client in identifying

their own sources of strength utilizing a team approach (Guo & Tsui, 2010). Before the integration of the strengths based perspective, social work practice was entered around the provider as the expert, not having yet looked through this new lens onto client strengths. Today, the strengths based perspective continues to be taught in curriculum, practiced across the field and researched for continued evaluation.

The strengths based perspective focuses on one's hopes, values, capacities, possibilities, talents, visions and competencies (Saleebey, 1996). Mindfulness practice, like the strengths based perspective, aids individuals in tapping into their already established skills, knowledge, strength and drive, to work towards the patient's goals(s). These strengths can be useful tools while working through empowerment. According to Guo and Tsui (2010), in a time of adversity, one's strengths can make patients resilient. Individuals diagnosed with cancer tend to make the best of their situation with the resources available to them at that given time. Patients with cancer are faced with many obstacles, however, often times they are wanting to work towards accomplishing goals, developing commitments and values and finding membership within their communities (Saleeby, 1996). These components create a link between mindfulness, the strengths based perspective and empowerment theory.

### **Methods**

The goal of this systematic review is to look into the effectiveness of MBSR programs implemented by hospitals for patients with cancer. This systematic review is designed to gather and analyze data available regarding the effectiveness of mindfulness practice in decreasing depression or anxiety for oncology/hematology patients. The goal of a systematic review is to identify, analyze and evaluate studies on a particular topic without a bias (Uman, 2011). The use

of inclusion and exclusion criteria, combined with a data extraction process, assures appropriate articles are analyzed from those collected initially.

### **Inclusion Criteria**

A research protocol was designed to help sort through the articles used for this systematic review. All articles are quantitative studies published in the year 2000, or later. The time frame has been expanded to 15 years as a result of mindfulness practice being newly integrated into medical practice. Quantitative studies are used, as qualitative studies do not provide the information needed to measure the effectiveness of MBSR when working with patients with cancer due to being outcomes based and not subjective based. Only longitudinal studies are included in the review, due to being able to provide information on the effectiveness of MBSR on the same individuals over a period of time. MBSR was designed as an 8-week program, this was also considered in the inclusion criteria. All study subjects are patients with a cancer diagnosis, at least 18 years of age; both males and females are included in this study. Children are excluded from the study as children's development, coping and needs are different than adults. Both inpatient and outpatient settings are included in the study.

### **Search Strategy**

Electronic databases were used to search for the studies for this review. The databases included the University of St. Thomas' Summon Data Base, Psychinfo, Social Work Abstracts, SocINDEX and St. Catherine University's Academic Search Premier. The key words used for the databases include: *mindfulness, cancer, oncology, anxiety, depression, mindfulness based stress reduction, MBSR.*

### **Data Abstraction and Analysis**

Upon initial gathering of research, all articles that did not meet the inclusion criteria were dismissed. The data abstraction table below (Table 1), was used to organize article information. Each article was carefully examined, exploring the exact same inclusion criteria for each article to help sort through articles that were appropriate for this review. The information reviewed from each article included the study's sample size, treatment used within the study, the study's design, what the study measured (anxiety, depression, both), was there a comparison group and lastly, what were the findings of the study.

These remaining qualifying studies were then analyzed using the elements in Figure 1 below, to help prioritize past research. The Quality Rating Scale, found in Table 1, below, was used to score each article. A 3-point scale was used to thoroughly review each article, focusing on the article's sample size, treatment type, measurements and comparison group. The highest score an article could receive was a 10, the lowest score being a 0. An ideal article would have a sample size of 75+, utilizing MBSR as the treatment, measuring both depression and anxiety with a comparison group.

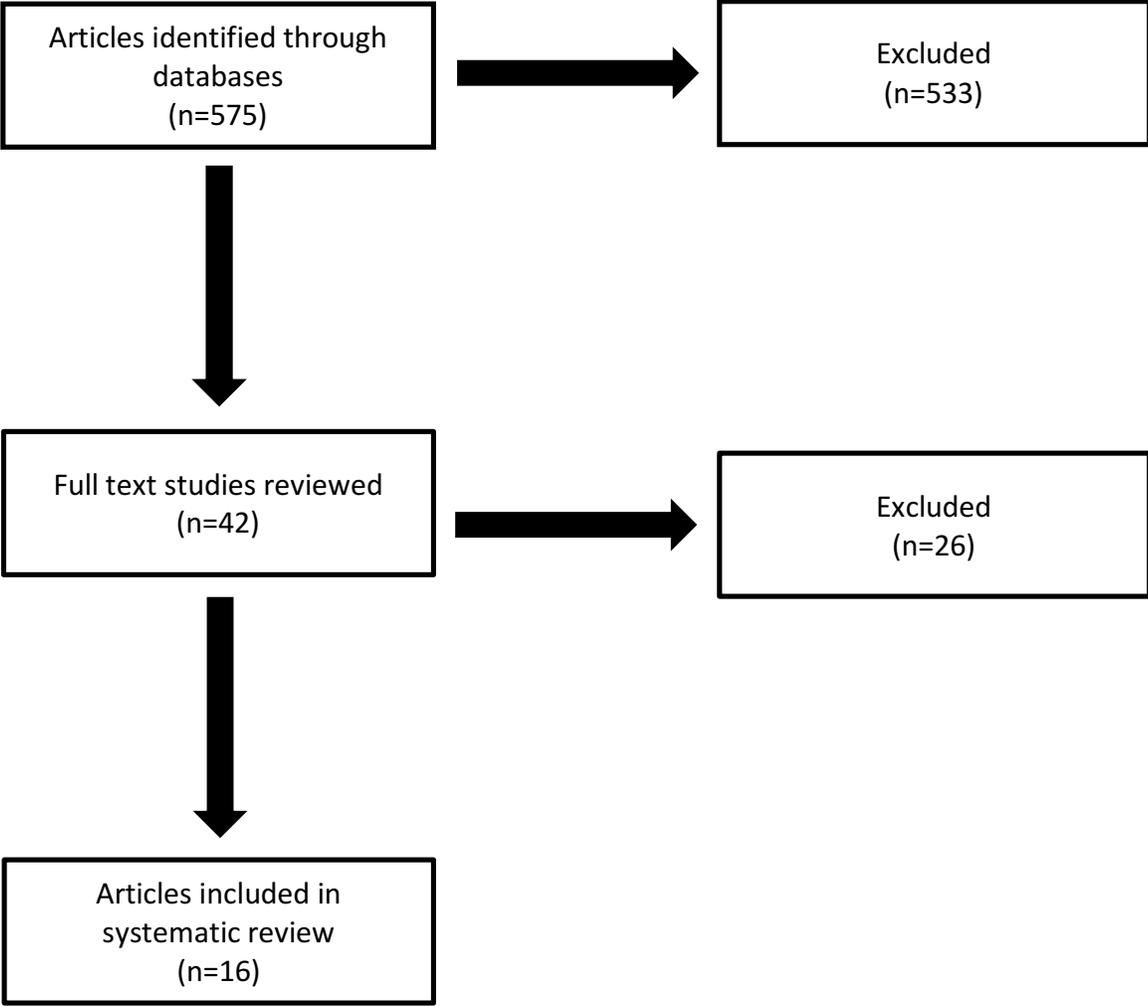
Upon the article findings, patterns were identified. I anticipated the articles to be organized in the following patterns: outpatient cancer patients, inpatient cancer patients, more prominent female cancers and more prominent male cancers. I have also identified themes within the patterns.

**Table 1: Quality Rating Scale**

Measure	Point Value			
	0 points	1 points	2 points	3 points
Sample Size	<25	25-50	51-75	75+
Treatment Type	Non MBSR	MBSR		
Measurement	Neither	Anxiety	Depression	Both
Comparison Group	None			Yes

### Strengths and Limitations

One significant limitation is the availability for diversity in the pre-existing research on the study of mindfulness practice when working with patients with cancer. Mindfulness practice is newer to the western medicine world, limiting the available research. This limits the amount of research available to analyze its efficacy while it continues to be integrated into the medical field. Another limitation is the sample demographics of the studies included in this systematic review. All of the articles included utilized a majority sample of female participants with breast cancer. Eight of the sixteen studies focused exclusively on female patients with breast cancer. Strengths include the amount of research available surrounding the subject of MBSR and general mindfulness practice. There is a need for continued research to be conducted, as mindfulness practice continues to grow in the social work field.



**Figure 1: Article Selection Process Flow Chart**

## Findings

### Themes

Common themes emerged throughout the data abstraction process. All sixteen studies were divided between the categories of post cancer treatment/cancer survivors or active cancer diagnosis. The three major themes that surfaced within these two categories were depression, anxiety and stress.

### Post Cancer Treatment/Cancer Survivors

Six of the sixteen studies focused their sample on patients who had completed cancer treatments, including radiation and chemotherapy, and were considered cancer survivors. Four of the six studies had a sample consisting of only females who had survived breast cancer. The sample sizes for this group of studies ranged from 19-229 participants. Following is a break down of the themes found amongst these six studies.

**Depression.** All six of the studies measured depression as part of their study. Three of the six studies used the Center for Epidemiological Studies Depression (CES-D) scale to measure the effects of MBSR on depression. The CES-D is a 20-item measure, utilizing a four-point scale to measure depressive symptoms over the previous week. The additional tools used to measure depression in the remaining three studies included: Hospital Anxiety and Depression Scale, PHQ-8 and POMS. Four of the six studies used randomly assigned comparison groups. These four studies averaged 9.25/10 on the quality rating scale. Two of the studies did not use comparison groups, giving them an average quality score of 5/10. Decreases in depression were reported at posttest follow up for these four studies. According to the Johns et al. (2014) study, depression outcomes were maintained up to the six month follow up.

**Anxiety.** Five of the six studies measured anxiety. Two of these studies utilized the State Trait Anxiety Inventory containing 20-items with Likert-type scales, measuring state and trait anxieties. The additional tools used to measure anxiety in the remaining three studies included: POMS, Questionnaire Generalized Anxiety Disorder Scale (GAD) and Hospital Anxiety and Depression Scale. All but one of the studies used randomly assigned control groups. The average quality rate of the five studies was 8.2/10. All five studies found MBSR to reduce anxiety in patients. Four of the studies identified statistically significant differences for reported levels of anxiety from baseline to follow up for the intervention group. Branstrom, Kvillemo and Moskowitz (2012), unable to report statistically significant differences, does share “noteworthy trends of greater reduction” in anxiety for the intervention group.

**Stress.** Four of the six studies included stress as a measure in their study. These four studies had an average quality rating of 7.25/10. All four of the studies measured anxiety utilizing the Perceived Stress Scale. This ten item scale looks at stress which has preceded over the past month. The Matousek and Dobkin (2010), and Lengacher et al. (2010) studies report statistically significant finding differences for reported stress. Although not statistically significant, the Branstrom et al. (2012) and Lengacher (2009) studies report large reductions in perceived stress from the control subjects.

**Table 2: Post Cancer Treatment/Cancer Survivors**

Study	Sample	Treatment	Design	Measures	Comparison Group Type	Findings	Quality Score
Branstom et al (2012)	71- female cancer survivors 1-male cancer survivor	MBSR	Randomized, wait-listed, controlled	Stress, depression, anxiety, post-traumatic stress symptoms, positive	Randomly assigned	Increase in mindfulness for intervention group at 6 months; no other differences	9

	98.6%-female  76%-breast cancer			states of mind, coping self-efficacy, mindfulness		between control and intervention groups.	
Hoffman et al (2012)	229-female cancer survivors  100%-female  100%-breast cancer	MBSR	Randomized, wait-listed, controlled trial	Anxiety, depression, mood disturbance, anger, vigor, fatigue, confusion	Randomly assigned	MBSR improved quality of life, mood, depression, anger, anxiety, confusion, fatigue, vigor and well-being more effectively than standard care for patients with breast cancer.	10
Johns et al (2014)	35-cancer survivors  94%-female  85.7%-breast cancer	MBSR	Randomized, wait-list control group	Fatigue interference, fatigue severity, vitality, disability, depression, anxiety, sleep disturbance	Randomly assigned	Improvements in fatigue severity, vitality, disability and anxiety, depression and sleep disturbance were apparent at 1 month post-interventions; all outcomes maintained at 6 months.	8
Lengacher et al (2009)	84-female cancer survivors  100%-female	MBSR	Randomized controlled	Depression, anxiety, perceived stress, fear of recurrence, optimism,	Randomly assigned	MBSR patients had significant decrease in levels of depression, anxiety, fear	10

	100%-breast cancer			social support, quality of life		of occurrence, increased energy and physical functioning @ 6 weeks	
Lengacher et al (2010)	19-female cancer patients  100%-female  100%-breast cancer	MBSR	Single-group, quasi-experimental, pretest-posttest	Fear of recurrence, perceived stress, anxiety, depression, optimism, social support, spirituality, physical symptoms, quality of life	NA	MBSR participants reported significant improvements in anxiety, depression, quality of life, perceived stress, fear of recurrence.	4
Matousek and Dobkin (2010)	59-female cancer survivors  100%-female  100%-breast cancer	MBSR	Cohort study	Stress, depression, medical symptoms, mindfulness, coping with illness, sense of coherence	NA	Significant reductions reported for stress, depression, medical symptoms; significant improvements reported for mindfulness, coping with illness, sense of coherence.	6

**Active Cancer Diagnosis**

Ten of the sixteen studies focused their sample on patients who have active cancer diagnoses. These studies included both inpatient and outpatient settings. These ten studies were then ranked using the quality rating scale found in Table 1, above. Four of the ten studies had a sample consisting of only females with a breast cancer diagnosis. The overall sample size for the ten studies ranged from 17-336. Below, please find a breakdown of the themes found within these ten studies.

**Depression.** Eight of the ten studies included depression as part of their study. Three of the studies utilized the Profile of Moods States to measure the effects MBSR had on symptoms of depression. Two studies utilized the Epidemiological Studies Depression Scale, another two studies utilized the Hospital Anxiety and Depression Scale and one study used the Beck Depression Inventory. Three of the ten studies had randomly assigned control groups. These three studies averaged 8.66/10 on the quality rating scale. The remaining seven studies averaged 5.71/10 on the quality rating scale. The studies of Speca et al. (2000), Kieviet-Stijnen et al. (2008), Fish et al. (2013), Garland et al. (2007) and Labelle et al. (2010) all report statistically significant decreases in reported symptoms of depression. Although decreases were reported, the studies of Henderson et al. (2012), Lengacher et al. (2012) and Degi and Szilagy (2013) did not report statistically significant findings for symptoms of depression.

**Anxiety.** Seven studies looked at anxiety in patients with active cancer diagnoses. Of the seven studies, two utilized the Hospital Anxiety and Depression scale, and two utilized the State-Trait Anxiety Inventory. Six of the seven studies report statistically significant findings in symptoms of anxiety for patients with active cancer diagnoses. Degi and Szilagy (2013) did not report statistically significant data. The remaining three used the Symptoms of Stress Inventory,

Beck Anxiety Inventory and POMS. Lengacher et al. (2012) found a link between the yoga practice of MBSR and a decrease in state anxiety. The same study also reports an association between sitting meditation and decreased state anxiety.

**Stress.** Four of the ten studies examined symptoms of stress. Among the studies the Danish Symptom Checklist 90-r, Symptoms of Stress Inventory (SOSI), single item 10-point scale and Perceived Stress Scale were used as measurement tools. These four studies had an average quality rating of 6.25/10. All four report findings of MBSR decreasing reported symptoms of stress following MBSR interventions. Wurtzen et al. (2015) found statistically significant reductions in reported levels in stress from baseline through 12-month follow up.

**Table 3: Active Cancer Diagnosis**

Study	Sample	Treatment	Design	Measures	Comparison Group Type	Findings	Quality Score
Deji and Szilagy (2013)	17- Romanian female patients with cancer  100%-female  100%-breast cancer	MBSR	Voluntary experimental group, Assigned control group	Anxiety, depression symptoms, coping mechanisms, quality of life	Assigned	Helped to reduce isolation of patients in experimental group. No significant decrease in depression, anxiety or improvements of coping mechanisms or quality of life.	5
Fish et al (2013)	26- patients with cancer  77%-female	MBCSM	Single- group, quasi- experimental	Psychological distress: anxiety and depression, quality of life	NA	MBCSM is effective in improving quality of life and spiritual well-being and reducing psychological distress:	4

	42%-breast cancer					anxiety and depression.	
Garland et al (2007)	104-patients with cancer  93.2%-female  54.5%-breast cancer	MBSR	Non-randomized	Anxiety, depression, anger, stress, mood disturbance	Voluntary	MBSR may be more helpful than HA in reducing depression, stress and anger and enhancing spirituality.	10
Henderson et al (2012)	172-female patients with cancer  100%-female  100%-breast cancer	MBSR	Randomized controlled	Quality of life, coping mechanisms, depression, anxiety, general distress, self-esteem, subjective social support, cancer-specific coping and emotional responses	Randomly assigned	MBSR appears to benefit patients above the usual care provided and indicates potential use as complimentary therapy in oncology.	10
Kieviet-Stijnen et al (2008)	47-patients with cancer  72%-female  40%-breast cancer	MBSR	No control group	Quality of life, joy in life, mood disturbances: depression, anger, vigor, fatigue, tension; meaning in life, physical symptoms	NA	Directly following training, patients reported better quality of life, increased joy in life, less tension, and decrease in physical symptoms, with an increase in these effects at 1 year follow	4

						up. At 1 year follow up, a decrease was reported in depression, vigor, anger and total mood disturbance.	
Labelle et al (2010)	77-female patients with cancer  100%-female  76.6%-breast cancer	MBSR	Waitlist-controlled	Depression, present-centered attention-awareness, neurotic self-attentiveness	Matched	Significant improvements for depressive symptoms and mindfulness for MBSR participants; decrease on rumination scores.	9
Lengacher et al (2012)	26 patients with cancer and 26 family caregivers of these patients  69.2%-female  30.8%-breast cancer	MBSR	One-group, quasi-experimental, pre-post test	Perceived stress, depression, anxiety, physical symptoms, psychological symptoms, quality of life, cortisol and IL-6 levels	NA	MBSR patients showed improvements in stress and anxiety @ 6 weeks, caregivers reported improvements in quality of life and psychological symptoms but were not statistically significant	5
Specia et al (2000)	90-cancer patients  81%-female  43%-breast cancer	Modeled after MBSR	Randomized, wait-list controlled	Mood disturbance: depression, anxiety, anger, confusion, vigor, stress; physical, psychological and	Randomly assigned	Treatment group had significant decreases in mood disturbances: depression, anxiety, anger, confusion, vigor, stress.	9

				behavioral responses to stress			
Tacon et al (2004)	27 - female patients with cancer  100%-female  100%-breast cancer	MBSR	No control group	Stress, mental adjustment to cancer, state stress, anxiety, health locus of control	NA	Significant decrease at pre-to-post in stress, state anxiety, changes in mental adjustment to cancer and health locus of control in MBSR participants	3
Wurtzen et al (2015)	336- Danish female patients with cancer  100%-female  100%-breast cancer	MBSR	Randomized controlled trial	Somatic symptoms, distress, mindfulness skills and spiritual wellbeing	Randomly assigned	Decrease of somatic symptoms found post and @ 6 months not @ 12 months; Significant effect on distress at all points; Significant effect on mindfulness @ 6 & 12 months; no effect for spiritual wellbeing	7

**MBSR and Breast Cancer**

According to the Centers of Disease Control and Prevention website (2015), more than 200,000 women are diagnosed with breast cancer every year. Additionally, 40,000 women lose their life annually to the disease. All of the studies used in this systematic review include a majority sample of female breast cancer patients. Of the sixteen total studies, eight of their samples consist of all female participants with an active breast cancer diagnosis or are breast cancer survivors. This information is very beneficial to the specialized area of breast cancer, however, this finding also supports the need for additional research. It is imperative for future research to include a diverse sample of cancer diagnoses in combination with more balanced gender representation. Understanding the effects of mindfulness on men is just as important as understanding its effects on woman. While men and women cope and process differently, understanding the effects of mindfulness for both genders will help providers to better support, advocate and empower their patients.

**Discussion**

This systematic review aimed to examine current studies on the effectiveness of MBSR for oncology/hematology patients. The studies included in this systematic review find MBSR to aid patients and cancer survivors in decreasing their symptoms of anxiety, depression and stress. Some of the articles included at length post intervention follow-up while some included only minimal time frames between intervention and post follow-up. Additional research is required to understand the length of ongoing effectiveness MBSR can have on symptoms of depression, anxiety and stress for cancer patients and cancer survivors.

### **Implications for Research**

The overall quality rating scale score for the sixteen studies was 7.06/10. These studies provided a moderate quality range of studies for this systematic review. Control group presence in all studies would have increased the overall quality rating. Control groups are essential in advocating research findings, while also aiding in the future program implementation process.

The research findings overall show that MBSR has a greater effect on psychological variables versus somatic outcome for those affected by cancer (Kieviet et al., 2008). There was a high rate of retention for participants in the studies included for this systematic review. The retention rate can be examined from different angles. The research findings might indicate that the success of MBSR is to blame for the high retention rate for participants. Participants may start to experience effects of the intervention early on in the 8-week course, helping to encourage them to adhere to the program. Lengacher et al. (2012), concludes that offering the MBSR intervention to both patients and caregivers at the same time may increase accountability. Additional research is required to understand the effects MBSR has for caregivers.

### **Implications for Practice**

Lengacher et al. (2012), also concluded that offering telehealth technology MBSR programming to patients with physical limitations, or to patients with cancer treatment scheduling conflicts, may also increase accountability. Offering MBSR through telehealth technology would also reach many other patients who otherwise might not have the opportunity for intervention. Although used in eastern medicine for generations, mindfulness practice is a new addition into our westernized medical care. Medical, clinical level social workers, can aid cancer patients in managing their mental health needs, as well as helping to identify any bio-psycho-social-spiritual needs that may arise during their medical care, as part of an integrated

health care team. MBSR can be a very powerful tool in the medical setting for not only oncology patients but all patients. After reviewing the studies included in this review, the research shows MBSR can benefit patients with active cancer diagnoses along with survivors. This information can be used in the medical settings when designing an MBSR program.

### **Implications for Policy**

The most beneficial programming would be offered to patients during their treatment and again as a cancer survivor. There are benefits for patients being offered MBSR intervention in both inpatient and outpatient settings. Wurtzen et al. (2015), found that home practice beyond intervention was required of patients to maintain the effects of the MBSR program. This information also solidifies the need for ongoing mindfulness support for patients throughout their medical journey. Patients throughout the world, no matter their diagnosis, could benefit from mindfulness practice being part of standard care at medical facilities. Additional research and education at all levels is needed to support this need with hopes of continued implementation.

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*Acta Oncologica*, 54, 712-719. doi: 10.3109/0284186X/2014.997371