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The Sustained Effects of Mindfulness-Based Interventions on Distress Symptoms in Female Breast Cancer Patients

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This is to certify that the doctoral dissertation by

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Walden University
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Abstract

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by

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MSW, University of South Carolina, 2005

BSW South Carolina State University, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Social Work

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Abstract

The purpose of this study was to illuminate the magnitude and prevalence of distress symptoms among female breast cancer patients and help identify best social work practices for treating distress symptoms in cancer patients. Using the social cognitive model of restorative well-being, the sustained effects of mindfulness-based interventions on distress symptoms female breast cancer patients experienced were examined in this study. Grounded in social cognitive theory, this model facilitated understanding of the recovery of well-being after an emotional setback. This quantitative experimental study included analysis of secondary data with pre- and post testing with multiple follow ups to measure the sustained effects, if any, of the intervention provided. The study addressed two research questions about the effect and persistent effect of mindfulness-based interventions on distress symptoms, such as stress and depression, among women with breast cancer following treatment. Data were analyzed using repeated measures ANOVA. Three measurement points in the analytical design included baseline, completion of the intervention, and 3-month follow up. Persistence of intervention effects (i.e., differences in measures between completion of the intervention and 3-month follow up) were also examined. Results indicated that the studied intervention was not effective in reducing depression and stress levels in women diagnosed with breast cancer. These results could be contributed to the short length of the intervention examined or possibly lack of continued use of mindfulness practices by participants afterwards. More research in this area is needed to determine which variations of mindfulness based interventions are most effective and appropriate for breast cancer patients.

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Dedication

It is with deep gratitude and warm regard that I dedicate this work to my mother, Selinda Drummond, my biggest fan and supporter. Thank you for all that you do for me and the kids. It was you who led me to the field of social work, I am forever grateful. To my baby sister, Bree Alexander, who has always told me that I was her inspiration and mentor, when in fact, she was mine. Thank you for your assistance, support, and love. I couldn’t have done this without you.

To my children Naomi, Noah, and Cameron, because without you, I would have given up on the pursuit of this degree long ago. Thank you, for pushing me to want more, so that I could do and provide more for you. To my grandparents, Mary Ann and Sherman Drummond, who helped raise and guide me. Thank you for all that you do.

To my father, Charles Alexander, who has stepped in more than a few times to save the day, thank you Daddy. To my sisters by choice, Cassandra Carter Rodgers and Casandra Johnson, Thank you for your support, for babysitting, for acting as traveling nannies, for believing in and supporting me over the last 27 years, and for filling in where others fell short, I love you both. Last but not least, I’d like to thank “SQ”. You arrived in my life as I was nearing the end of this journey and ready to quit, but you encouraged me to continue, offered your support, and helped me keep perspective. Thank you, for your continued prayers, friendship, and love. I am grateful to have you in my life.

Acknowledgments

I gratefully acknowledge the assistance, help, and effort of my committee, Dr. Lindy Lewis and Dr. Sean Hogan. Thank you both, for sticking with me through this journey. For taking time to instruct, guide and teach me. For getting me back on course when life pulled me away, I am forever grateful.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

When referring to oncology populations, distress refers to a combination of anxiety and depressive symptoms (National Cancer Care Network [NCCN], 2017). The field of medicine has progressed over the last decade to incorporate a more holistic perspective (Huljev & Pandak, 2016). Many medical providers have adopted an integrated care approach (Huljev & Pandak, 2016) and acknowledged the impact of mental health needs on patient outcomes. Researchers have indicated that patients suffering from chronic long-term illnesses may benefit from having these mental health needs addressed (Bodenheimer et al., 2002). Despite recent findings indicating the value of meeting these mental health concerns within medical settings, the practice has not been adopted as a national standard of care. Studies, such as the current one, have the potential to offer additional findings to support addressing the mental health needs of patients with chronic illnesses (NCCN, 2017). More specifically, a study was needed to help illuminate the magnitude and prevalence of distress symptoms among breast cancer patients and fill the gap in the literature by identifying best social work practices for treating distress symptoms in cancer patients.

I provide a formal definition for distress and other key terms in this chapter. A foundation and background of this phenomena are also presented. Using statistics, I show the magnitude of the subject and explore who may be most affected, while providing an understanding of why this topic is so important. I also inform readers of what national organizations, such as the NCCN, American Cancer Society, and Commission on Cancer, have said about the issue. This chapter includes a background of interventions that have been applied to the phenomena as well as the purpose, significance, nature of the study, research questions, definitions, and the conceptual model that guided the study. The chapter also includes a discussion of the assumptions, scope and delimitations, limitations, and significance before concluding with a summary.

Background

Oncology social workers are challenged to address the distress that patients with cancer experience. Cancer is one of the most emotionally distressing diagnoses in the medical field (Barker-Glenn et al., 2011; NCCN, 2017; NCCS, 2017; Zhang et al., 2016). While distress symptoms such as anxiety and depression are prevalent among this patient population, less than 10% of cancer patients are referred for intervention (Buchmann et al., 2013). Researchers have indicated that suicide is more than 4 times higher among people with cancer, specifically noting head and neck cancers (Buchmann et al., 2013). Documented levels of distress within this group raises concern that intervention, evaluation, and management of symptoms need to be more efficient and specific to the population (Buchmann et al., 2013).

Breast cancer is the most diagnosed cancer and ranked the most common cause of death in women throughout the world (Zhang et al., 2016). In 2015, the Centers for Disease Control and Prevention reported that 1,000,721 women in the United States were diagnosed with breast cancer; of this number, 41,523 died of the disease (ACS, 2015). The ACS (2015) estimated that approximately 252,710 additional cases of breast cancer would be diagnosed, with an estimated 40,610 women dying of the disease, by the end of 2017.

Zhang et al. (2016) reported that the 5-year survival rate for women diagnosed with breast cancer, at all stages, had reached 85%. The shift in survival rate increased the number of women dealing with the aftermath of the disease/diagnosis. The ACS (2017) reported that there were 3.5 million breast cancer survivors in the United States alone as of January 2016. For this reason, Würtzen et al. (2013) described the disease as chronic, and because of increased longevity, the authors called for psychosocial interventions to prepare patients to confront the long-term effects of the disease. In this context, Baker-Glenn et al. (2011) concluded that cancer patients continue to have psychosocial needs that are unmet (see also Absolom et al., 2011). Baker-Glenn et al. found that 48% of cancer patients reported some type of distress, and two thirds of those patients reported an unmet psychosocial need despite intervention.

As a result, the American College of Surgeons Committee on Cancer (2016) implemented an accreditation standard requiring that all accredited community cancer programs screen and monitor distress symptoms in cancer patients. While the standard acknowledges the need to capture and address psychosocial distress symptoms in cancer patients, it does not specify best practices for intervening once symptoms have been identified. Faller et al. (2013) informed that the benefits of psycho-oncologic interventions for patients is unclear and that 35%–38% of all persons diagnosed with cancer are at risk to experience significant emotional distress, especially patients with breast cancer.

Numerous psychosocial treatment interventions have been used to treat distress symptoms in breast cancer patients. The documented interventions include cognitive behavior therapy (CBT), group and individual counseling, mindfulness-based interventions (MBI), and positive psychology interventions (Jassim et al., 2015; Uitterhoeve et al., 2004). Among positive psychology interventions, those acknowledged include visualization, relaxation exercise, guided imagery, self-affirmation writing, and spiritual interventions (Casella-Grau et al., 2014). Researchers have indicated that these interventions have a positive effect on distress symptoms and overall mood in breast cancer patients. In particular, mindfulness-based stress reduction (MBSR), an MBI, is often used to treat distress among women with breast cancer and cancer patients in general (Andersen et al. 2014; Baker-Glenn et al., 2011; Baniasadi & Jamshidfar, 2014; Carlson, 2016; Witek Janusek et al., 2008).

Researchers have indicated that MBIs, on average, have had a promising and positive effect of the psychological health of breast cancer patients (Cramer et al., 2012; Zainal et al., 2013; Zhang et al., 2016). Breast cancer patients have responded to interventions with reduced levels of stress, depression, anxiety, and fear of recurrence (Cramer et al., 2012; Zainal et al., 2013). However, Zhang et al. (2016) argued that, while there have been some positive results with MBIs and the treatment of distress in breast cancer patients, a significant effect has not been indicated for pain, spirituality, or sleep, which are also noted symptoms of distress for breast cancer patients (Commission on Cancer, 2012). In addition to this, Rustøen et al. (2010) suggested that positive results are not maintained post intervention.

MBSR is the most documented MBI used with breast cancer patients and cancer patients in general. Other interventions include CBT, positive psychology, and solutionfocused therapies (Cramer et al., 2012; Csellas-Gray et al., 2014; Uitterhoeve et al., 2004; Witek Janusek et al., 2008; Zainal et al., 2013; Zhang et al., 2016). All interventions appeared to have a positive effect on reducing distress symptoms. There does not appear to be a significant difference in outcomes based on the intervention used.

Most research on MBI and breast cancer patients has been conducted primarily with adult, White females who are 18 years of age or older with a diagnosis of breast cancer in Stages I, II, or III (Cramer et al., 2012; Csellas-Gray et al., 2014; Uitterhoeve et al., 2004; Zainal et al., 2012; Zhang et al., 2016). While MBI has shown positive results with this particular group of breast cancer patients, more research is needed to determine its effects in use with other populations of women over a sustained period of time (Cramer et al., 2012; Csellas-Gray et al., 2014; Uitterhoeve et al., 2004; Zainal et al., 2013; Zhang et al., 2016).

Problem Statement

Previous research on MBIs and their treatment of the psychosocial needs of cancer patients has illuminated the overall influence of intervention, the variations of MBI that seem to work best, and the populations with whom they seem to be most effective. Even so, additional research is needed to identify MBI as a best practice in addressing distress among women with breast cancer, especially regarding stress and depression over time.

To date, MBI studies directed at breast cancer lack diversity, with researchers focusing on comparable groups of White females aged 18 years and older (Bower et al., 2014; Liao et al., 2015; Reich et al., 2016; Romeo et al., 2017). These studies also limited the observed effects of treatment because the majority of them extend only 3 months or less, which did not allow researchers to conclude that the indicated intervention had sustainable effects over longer periods of time (Dobos et al., 2015; Lengacher et al., 2014; Zhang et al., 2016).

Purpose

The purpose of this previously conducted, repeated measures, randomized clinical trial was to examine the effect of intervention on distress. I used secondary data analysis and a repeated measures within group design for all subjects across three data points to explore the sustained effects of MBI (i.e., the independent variable) on distress symptoms (i.e., depression and stress) among female breast cancer patients at Stages 0–III, as the American Joint Committee of Cancer (AJCC) defined, over a period of 3 months. Measuring the level of distress associated with a diagnosis of breast cancer may further illuminate the consequences and implications of this phenomenon in the identified patient population. The study may also add to the body of existing knowledge by showing the sustained effects of MBI on distress symptoms, specifically depression and stress, in female breast cancer patients ages 18 years and older.

Research Questions and Hypotheses

This study was a secondary data analysis of an experimental study. Specifically, the study design allowed me to determine the sustained effect of MBI (i.e., the independent variable) on distress symptoms (operationally defined as depression and stress) among female breast cancer patients. With this purpose in mind, the following research questions and corresponding hypotheses guided the study:

RQ1: What is the effect of MBI on depression among women with breast cancer at different time points following treatment?

H_a1: $\mu1 \neq \mu2 \neq \mu3$ There will be differences in depression scores between baseline and follow-up measures among patients who receive MBI.

H_01: $\mu1 = \mu2 = \mu3$ There will be no differences in depression scores between baseline and follow-up measures among patients who receive MBI.

RQ2: What is the effect of MBI on stress among women with breast cancer at different time points following treatment?

H_a2: $\mu1 \neq \mu2 \neq \mu3$ There will be differences in stress scores between baseline and follow-up measures among patients who receive MBI.

H_02: $\mu1 = \mu2 = \mu3$ There will be no differences in stress scores between baseline and follow-up measures among patients who receive MBI.

Conceptual Model

I used the social cognitive model of restorative well-being (Hoffman et al., 2013) as the conceptual model in this study. The model was designed to understand the recovery of well-being after an emotional setback (Hoffman et al., 2013). Grounded in social cognitive theory (SCT), the model allowed for incorporating multiple factors linked to emotional recovery and coping (Hoffman et al., 2013). The model focused on psychosocial adjustment, making its application to this study appropriate.

Hoffman et al. (2013) proposed that external factors or events can destabilize well-being, which may include coping appraisal/strategies, problematic events/internal states, and problem-related coping efficacy. Another proposition in the model is that personality and affective dispositions influence one's sense of well-being. In applying this model to the breast cancer trajectory, pinpointing destabilization may be difficult due to the inundation of possible problematic events that may occur after diagnosis (Hoffman et al., 2013). Given these propositions, an intervention, such as cultivating mindfulness in cancer survivors, which is an MBI, allows cancer patients to stabilize within the context of treatments and could enhance their well-being and mental health symptomatology.

The social cognitive model of restorative well-being allows researchers to focus on the relatedness of personality, affect, and social cognition (Hoffman et al., 2013; Lent, 2004). MBIs are typically used to help further psychological insights and aide in emotional healing over time. MBI techniques focus on relieving symptoms of distress and mental health concerns, including anxiety and depression, while fostering a spirit of acceptance to embrace negative thoughts or life changes, making the social cognitive model of restorative well-being suitable for this study.

Nature of the Study

In this secondary analysis, the dependent variables were depression and stress symptoms in female breast cancer patients, as measured by the Center for Epidemiological Studies Depression Scale (CES-D 10) and Perceived Stress Scale (PSS). The independent variable in this study was MBI (i.e., MBI treatment versus no treatment). I used secondary data analysis to examine changes to depression and stress outcomes within the experimental and control groups. Previous research has indicated that longitudinal designs are effective for attaining knowledge regarding the effects of interventions and further development of clinical psychology interventions (Biglan et al., 2000). I obtained secondary data from a Cancer Institute in South Carolina. The original study included data from participants at three time points: baseline, 6-week post assessment, and 3-month follow-up assessment. Participants in the original study were volunteers recruited from the Cancer Institue and were randomized into an MBI intervention group or a breathing exercise control group. The researchers in the previous study collected data using the CES-D 10 and PSS and self-administered questionnaires to detect the presence and severity of depression and stress. I used IBM Statistical Package for Social Science 25 software to analyze the data in the present study.

Definitions

I use the following terms and definitions in this study:

Anxiety: An emotion characterized by worried thoughts, feelings of tension, and frequent intrusive thoughts and concerns (American Psychiatric Association [APA], 2013).

Breast cancer patients: For the purposes of this study, adult females aged 18 to 60 years old, who were diagnosed with Stages 0–III breast cancer, and who were not currently receiving curative treatment for a cancer diagnosis.

Cancer survivor: Any individual diagnosed with a cancer from the time of initial diagnosis until their death (National Coalition for Cancer Survivorship, 2016).

Depression: A mood disorder that presents with symptoms that negatively affect how individuals think, feel, and behave. Depression may affect daily functioning such as sleep and appetite patterns. Symptoms typically last 2 weeks or more (APA, 2013).

Distress: A multifactorial, unpleasant emotional experience of psychological (i.e., cognitive, behavioral, and/or emotional), social, and/or spiritual nature that may interfere with the ability to cope with cancer, its physical symptoms, and its treatment (National Comprehensive Cancer Network, 2017).

Mindfulness: The refinement of moment-by-moment consciousness of the present situation in an open and nonjudgmental manner (Tamagawa et al., 2013). Mindfulness refers to the allowance of thoughts, feelings, and emotions as they arise without focusing on meaning or reacting (Shapiro & Carlson, 2009, as cited in Tamagawa et al., 2013).

MBI: An extensive range of meditation practices combined with psychological interventions that are linked by the concept of mindfulness (Chiesa & Malinowski, 2011).

Serious mental illness: Defined by federal regulation as a serious mental illness that affects adults 18 years old or older who presently or at any time in the past year have had a diagnosable mental, behavioral, or emotional disorder of sufficient interval to meet diagnostic criteria specified within *Diagnostic and Statistical Manual of Mental Disorder,*, which has resulted in serious functional impairment that substantially interferes with or limits one or more major life activities (Substance Abuse and Mental Health Services Administration, 2013).

Stress: A state of emotional or mental strain caused by adverse situations and circumstances (APA, 2016).

Assumptions

A major assumption of this study was based on the data being secondary. I had no control over how the data were originally collected, so I had to assume that they were collected using sound and reliable methods. Additionally, based on findings of previous studies, another assumption was that the short-term effects of MBI intervention were positive. A third assumption was that external factors in the lives of individual women with breast cancer may have impeded the progress of the whole group. I made this assumption based on the commonality formed in most therapeutic group settings. For example, when a group member experiences a setback, all group members may experience that sentiment. Breast cancer patients are at higher risk for getting another kind of breast cancer or developing other types of cancer (ACS, 2016). Last, I assumed that the antecedents to distress would not vary so considerably as to distort the comparability of pre- and posttest measures between the experimental and control groups.

Scope and Delimitations

The study focused on women diagnosed with breast cancer, primarily because women are diagnosed with breast cancer more frequently than men. In addition, the participants were limited to those oncology patients who had completed medical interventions/treatment for their diagnosis and who were in distress based on standardized screening and self-report. Research has shown that patients undergoing treatment for cancer are likely to experience some psychological and emotional distress (Zainal et al., 2013). Additionally, findings from previous research indicated that emotional distress in cancer patients increases after medical intervention and separation from the oncology team as patients begin to fear recurrence (Lengacher et al., 2014).

Limitations

I focused this study specifically on female breast cancer patients who lived or had been treated in the state of South Carolina. Because of this, generalizability of the findings to other cancer diagnosis or geographical areas may be limited. Zabora et al. (2001) stated that cancer patients are not a homogeneous group and called the concept of a universal psychosocial treatment “erroneous” (p. 26). In addition, the results are not generalizable to men who can also be diagnosed with breast cancer.

Significance

The findings of this study may have significance for policymakers, practitioners, and researchers. The findings of this study may help illuminate the magnitude and prevalence of distress symptoms among breast cancer patients as well as help to identify best social work practices for treating distress symptoms in cancer patients. As such, the findings may have implications for policies directing funding for MBI interventions as best social work practices to support women with breast cancer. However, the findings may suggest that applying a universal treatment specific only to depression and anxiety without the consideration of outlying factors, such as long-term or terminal medical conditions, is unjust and leads to fragmented care. Thus, policy may be warranted that allows for more eclectic social work practices.

The findings may also have specific significance for practitioners and especially oncology social workers. This study was unique in that it addressed the under researched area of cancer-specific treatments to manage distress symptoms over a 6-month time period, which may provide other investigators with insight into lasting effects of MBI intervention. Insights from this study may help inform practice by providing physicians, specifically oncologists; mental health clinicians; and oncology social workers a broader perspective when treating cancer patients. Such a perspective may help promote the treatment of the whole person to improve cancer patients' quality of life. Papathanasiou et al. (2013) noted that just because a disease has been treated physically, in the here and now, there is no guarantee of long-term rehabilitation for the patient.

This study findings may also have significance for researchers interested in addressing distress among women with breast cancer. Long-term, positive findings may influence researchers to replicate this study with similar populations of women and with populations of women who are members of ethnic minority groups. By comparison, qualitative studies may be warranted to determine the external factors that contribute to less positive results for particular women. In other words, it may be valuable to identify which factors negatively impact MBI.

In addition to implications for policy, practice, and research, the findings of the study may have implications for positive social change. Medical treatments of illness have traditionally focused on healing or curing physical ailments and symptoms. Papathanasiou et al. (2013) called for a more definitive treatment of disease, one that effectively included treatment of mental and physical manifestations of diseases. It is within this realm that the potential for social change exists. Understanding how to improve the quality of the patient's life by treating the whole person has the potential to affect the practice patterns of oncology practitioners, and in turn, bring further validation to the need to address the emotional aspects of medical disease. In addition, the findings from the present study may also positively influence how clinical social workers in oncology departments of hospitals are viewed, primarily because they will be able to validate their roles in the eyes of medical personnel, such as physicians and nurses.

Summary

In this chapter, I have provided an overview of the study. I included a discussion of the background and significance of the study, giving a detailed glimpse into distress as it presents in cancer patients. Researchers have acknowledged that 48% of cancer patients report some form of distress and that two thirds of this population report unmet psychosocial needs despite interventions (Absolom et al., 2011; Baker-Glenn et al., 2011). These numbers indicate that further research efforts are needed in this area. Accordingly, I designed this study to examine how interventions, specifically MBIs, impact distress symptoms in female breast cancer patients. I presented an introduction to the social cognitive model of restorative well-being as a framework to shape understanding of how using MBIs may have a positive impact on the distress symptoms depression and stress. I also designed the study to examine the sustained effects of intervention because positive outcomes of previous studies have not been sustained post intervention (see Rustøen et al., 2010).

I will provide an in-depth look at the foundation for the conceptual framework relative to the variables of the study in Chapter 2. I will also provide an in-depth discussion of the existing literature, providing insight into what is known about MBIs, the variations of MBIs that are most effective, and the populations with whom the interventions work best.

Chapter 2: Literature Review

The purpose of this secondary analysis was to explore the sustained effects of MBI on distress symptoms among female breast cancer patients with Stages 0–III, as defined by the AJCC, over a period of 3 months. Previous MBI studies on breast cancer lacked diverse populations, with researchers focusing on comparable groups of White females ages 18 years or older (Fernandes-Taylor et al., 2015; Hoffman et al., 2012; Romeo et al., 2017). These studies also limited the observed effects of treatment because most studies extended only 3 months or fewer (Baniasadi & Jamshidifar, 2014; Dobos et al., 2015; Lengacher et al., 2014), which did not allow researchers to conclude that the intervention had sustainable effects over longer periods. Information from this study may add to the body of existing knowledge related to the sustained effects of MBI on distress symptoms, specifically depression and stress, within a diverse population of female breast cancer patients aged 18 years or older.

In this chapter, I provide a detailed look at the foundation for the conceptual framework relative to the variables of the study. Psychosocial interventions and support for cancer patients are discussed before I delve into an examination of what is already known about MBIs and their many variations. The chapter is broken into sections to highlight the intervention as applied to specific populations and length of study as well as to demonstrate the lack of studies providing data on the sustained effects of MBIs.

Literature Search Strategy

I conducted a comprehensive online search to locate material for this literature review. I accessed the following databases and search tools through Walden University's online library portal: PsycINFO, PubMed, EBSCO, SAGE, Academic Search Premier, Academic Search Elite, and Google Scholar. Search terms included the following key terms and combination of terms: *mindfulness*, *mindfulness-based intervention*, *stress reduction*, *breast cancer*, *oncology*, *distress symptoms*, *depression*, *anxiety*, *psychosocial adjustment*, and *fear of recurrence*. To obtain a current sense of research on MBI, breast cancer, and distress symptoms, I gave preference to studies published within 5 years of anticipated completion of this study. I also gathered background and contextual information from the websites of the American Society for Clinical Oncology (ASCO), the CDC, and the APA; however, literature for analysis and synthesis included only peer-reviewed articles and studies.

Conceptual Framework

I selected the social cognitive model of restorative well-being as the framework for this study because it focuses on the emotional and psychological well-being of individuals who experience emotional setbacks due to disease or trauma. Specifically, the model was designed to allow researchers to understand and explain how individuals recover a sense of well-being after emotional setbacks (Hoffman et al., 2013; Lent, 2007). Because restorative well-being is grounded in SCT, it allows for incorporation of multiple factors linked to emotional recovery and coping (Hoffman et al., 2013).

SCT holds that individuals learn by observing others and forming beliefs about what they have observed (Lent, 2007). In this regard, Bandura (2004) is credited with expanding the theory as it is interpreted today. Theoretical concepts of SCT include modeling, self-efficacy, and outcome expectations. Additionally, according to Lent

(2004, 2007), three variables of SCT linked to well-being include: (a) beliefs regarding personal control, (b) outcome expectancies, and (c) goal mechanisms (Hoffman et al., 2013).

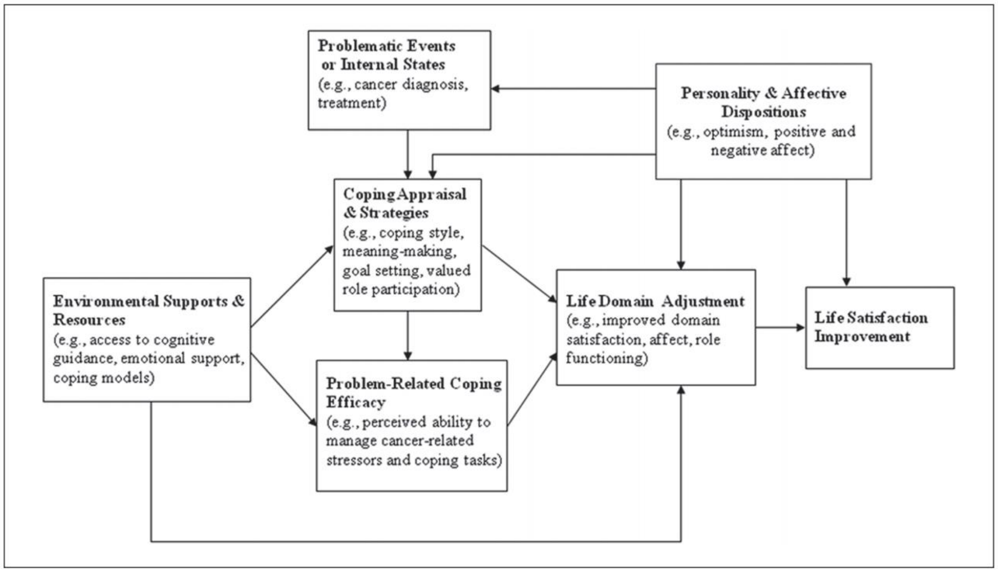
Within the social cognitive model of restorative well-being, self-efficacy translates to beliefs regarding personal control or the appraisal of coping strategies, while goal mechanisms refer to possible environmental supports and resources as well as the role of personality and affective dispositions (Hoffman et al., 2013; Lent, 2007). According to SCT, well-being involves a combination of an individual's subjective well-being and psychological well-being (Hoffman et al., 2013; Lent, 2004, 2007). While subjective well-being is composed of life satisfaction, the presence of positive affect, and absence of negative affect, psychological well-being emphasizes personal qualities, such as positive relations with others and self-acceptance (Hoffman et al., 2013; Lent, 2004, 2007).

Researchers have recognized the restorative well-being model for its application to understanding how individuals cope with traumatic experiences and chronic illnesses, such as cancer (Benight & Bandura, 2004; Hoffman et al., 2013; Lent, 2004). Many cancer patients survive diagnosis but must deal with the aftermath of the disease, including the physical, psychosocial, and economic challenges (Hoffman et al., 2013; Lent, 2004, 2007). However, because cancer is often a life-threatening diagnosis, restoration of well-being is necessary for patients to stabilize their lives in the curative stage of treatment and beyond (Hoffman et al., 2013).

There is some question about the means by which an individual can restore well-being during and after curative treatment for cancer, especially breast cancer. The best means of restoring well-being among women who are receiving or have received curative treatment for breast cancer might be one that allows them to change their beliefs about expectations of life after breast cancer (see Figure 1). One such means that has support in practice in the short term is participation in MBIs that seek to help women in the curative stages of breast cancer and beyond. These MBIs may reduce distress, which may include depression and anxiety, and draw individuals' attention to the internal and external experiences occurring in the present moment (Casellas-Gray et al., 2014; Cramer et al., 2012; Uitterhoeve et al. 2004; Zainal et al., 2012; Zhang et al., 2016).

Figure 1

A Model of Restorative Well-Being.



Note. Adapted from "A social cognitive perspective on coping with cancer theory, research, and Intervention," by M.A. Hoffman, R.W. Lent, and T. L. Raque-Bogdan, 2013, The Counseling Psychologist, 41(2), 240–267. (https://doi.org/10.1177/0011000012461378). Reprinted with permission

Cancer and Distress Symptoms

Researchers have indicated that standard evidenced-based treatments used for depression and anxiety are appropriate when treating distress; however, more distress-focused intervention trials are needed (Carlson et al., 2012). Researchers showed that distress in cancer patients is not a new topic. Zabora et al. (2001) recognized the need to identify high risk patients and provide early intervention. Zabora et al. linked distress to a decreased quality of life and increased health care costs. In addition to this, they documented how the presence of elevated distress symptoms in oncology patients may decrease outcomes of cancer therapies.

Liao et al. (2015) conducted a longitudinal study to examine changes in symptoms of distress and factors predicting these changes in breast cancer patients over a period of 4 months. Variables for the study included anxiety, symptom distress, and social support outcome measures. A total of 97 female breast cancer patients participated in the study and completed measures after diagnosis at 1-, 2-, and 4-month markers. The investigators measured variables with the following assessment tools: State-Trait Anxiety Inventory, Symptom Distress Scale-Modified for Breast Cancer, and the Social Support Scale-Modified. The findings indicated that participants displayed mild symptoms of distress during treatment, which increased from diagnosis to treatment and peaked at the 4-month marker. The researchers noted that distress appeared linked to anxiety, health professional support, and time since cancer diagnosis. The research team urged further investigation of interventions for symptom management, psychological consultation, and problem-solving, identifying the need for such as critical.

Liao et al.'s (2015) findings illustrated the need for further research addressing distress in cancer patients, specifically in breast cancer patients. Limitations of Liao et al.'s study included lack of generalization due to recruitment from a single site, small sample size, and differences in treatment modalities. However, Liao et al. concluded that patients should receive social support and problem-solving skills to address distress from diagnosis through treatment. Liao et al. also argued that some physical manifestations related to the disease, such as insomnia, poor appetite, fatigue, and inability to concentrate, actually derived from distress, suggesting that addressing distress may eliminate or lessen some physical ailments in cancer populations.

Vin-Raviv et al. (2015) conducted a cross-sectional study of hospital inpatient admissions; the purpose of the study was to document the prevalence of depression and anxiety disorders and their association with mortality in hospitalized breast cancer patients. Vin-Raviv et al. examined the associations between breast cancer diagnosis and the diagnoses of anxiety or depression in 4,164 hospitalized cancer patients. An equal amount of noncancer controls was obtained using 2006–2009 inpatient data from the Nationwide Inpatient Sample database. Results indicated that breast cancer cases were less likely to include a diagnosis of depression or anxiety in comparison to the controls. Vin-Raviv et al. also found that breast cancer patients with a depression diagnosis had lower mortality when compared to those without the diagnosis of depression. The researchers discovered no significant differences in mortality among those with or without anxiety diagnoses. Vin-Raviv et al. concluded that depression and anxiety in hospitalized breast cancer patients were less prominent than originally thought. The researchers asserted that there is underdiagnosis of mental health problems in hospitalized breast cancer patients and future research should highlight and explore reasons for and consequences of inappropriate identification of mental health needs in the population.

Further research in the area of mental health problems within cancer populations could help focus attention on interventions to address, rather than overlook, symptoms. Vin-Raviv et al. (2015) recognized multiple barriers to identifying and diagnosing mental health disorders among cancer patients, including fear of stigma from the patient and concerns that psychiatric disorders would distract the oncology team; lack of time to make mental health assessments; reluctance to shift the focus of treatment from the provider; and, from an institutional standpoint, low priority and fragmented psychosocial care. Part of the issue may lie in an overreliance on self-report measures (Vin-Raviv et al., 2015).

Acknowledging cancer as a stressful and traumatic event that generates negative consequences on psychological well-being, Romeo et al. (2017) surveyed breast cancer patients in Italy. The purpose of the study was to measure the level of posttraumatic growth (PTG) in cancer survivors and its relationship with sociodemographic, clinical, and psychological variables. PTG, a relatively new psychological construct, was developed in 1995 and refers to the positive psychological change experienced as a result of dealing with a challenging life circumstances (Romeo et al., 2017). PTG is closely related to restorative well-being as it relates to distress symptoms. Romeo et al. recruited and surveyed 108 female patients who had undergone treatment for breast cancer at least 1 year prior. Variables within the study were measured with the Distress Thermometer, Hospital Anxiety and Depression Scale (HADS), the Posttraumatic Growth Inventory, and the Relationship Questionnaire. While there was no significant link found between PTG and other variables, results showed that women with higher levels of psychological distress were found to have higher levels of PTG indicating that more intense psychological distress leads to an intensification of PTG. Romeo et al. emphasized the importance of psychological intervention focusing on psychological distress after cancer treatment. Admitted limitations included the study being too descriptive in nature, which limited thorough evaluation of the relationships between variables; the researchers encouraged longitudinal studies to assess psychological distress in acute periods following diagnosis.

While the present study did not focus on PTG specifically, it did focus on psychological distress within cancer populations, which Romeo et al. (2017) had identified as a precursor to PTG as long as distress can be resolved. Results of the present study may have the potential to inform future research related to PTG in cancer patients. Romeo et al. indicated that distress and PTG can co-occur, suggesting that they are not mutually exclusive. Identifying correlates of PTG may increase knowledge surrounding the concept and promote PTG through specific interventions (Romeo et al., 2017).

Schapmier and Faul (2017) used a two-level longitudinal panel design to examine differences in depression symptoms of older adults ages 50 to 91 with cancer. The researchers tested a conceptual model that involved stress and coping, conservation of resources, and life-course theories to examine predictors of depression over a period of 8 years in the aforementioned population. Data for the study came from the Health and Retirement Study and included 1,390 participants, 200 with cancer diagnoses and 1,190 with no cancer diagnoses. Predictor variables in the study included self-measured subjective physical health, subjective life expectancy, level of optimism, and level of pessimism. Additional predictor variables, such as external resources, were measured by years of education, net worth, and employment. A separate outcome variable for the study, depression symptoms, was measured by a subset of eight items from the Center for Epidemiological Studies Depression Scale. Findings indicated a significant two-way interaction between having cancer and the absence of a spouse/partner in the home, and cancer and lower life expectancy; both led to higher probabilities of depression. An additional three-way interaction was also observed between cancer, gender, and social support, indicating that women with a history of cancer and limited social support had the highest probability of depression. Schapmier and Faul concluded that survivorship should focus on assessment and intervention, while targeting older adults with higher levels of depression early in the cancer treatment trajectory, individuals with no partner in the home, lower life expectancy, and women with low social support.

Schapmier and Faul (2017) acknowledged that long-term survivorship care models should focus on assessment and intervention within supportive services offerings. In order to advance psychosocial and psychological treatments for oncology populations, further studies, such as the present study, are needed to effectively examine interventions that might assist practitioners in supporting patients. Limitations noted in the study included underrepresentation of African American and other racial groups (Schapmier & Faul, 2017). Because of this underrepresentation, inferences cannot be drawn about long-term depression symptoms and cancer within these groups, which is also true of those in lower socioeconomic groups and younger cancer survivors.

In a quantitative correlational study with 221 breast cancer patients, Ng et al. (2017) sought to examine the relationship between depression, anxiety, and distress in cancer patients over a period of 12 months. Ng et al. assessed the variables using the HADS and the Distress Thermometer. The researchers recorded measurements at time of diagnosis, 6 months, and 12 months after diagnosis. Findings indicated that there was a reduction in distress, anxiety, and depression scores at 12 months. The decrease in distress was positively correlated to the reduction in anxiety and indicated that anxiety significantly contributed to the feeling of distress in breast cancer patients.

Based on Ng et al.’s (2017) findings, further studies such as this study are needed to measure the effectiveness of therapeutic interventions within oncology populations. Ng et al. indicated that their findings justify screening, identification, and therapy for maintaining the psychological well-being of cancer patients. Concerningly, while all cancer patients will potentially address distress symptoms, the prevalence of depression is third highest among breast cancer patients (Ng et al., 2017), indicating that further research focused on this particular population is needed.

The diagnosis of, and treatment for, breast cancer presents a significant impact on the psychological well-being of the patient (Ng et al., 2017). A diagnosis of breast cancer often leads to uncertainty about disease progression, potential recurrence, and fear of physical suffering (Ng et al., 2017). Breast cancer patients experiencing depression are less proactive in seeking treatments and have more severe symptoms, poorer responses to treatment, and poorer recovery and outcomes than breast cancer patients who do not experience depression (Ng et al., 2017). Because of the documented damaging effects of anxiety and depression on the quality of life of breast cancer patients, continued research is needed to better understand this phenomenon.

Psychosocial Support for Cancer Patient Distress

Baker-Glenn et al. (2011) concluded that cancer patients continue to have unmet psychosocial needs. These researchers found that 48% of cancer patients reported some type of distress and two-thirds of those patients reported an unmet psychosocial need despite intervention, which entailed adding a help question to initial encounters with patients (Baker-Glenn et al., 2011). Absolom et al. (2011) shared this concern and noted that the existence of psychosocial distress symptoms in cancer patients is well documented. However, the detection and treatment of distress symptoms remain challenging as patients continue to report unmet needs and a desire for psychological support (Absolom et al., 2011).

Philip et al. (2013) conducted a study to examine the role of coping self-efficacy and social support in a national convenience sample of posttreatment cancer patients. A sample of 124 participants represented most geographical locations of the United States, with the exception of the northeast (Philip et al., 2013). Variables of the study included coping self-efficacy, depression, cancer symptoms, and social support (Philip et al., 2013). The researchers measured variables using the Cancer Behavior Inventory, the Center for Epidemiologic Studies-Depressed Mood Scale, the Symptom Impact Inventory, and the Inventory of Socially Supportive Behaviors (Philip et al., 2013). The average age of participants was 62 years, and 70% of the total sample being female (Philip et al., 2013). Participants were estimated to be approximately 9 years posttreatment and were asked to complete measures for the aforementioned variables. Results indicated that 20% of the sample was clinically depressed and that coping efficacy was significantly related to the reduction of depression, as well as a mediator for the relationship between symptoms and depression (Philip et al., 2013). Philip et al. concluded that coping self-efficacy was an important element of patient's adjustment and should be targeted for treatment.

Philip et al. (2013) also highlighted the ongoing mental health and support needs of cancer survivors, adding merit to this study. The diagnosis and treatment of cancer presents stressors that include emotional distress, difficulty maintaining interpersonal relationships, and financial strain (Philip et al., 2013). The rates of distress cancer patients experience is three times greater than the general prevalence of distress in the United States, with an estimated 30% of cancer patients experiencing significant levels of distress (Philip et al., 2013). Philip et al. called for additional research in the area of mental health treatment for cancer survivors, acknowledging that despite the importance of identifying and treating distress in this population, there remains a gap in the literature pertaining to the clinical attention and rarity of research data related to the psychological well-being of posttreatment cancer patients. I designed the current study to focus on oncology patients who were at least 1 year posttreatment in an effort to add to the body of knowledge on interventions for distress in breast cancer survivors.

Andersen et al. (2014) identified and adapted practice guidelines on screening, assessment, and care of psychosocial distress in adults with cancer. The ASCO has a policy for adapting clinical guidelines developed by other organizations, which includes review of such policies by the ad hoc panel members (Anderson et al., 2014). Based on review of a Pan-Canadian Guideline, the ASCO adapted guidelines, with some exception, for treating anxiety and depression in adults diagnosed with cancer. The ASCO review panel concluded that while clinicians may be unable to prevent chronic medical effects of cancer, they should serve a vital role in alleviating the negative emotional and behavioral conditions that result from the illness (Andersen et al., 2014). The adaption of the guidelines was informed by the ADAPTE methodology. This methodology includes a literature search to identify candidate guidelines. After this, the ASCO Clinical Practice Guidelines Committee reviewed and approved the manuscripts; this review is two-fold, including methodology and content (Andersen et al., 2014).

The current practice guidelines seek to answer the following question: “What are the optimum screening, assessment, and psychosocial-supportive care interventions for adults with cancer who are identified as experiencing symptoms of depression and/or anxiety?” (Andersen et al., 2014, p. 1607). The guidelines apply to adults 18 and older with a cancer of any type, disease stage, or treatment. In addition to pharmacological treatment, the recommendations include empirically supported psychological and psychosocial treatments that specify content, guide structure, delivery mode, and duration of intervention (Andersen et al., 2014). The guidelines also encourage minimal routine measures of at least pre- and posttreatment to gauge efficacy of treatment for the patient.

MBIs align with guidelines set forth by the ASCO (Andersen et al., 2014). MBIs are generally scripted interventions lasting anywhere from 5 to 10 weeks in duration and provide specific content and delivery methods for the facilitator and participants. The ASCO acknowledged not only the prevalence of distress in cancer patients, but also the responsibility of the oncology team to address distress symptoms in cancer patients. Andersen et al. (2014) encouraged clinicians to apply evidenced-based treatments to assist in the alleviation of these symptoms, while measuring for effectiveness with pre- and post-testing, as I planned in the present study.

Oh and Ell (2015) analyzed secondary data that were originally collected in a randomized trial to assess the effectiveness of collaborative depression care for cancer patients. The purpose of the study was to assess whether perceived social support was a factor in improving physical and functional well-being in cancer patients' receiving depression care (Oh & Ell, 2015). The researchers analyzed data from a total of 308 patients, including 143 participants who received collaborative depression care and 165 patients who received enhanced usual care. Using bivariate correlation analyses, Oh and Ell found significant correlations between PSS and physical and functional well-being, suggesting a mediating role of PSS in changes in functional and physical well-being over a period of 24 months. The researchers concluded that cancer survivors suffering from depression could benefit from social workers providing psychosocial depression care aimed at activating social supports (Oh & Ell, 2015).

While Oh and Ell (2015) highlighted the effects of psychosocial depression care on physical and functional well-being, they also reiterated the need for more psychosocial care for cancer patients with mental health issues. Researchers have encouraged social workers specifically to target depression in cancer patients and use social support interventions as ways to affect quality of life (Oh & Ell, 2015). While quality of life was not a variable of the present study, Oh and Ell’s findings suggested that by addressing depression and anxiety in the target population of the present study, there was a chance that the quality of life of participants may also improve, thus providing a foundation for possible future studies.

Zebrack et al. (2016) surveyed oncology care providers at 60 cancer treatment centers to assess their perceptions of their cancer programs’ performance and capacity to provide psychosocial care. The researchers assessed capacity using the Cancer and Psychosocial Care Matrix developed by the National Cancer Institute (Zebrack et al., 2016). Zebrack et al. found that among the 2134 respondents, 62% reported a mid level capacity to provide psychosocial care. The respondents who completed surveys were broken down by profession. There were 380 oncologists, 119 nurse practitioners, 884 nurses, 273 psychosocial care providers, and 478 ancillary providers. The researchers indicated that in comparison to other types of cancer programs, providers at community cancer programs reported higher capacity regarding patient-provider communication, psychosocial needs assessment, and continuity in delivery of psychosocial care over time (Zebrack et al., 2016). In contrast, nurses and primary medical providers reported a lower capacity for linking patients with needed psychosocial services. Results indicated that cancer programs were performing moderately well in the area of communicating to patients the importance of psychosocial care and identifying those needs; however, cancer programs were not doing as well in the provision of that care over time, indicating gaps in psychosocial services (Zebrack et al., 2016).

I designed the current study to examine psychosocial care over time in a particular intervention; information from the study might help to enhance outcomes and provide additional knowledge to fill the gap in literature. Zebrack et al. (2016) indicated that additional work was needed to integrate psychosocial care in routine cancer care, overcome disparities in provision of care, and monitor the quality of psychosocial care given over time. These goals may be achieved through information from studies, such the present study, on psychosocial intervention outcomes and benefits to cancer patients over time.

Researchers have also studied dispositional mindfulness in cancer survivors. Garland et al. (2017) defined dispositional mindfulness as the tendency to exhibit nonjudgmental and nonreactive awareness of one’s thoughts and emotions of a present moment. Garland et al. used a multivariate path analysis with the purpose of evaluating the association between dispositional mindfulness, positive reappraisal, savoring, and attention to positive information. In addition, Garland et al. examined how these positive psychological factors were linked to meaning of life, emotional distress, and quality of life in cancer patients. Ninety-seven patients who were actively receiving chemotherapy participated in the study. Breast cancer patients represented the largest portion of the sample, accounting for 26% of the entire sample (Garland et al., 2017). Variables were measured using the following self-report questionnaires: (a) the Five Facet Mindfulness Questionnaire, (b) Cognitive Emotion Regulation Questionnaire, (c) Meaning in Life Questionnaire, (d) Attention to Positive and Negative Information Scale, (e) Savoring Beliefs Inventory, (f) Functional Assessment of Cancer Therapy, and (g) Depression Anxiety Stress Scale-21 (Garland et al., 2017). Findings indicated that dispositional mindfulness was significantly positively associated with cancer-related quality of life, attention to positive information, savoring, and positive reappraisal, suggesting that enhanced mindfulness, reappraisal, and savoring could be beneficial to cancer survivors (Garland et al., 2017).

Psychosocial Support for Breast Cancer Patient Distress

Psychosocial distress has been shown to affect the inflammatory processes in cancer patients (Muscatell et al., 2016). Psychosocial stress works by activating the innate immune system (Muscatell et al., 2016), which leads to mobilization of pro-inflammatory cells (Irwin & Cole, 2011). Researchers have linked this mobilization to increased risk of breast cancer recurrence and mortality (Villasenor et al., 2014). Alleviation of distress symptoms in breast cancer patients, through increased psychosocial support, may offer both physical and behavioral benefits. Despite this knowledge, the unique needs of women undergoing breast cancer treatment remain understudied (Fernandes-Taylor et al., 2015). While psychosocial interventions appear to offer relief of symptoms during treatment, the effects do not appear to continue over the longer term (Fernandes-Taylor et al., 2015).

Kashani et al. (2014) used a quasi-experimental design with pre- and post-testing to evaluate the efficacy of stress coping skills training on distress in breast cancer patients. Kashani et al. described distress as the inability to cope with stress. Twenty hospitalized female cancer patients, ages 25 to 50, were selected to participate in the study. The sample was randomly divided in half and the experimental group underwent 12 90-minute sessions of stress coping skills. Measurements were taken prior to intervention, postintervention, and again at a 1-month follow-up. Distress levels were measured using the Vaziri Subjective Units of Mental Distress Scale (Kashani et al., 2014). Findings indicated that stress coping skills training positively impacted distress in this population and results were sustainable at least 1-month post intervention (Kashani et al., 2014).

Clinical support of the emotionality and mental anguish of cancer patients is important, and 77% of women with breast cancer suffer from distress, with women under 50 years of age experiencing distress at a higher rate than those over 50 (Kashani et al., 2014). Although interventions and ways of coping with stress can help reduce symptoms of cancer, further research is needed. While Kashani et al. (2014) added to the literature on distress in cancer patients, the study was limited by a small sample size, a convenience sample, and an intervention that lacked empirical support. Furthermore, follow-up testing postintervention was measured at 1 month, leaving the questions of longer-term sustainability unanswered.

Experiential avoidance in cancer patients, while prominent, has received little empirical attention from researchers. Experiential avoidance is defined as the attempt to deny having cancer (Aguirre-Camacho et al., 2016). Aguirre-Camacho et al. (2016) conducted a quantitative study to examine the relationship between this phenomenon and symptoms of anxiety, depression, and quality of life in women with breast cancer. The purpose of the study was to improve understanding of how experiential avoidance affects distress in breast cancer patients. Female participants ages 18 years and older with a diagnosis of non-metastatic breast cancer were enrolled in the study. The researchers assessed associations between symptoms of depression, anxiety, and quality of life in a group setting using a psychological intervention designed to lower distress and improve quality of life. Three separate instruments were used to measure variables in the study. The researchers used the Functional Assessment of Cancer Therapy-Breast to measure quality of life, the HADS to measure anxiety and depression, and the Acceptance and Action Questionnaire to measure experiential avoidance. Aguirre-Camacho et al. selected psychoeducation and CBT as the intervention of choice for their study. Findings indicated that higher levels of experiential avoidance predicted higher levels of depression and anxiety, while higher levels of the latter predicted a poorer quality of life. Participants experienced statistically significant reductions in anxiety and depression upon completion of the study intervention, indicating that therapeutic work to address experiential avoidance could improve distress symptoms in breast cancer patients (Aguirre-Camacho et al., 2016).

According to Spijkerman et al. (2016), MBIs allow participants to focus on cultivating acceptance of the fact that they have cancer, while embracing discomfort in an intentional and non-judgmental way, thus targeting experiential avoidance directly.

Findings from Aguirre-Camacho et al.’s (2016) study supported this idea. Aguirre-Camacho et al. also recommended that future research include examination of the benefits of integrating tools targeting experiential avoidance within psychosocial interventions because psychosocial interventions could have a positive impact on psychological outcomes for breast cancer patients. Aguirre-Camacho et al. further indicated that, while theory and research from other areas have pointed to the relevance of experiential avoidance in cancer-related distress, it has not received attention within psycho-oncology, creating a gap in literature and highlighting the need to study such interventions further.

Aguirre-Camacho et al. (2016) described acceptance and commitment therapy (ACT), which is a form of psychotherapy that incorporates CBT and mindfulness strategies to increase psychological flexibility and acceptance (Low et al., 2016). The authors indicated that in a separate study comparing ACT with CBT interventions, those participants receiving ACT experienced greater reductions in distress and improvements in quality of life (Aguirre-Camacho et al., 2016). Researchers also acknowledged that CBT does not incorporate treatment components specifically designed to target experiential avoidance (Aguirre-Camacho et al., 2016). Additional limitations of this study included the inability to generalize to women with breast cancer at other stages and the observed effects, which were limited by no treatment control group (Aguirre-Camacho et al., 2016).

Costas-Muñiz et al. (2017) examined the use of psychosocial services among Latina and non-Latina White breast cancer survivors treated a comprehensive cancer center in New York. Nine hundred and twenty-three women participated in the study, including 409 Latina and 514 non-Latina women (Costas-Muñiz et al., 2017). The results indicated that 33% of Latina breast cancer survivors reported needing mental health or psychosocial services after diagnosis and 34% of non-Latina white survivors reported the same (Costas-Muñiz et al., 2017). An additional 34% of reporting survivors stated that they discussed emotional issues with their oncologist after diagnosis; 30% were Latinas and 36% were non-Latinas. Additionally, 40% of survivors who reported needing services received referral for psychosocial services; 42% of these were Latina and 39% were non-Latina (Costas-Muñiz et al., 2017). Costas-Muñiz et al. further indicated that 66% of participants who reported needing services had contact with a mental health professional after their diagnosis, including 57% of Latina women and 71% of non-Latina women. These findings indicated gaps in services for both groups, and Costas-Muñiz et al. recommended more studies to address potential differences in the availability and acceptability of mental health services by ethnically diverse patient groups.

In this study, examination of MBIs would also allow for closer scrutiny of aspects that might be more fitting for certain ethnic populations. For example, Costas-Muñiz et al. (2017) noted that one of the differences in the two groups examined included the tendency of Latina participants to rely on spiritual care more frequently than their non-Latina White counterparts who demonstrated a tendency to access mental health services and medication at a higher rate. The findings showed that MBIs, which may involve some aspects of spirituality, might be better suited for one ethnic group over another.

Costas-Muñiz et al.documented the need to educate patients and cancer providers about the needs surrounding psychosocial issues and building interventions based on cultural and linguistic needs.

MBI

Interest in MBIs has grown substantially across professions in recent years, as social scientists, educators, athletes, and others have documented success using the interventions (Cullen, 2011). Mindfulness is defined as “paying attention, in a particular way: on purpose, in the present moment, with acceptance” (Kabat-Zinn, 1994, p. 4). There is currently no data documenting the exact number of MBI variations in existence (Cullen, 2011); however, numerous articles exist in its varying applications to multiple ailments including depression, anxiety, childbirth, chronic pain, cancer, elder care, and post-traumatic stress disorder (Boden et al., 2012; Carlson, 2016; Creswell, 2017; Huijbers et al., 2016; Meiklejohn et al., 2012; Moss et al., 2015; Rosenzwieg et al., 2010).

Huijbers et al. (2016) examined the effect of mindfulness based cognitive therapy (MBCT) on patients who preferred either pharmacological treatment or MBCT to prevent relapse into depression. The researchers used two parallel randomized trials to compare pharmacologic intervention and MBCT combined in those patients preferring MBCT against patients receiving pharmacologic intervention alone. Researchers recruited 317 individuals with a history of at least three prior depressive episodes from mental health professionals and outpatient clinics (Huijbers et al., 2016). The variables were measured using the structured clinical interview for the Diagnostic and Statistical Manual of Mental

Disorders and the Inventory of Depressive Symptomatology-Clinician Rated. Measurements were taken at baseline, 3, 6, 9, 12, and 15 months. Findings indicated support for the applicability of MBCT for recurrent depression (Huijbers et al., 2016).

While Huijbers et al.'s (2016) study did not directly involve cancer patients, it supported that MBIs can effectively serve as depression interventions. Research has indicated that the most common treatment for depressive episodes is antidepressant medication (Huijbers et al., 2016). However, there is evidence that adherence to pharmacological interventions over time is low and effectiveness decreases with the number of previous episodes. For this reason, alternative preventive strategies are needed and MBCT, a well-known MBI, has proven to reduce relapse in patients with three or more previous episodes of depression (Huijbers et al., 2016). Distress symptoms (depression and anxiety) within oncology patients is well documented; treatment for depression or depressive episodes might be applicable to female breast cancer patients. However, further research aimed at the alleviation of distress symptoms within diverse populations of breast cancer patients longer than 3 months is needed.

MBIs for Cancer Patients

Multiple characteristics of the cancer experience make it amenable to mindfulness interventions (Carlson, 2016). Cancer can challenge an individual's world view and disrupt the false sense of security that life is controllable and predictable (Carlson, 2016). Mindfulness interventions have proven effective in treating oncology patients, because they can help prevent the escalation of anxiety commonly seen in cancer patients (Carlson, 2016). Mindfulness interventions have also proven effective in helping individuals to address uncontrollable, unpredictable, and emotionally charged life events (Carlson, 2016), again making its application suitable to oncology populations.

While Carlson (2016) acknowledged previous research conducted on mindfulness interventions and cancer patients, the author noted that further research in this area is needed. The researcher called for future studies using mindfulness interventions to examine online adaptions, shorter programs, self-study, and even mobile-supported applications (Carlson, 2016). As indicated in the present study, the intervention I selected for use was shorter in duration than typical MBI programs, lasting only 5 weeks instead of the traditional 8- to 10-week protocol, to add to the body of knowledge surrounding the use of this intervention with a diverse sample of cancer survivors.

Piet et al. (2012) conducted a meta-analysis and examined evidence on the effect of MBI on depression and anxiety symptoms in adult cancer patients. Piet et al. analyzed 22 independent studies with a total of 1,403 participants. The researchers performed effect size for randomized and non-randomized studies separately. Results indicated that in the aggregated sample in nonrandomized studies, MBIs were associated with significantly reduced pre- and post treatment symptoms of anxiety and depression (Piet et al., 2012). MBI also appeared to improve mindfulness skills in participants (Piet et al., 2012). Piet et al. concluded that despite the variation in existing clinical trials, there appeared to be positive evidence to support the use of MBIs in cancer patients with symptoms of depression and anxiety. While MBI has become a popular intervention, research continues to emerge about its efficacy among cancer patients; therefore, Piet et al. called for further research on the subject to investigate specific effects and mechanisms of change.

Piet et al. (2012) asserted that the deteriorating effect of depression on health is enhanced when comorbid with a medical disease. Depression and anxiety are common problems associated with a cancer diagnosis and are more prevalent in cancer patients, making advancement in this area of study pertinent to management of the disease. Piet et al. documented that the prevalence of depression seemed to be highest among patients with pancreatic, oropharyngeal, lung, and breast cancer, making the focus of the present study relevant. Piet et al. also acknowledged the risk of developing anxiety and depression within the first year following a cancer diagnosis, which should encourage future researchers to examine the longevity and sustained effects of interventions.

Rouleau et al. (2015) compiled a descriptive review of the literature highlighting outcomes that have been evaluated by MBI research. These outcomes included three categories: (a) symptom reduction, (b)positive psychological growth, and (c) biological outcomes (Rouleau et al., 2015). The authors acknowledged that diagnosis, treatment, and survivorship in oncology are associated with a throng of stressors including side effects from treatment, disrupted social, family, and occupational roles, and the possibility of cancer recurrence and death (Rouleau et al., 2015). Researchers have estimated that 38-43% of cancer patients exceed the clinical cutoffs for psychological distress when using self-report instruments (Rouleau et al., 2015). Rouleau et al. observed that heightened distress at baseline is often not consistently used as inclusion criteria for MBI studies. Therefore, whether MBIs are appropriate for the treatment of anxiety or mood disorders in cancer patients remains unclear. Additionally, Rouleau et al. questioned whether results might be more pronounced if participants were screened pre- and post study for distress and whether or not the reductions in distress were attributable to the intervention.

In the present study I sought to clarify some of the issues highlighted by Rouleau et al. (2015). By using a pre- and post study design, I designed this study to examine whether decreases in distress symptoms are correlated with the use of MBI interventions. I also designed the study to examine results over a period of 3 months and address a limitation Rouleau et al. noted, that high attrition from MBIs may lead to lack of long-term follow-up and, thus, the sustainable effects of interventions are unknown.

Zhang et al. (2015) conducted a meta-analysis to examine the effectiveness of MBIs for improving anxiety and depression in patients with cancer. Seven randomized controlled trials (RCTs) were included in the analysis. A combined total of 888 participants were involved in these studies, including 469 in mindfulness-based therapy groups and 419 in the control groups (Zhang et al., 2015). Types of cancer varied throughout studies, and staging ranged from 0–III. The length of intervention ranged from 7–8 weeks among the studies in the meta-analysis. Zhang et al. found that MBI could relieve anxiety and depression among cancer patients. In addition, Zhang et al. indicated that the effects of MBIs may not persist long term and that some forms of mindfulness interventions may be less effective than others (Zhang et al., 2015). Zhang et al. noted that, of the seven studies, only two incorporated long-term assessment of the interventions’ benefits. Zhang et al. encouraged additional study of the subject to include longer duration of follow-ups to determine which forms of MBIs are most effective and how to best improve the persistence of benefits gained.

In alignment with the recommendations of Zhang et al. (2015), I designed the present study to examine the effects of an MBI over 3 months to determine whether lasting effects are possible in this population. The present study may add to the body of existing knowledge on this topic to help optimize the psychosocial care of oncology patients. Distress symptoms, anxiety, and depression are well documented in oncology populations and have been shown to negatively affect medical treatments. Identifying an effective form of intervention to treat these symptoms could potentially offer improved outcomes for cancer patients and survivors.

Poulin et al. (2016) conducted a cross-sectional study of cancer patients experiencing chronic neuropathic pain. The purpose of the study was to examine whether mindfulness was associated with pain catastrophizing, depression, disability, and health-related quality of life. Paulin et al. surveyed a total of 76 men and women with various cancer diagnoses were surveyed, with women accounting for 76% of the total sample. Participants were at least 1-year posttreatment with no evidence of disease at the time of the study. Paulin et al. measured the study variables using the Five Facet Mindfulness Questionnaire the Neuropathic Pain System Inventory, Pain Intensity Ratings, the Multidimensional Pain Inventory, the Pain Catastrophizing Scale, the Patient Health Questionnaire-9, and the Short Form-12 Health Survey. Results indicated that mindfulness was negatively correlated with pain intensity, pain catastrophizing, pain interference, and depression (Poulin et al., 2016). However, mindfulness was positively correlated with mental health as it related to cancer. Researchers reported that mindfulness lessened the impact of pain experiences in cancer survivors, indicating that mindfulness was associated with improved adjustment and should be studied further to explore whether these interventions could improve quality of life for specific cancer patients (Poulin et al., 2016).

Poulin et al. (2016) were among some of the researchers who have laid foundation for the use of mindfulness among oncology populations. Mindfulness is described as a non-elaborative, non-judgmental, and present-centered awareness approach that can lead to improved function and mood when applied to chronic illness (Poulin et al., 2016). Poulin et al. recommended further research on MBIs and their effect on the symptoms of distress in diverse populations of cancer patients, helping to justify the need for the proposed study.

Sanada et al. (2017) completed a systematic review of the literature that included 13 studies with 1,110 participants, noting that there have been few studies to date on the relationship between MBIs and biomarkers. The purpose of the review was to examine the effects of specific biomarkers in both healthy subjects and cancer patients. Biomarkers of interest included cytokines, neuropeptides, and C-reactive protein. The review included RCTs, non-RCTs, and open trials with pre- and post-analysis (Sanada et al., 2017).

Results indicated that MBIs in the healthy population had no effect on cytokines but did increase the levels of neuropeptide insulin-like growth factor 1, indicating that MBIs may enhance recovery from stress (Sanada et al., 2017). Within the cancer population, MBIs did appear to have some effect on cytokine levels (Sanada et al., 2017). Though difficult to pinpoint which cytokines were affected, Sanada et al. (2017) suggested that MBIs may aid in the recovery of the immune system and be involved in changes from a depressive/carcinogenic profile to a more normalized one. Because this kind of research is still in early stages, further research in this area is needed.

I designed the present study to examine the sustained effectiveness of MBIs in reducing distress symptoms in breast cancer patients. Sanada et al. (2017) took the inquiry a step further, suggesting that there is an actual psychical change in biomarkers of cancer patients that may lead to positive psychoemotional change. Sanada et al. noted that continued research in this area is needed to further advance these findings and justify the need for the present study and others like it.

Dobos et al. (2015) conducted a quantitative study to investigate the effects of a mindfulness-based day care clinic group program on mental health and quality of life among cancer survivors. Individuals 18 years old and older, regardless of cancer diagnosis type, were invited to participate in the study (Dobos et al., 2015). One hundred and seventeen cancer survivors participated in the study; 91% of the sample were women and 65% had a diagnosis of breast cancer (Dobos et al., 2015). Researchers used a prospective single-arm cohort study to evaluate the effectiveness of intervention. The 11-week intervention incorporated mindfulness-based meditation, yoga, lifestyle modification, cognitive behavioral techniques, and required a commitment of 6 hours per week (Dobos et al., 2015). Dobos et al. measured psychological variables the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire, the

HADS, Brief Multidimensional Life Satisfaction Scale, the Freiburg Mindfulness Inventory, the Adaptive Coping with Disease Questionnaire, Spiritual and Religious Attitudes in Dealing with Illness Questionnaire, and the Interpretation of Illness Questionnaire (Dobos et al., 2015). Measurements were taken at baseline, directly after completion of program, and 3 months postintervention (Dobos et al., 2015). Findings indicated an improved level of quality of life in participants and significant decreases in anxiety and depression over time.

Dobos et al.'s (2015) findings showed that MBIs can serve as an effective tool in combating cancer-related distress. However, the study was limited by the observational design and lack of a control group, which left findings indistinguishable from a placebo effect (Dobos et al., 2015). In addition to these limitations, follow-up was limited to 3 months postintervention, leaving the question of the sustainability of effects over longer periods of time unanswered. Furthermore, the authors noted that they did not assess whether patients adhered to the program or completed homework assignments (Dobos et al., 2015), leaving interpretations to be preliminary at best.

MBI for Breast Cancer Patients

MBIs have been used to treat breast cancer patients for more than a decade (Witek-Janusek et al., 2008). Research results indicated some improvements in patients' emotion regulation, quality of life, and biological functioning. Despite these indications, queries continue to linger. Unanswered questions remain, however, regarding the duration of symptom alleviation, best practices when administering interventions, timing of intervention, stage of cancer most susceptible to interventions, and demographics of those patients who appear to be most responsive to interventions.

In a meta-analysis, Zhang et al. (2016) focused on quantifying the effects of MBI on the quality of life and the physical and psychological health of breast cancer patients. Researchers included RCTs designed to examine the effects of MBI in comparison to control groups receiving no intervention (Zhang et al., 2016). Seven studies involving 951 patients were included, and the authors independently assessed the methodological quality of studies using a scoring instrument Jadad et al. (1996) developed. Zhang et al. used Cochrane Collaboration’s Revman 5.1 to analyze extracted data. Results indicated a positive effect of MBI in reducing anxiety, depression, and fear of reoccurrence associated with breast cancer. Researchers noted that, while results were in favor of MBI, there were only a small number of studies that could be included in the analysis, and due to incomplete reporting within studies, only two of the nine included studies were considered high-quality studies (Zhang et al., 2016). In addition, the researchers indicated they were unable to answer to what extent the effects of intervention produced long-term effects (Zhang et al., 2016).

In alignment with Zhang et al.’s (2016) findings, I developed the present longitudinal study with multiple follow-ups over the course of 3 months to determine whether the effects of MBIs are sustainable in cancer populations. These data may add to the body of existing knowledge and have the potential to impact future treatment of oncology populations. Zhang et al. acknowledged the need for considerable improvement in the study of MBIs when applied to cancer populations. Zhang et al. also called for additional studies to evaluate the superiority or inferiority of MBIs in comparison with other complementary therapies.

Kenne Sarenmalm et al. (2017) conducted an RCT with the purpose of determining the efficacy of MBSR for mood disorders in women with breast cancer. The study included 166 women with breast cancer. Participants in the study were randomly assigned to one of three groups: 8 weeks of MBSR, self-instructing MBSR, and a non-MBSR group (Kenne Sarenmalm et al., 2017). Kenne Sarenmalm et al. used five measurement tools to assess variables, including the HADS, Symptom Assessment Scale, the Short Form Health Survey, the Sense of Coherence scale, the Five Facet Mindfulness Questionnaire-Swedish version, and the Posttraumatic Growth Inventory. Results of the study indicated that were beneficial effects of MBSR on psychological and biological responses. In addition, findings revealed significant improvement in distress symptom burden and mental health (Kenne Sarenmalm et al., 2017).

Kenne Sarenmalm et al. (2017) provided foundation for future studies, including the proposed study, on the efficacy of MBIs on distress symptoms in cancer patients. Kenne Sarenmalm et al. reported that more longitudinal studies were needed to investigate whether positive psychological and biological responses persist over time. In the present study, I examined responses over a period of 3 months, adding to the body of knowledge on MBIs and their long-term impact on an oncology population. Kenne Sarenmalm et al. also encouraged the use of self-training programs for patients who preferred to practice MBIs on their own without attending weekly group sessions. The curriculum for the MBI identified in the proposed study does encourage self/home-practice for patients to be able to continue behaviors outside of group meetings.

Assessment of Short-Term MBIs Outcomes

Baniasadi and Jamshidifar (2014) asserted that the crisis of cancer causes inconsistency and imbalance in the mind, physique, and spirit. Baniasadi and Jamshidifar conducted a quasi-experimental study with applied pre- and post testing. The purpose of the study was to investigate the effectiveness of mindfulness training on reducing distress (depression and anxiety) in breast cancer patients. A convenience sample of 30 female oncology inpatients were divided into test and control groups, with 18 and 12 participants in each group, respectively. Baniasadi and Jamshidifar measured distress levels using the Kessler’s Distress Assessment Scale. Findings indicated that mindfulness training was statistically significant in effectively reducing distress in the test group, suggesting that this intervention was effective in improving the psychological and behavioral issues caused by distress (Baniasadi & Jamshidifar, 2014).

While Baniasadi and Jamshidifar (2014) focused on oncology inpatients, results still suggested that MBIs could be successful in reducing distress symptoms in cancer patients. The study results laid the foundation for continued inquiry into the use of mindfulness to address distress symptoms in the oncology patients, and to include extended studies that might examine sustained effects, as intended in the present study. Researchers indicated that psychological interventions are important in reducing distress, which has the potential to mitigate other disorders and problems (Baniasadi & Jamshidifar, 2014).

Study results indicated that mindfulness techniques could improve psychological and behavioral issues when used independently or in conjunction with other treatment methods (Baniasadi & Jamshidifar, 2014). While the results support the use of MBI, the study was limited as it only used postintervention measurements directly following intervention, leaving a gap in the literature regarding the sustainability of intervention effects. Further, adopting and applying the principles outlined for MBIs could be particularly useful for patients suffering from cancer (Baniasadi & Jamshidifar, 2014).

Lengacher et al. (2014) conducted a 6-week RCT of MBSR with 82 posttreatment breast cancer patients, stages 0–III. Lengacher et al. randomly assigned participants to one of two groups: 6 weeks of MBSR (*n* = 40) and a usual care group (*n* = 42). Results from this study indicated that the MBSR group yielded more favorable results than that of the control group, suggesting that the intervention positively impacted the above-noted symptoms in early-stage breast cancer patients. However, the control group in this study also experienced positive results with no intervention. In addition, the investigators noted that results of the study were limited to short-term effects (i.e., 6 weeks), did not include a direct measure of mindfulness, and could not be generalized to advanced-stage cancers (Lengacher et al., 2014).

Bower et al. (2014) conducted an RCT of 71 women ages 50 years or younger who had been diagnosed with early-stage breast cancer. Participants in study were assigned to 6 weeks of an MBI titled Mindful Awareness Practices or to the control group. Depression and stress were identified as primary outcomes and were measured by the use of questionnaires (Bower et al., 2014). Questionnaires were administered at baseline, after intervention at 6 weeks, and at a 3-month follow-up. Recorded results indicated significant improvement in perceived stress and marginal reduction in depressive symptoms at 6 weeks postintervention (Bower et al., 2014). Positive effects were not maintained at the 3-month follow-up, indicating preliminary short-term efficacy. Limitations of the study included small sample size and that specific effects of the intervention were not controlled for in the control group (Bower et al., 2014).

Reich et al. (2016) used a randomized control design to examine improvement in symptoms of breast cancer patients. Researchers sampled 322 patients in stage 0–III breast cancer. Participants were randomly assigned to 6 weeks of MBSR-Breast Cancer or usual care. Results from baseline to 6 weeks indicated enhancement in psychological symptoms including depression, anxiety, perceived stress/QOL, and emotional well-being. Results between 6 and 12 weeks were sustained; however, further improvement was not observed (Reich et al., 2016).

Assessment of Long-Term MBIs Outcomes

Eyles et al. (2015) investigated the acceptability and feasibility of using MBSR for women with metastatic breast cancer (MBC). This mixed-methods study included 19 women with MBC who had been diagnosed at least 2 months prior and were considered medically stable, with a life expectancy of at least 6 months (Eyles et al., 2015). Eyles et al. employed qualitative interviews, focus groups, and interviews with oncology staff to explore acceptability and feasibility of use of mindfulness intervention. Researchers measured mindfulness, disease-specific quality of life, generic preference-based quality of life, and symptoms including fatigue, anxiety, and depression with the following questionnaires: (a) the Brief Fatigue Inventory, (b) the HADS, (c) the EuroQol Quality of Life-5 Dimensions, and (d) the Toronto Mindfulness Scale. Measurements were taken at baseline and weeks 4, 8, 16, and 24. Qualitative findings from the study indicated that participants felt less reactive to emotional distress and more accepting to the disruption in life caused by MBC (Eyles et al., 2015). Quantitative findings indicated that there was a statistically significant decline in depression, anxiety, and fatigue. Findings further indicated an increase in mindfulness between baseline and 24 weeks (Eyles et al., 2015).

The prognosis for breast cancer has improved with advances in treatments and therapies (Eyles et al., 2015). However, because of increased survivorship, more patients need psychosocial and psychological support (Eyles et al., 2015). Eyles et al.’s (2015) study helped support the use of MBSR, a type of MBI, with an oncology population. While findings indicated a positive impact on the lives of the participants, the study was limited by a small sample size of 19, which lacked diversity and absence of a control group. Eyles et al. concluded that psychological interventions can improve psychosocial outcomes such as mood and quality of life but stressed that there was little evidence that results are sustained over time or that they address the cause of ongoing distress. The researchers further indicated the need for additional studies with adapted shorter versions of interventions to improve participant recruitment and intervention adherence. In the present study, I sought to address the question of sustainability in a diverse oncology population by extending follow-up measurements over a period of 6 months and using an intervention I shortened and tailored to the oncology population.

Summary

The literature review provided a detailed look at the foundation for the conceptual framework relative to the variables of the study. In this chapter, I also provided an in-depth look at what is known about MBIs, the variations of MBIs that are most effective, and the populations with whom the interventions work best. Most importantly, the review of literature indicated that there is limited information available regarding the sustained effects of MBI with the targeted population, thus supporting the purpose of the present study. In Chapter 3 I will introduce the methods I used to conduct the study and discuss the participants and data collection methods used in the study. I will also describe the data analysis process and interpretations of the data.

Chapter 3: Methodology

The findings of previous research on MBIs and their treatment of the psychosocial needs of cancer patients have illuminated the overall influence of intervention, the variations of MBI that seem to work better, and the populations with whom they seem to be most effective. Even so, additional research is needed to identify MBI as a best practice to address distress among women with breast cancer, especially with regard to stress and depression in the long term. In this study, I analyzed secondary data to provide evidence related to the sustained effect of MBI with the targeted population. This chapter includes a thorough explanation of the research design and rationale, methodology and measurement tools, data collection and analysis, process for recruitment, participation, ethical concerns, and my role as the study's principal investigator.

Research Design and Rationale

The independent variable in this study was MBI. Mindfulness can be defined as "paying attention, in a particular way: on purpose, in the present moment, with acceptance" (Kabat-Zinn, as cited in Vøllestad et al., 2011, p. 4). I assumed that the purposeful harnessing of this concept could reduce maladaptive patterns of distress symptoms. This allows the individual to view negative thoughts as temporary events that will fluctuate without activating secondary responses that may increase its level of intensity and duration (Roemer et al., 2008).

The dependent variables in this study were depression and stress. Depression is a mood disorder that presents with symptoms affecting how a person thinks, feels, and behaves. Daily functioning, such as sleep and appetite patterns, may also be impacted.

Symptoms typically last 2 weeks or more (National Institute of Mental Health, 2016). When individuals with cancer experience depression, symptoms may cause the inability to follow through with cancer treatments (ACS, 2016). The diagnosis may also be accompanied by symptoms of grief related to the life changes people with cancer and other chronic illnesses experience (ACS, 2016). Stress is characterized by a state of emotional or mental strain and caused by adverse situations and circumstances (APA, 2016). When experienced by those with cancer diagnoses, stress may produce a variety of physical symptoms, including, but not limited to, muscle trembling, irritability, dry mouth, fear of treatment, fear of death, and fear of pain (ACS, 2016).

This study was a secondary data analysis of data collected as part of a study employing an experimental design. I chose the use of secondary data to examine differences between groups that received the indicated treatment versus groups who had not received the treatment. Specifically, the original data collection involved multiple follow ups to determine the effect of MBI on distress symptoms, depression and stress, among female breast cancer patients over a period of 3 months. Measurement occurred at the following intervals: baseline, completion of the intervention, and 3 months postintervention. I acquired permission to use the data from the Cancer Institue (see Appendix A). Researchers, such as Matchim et al. (2011), have used a quasi-experimental design to examine the effect of their chosen intervention on breast cancer patients. In this study, I examined the effects of MBI on the targeted symptoms (i.e., depression and stress) of research participants. Biglan et al. (2000) specified that group research designs with multiple follow ups enable researchers to develop more accurate knowledge about the effects of interventions. More specifically, experiments with multiple follow ups are pivotal in the development of clinical psychology interventions (Barlow et al., 1984, as cited in Biglan et al., 2000), making this design a rational choice. Williams (2011) indicated that quantitative researchers seek to provide explanations and predictions that will be generalizable to other areas and populations, thus justifying further the research method and design of the present study because I also sought to provide explanations and predictions about the sustained effects of MBI on distress symptoms in breast cancer patients.

Methodology

Design

This secondary data analysis involved analysis of data originally collected by the a Cancer Institute in South Carolina This facility offers support services to existing patients. Prospective participants were invited into the original study using fliers, print media, social media, and direct solicitation by providers and staff at the Cancer Institute. Interested individuals were screened by telephone and then invited to meet with the original study investigators and coordinators to review their eligibility and provide informed consent. Before any data were collected, participants were asked to sign an informed consent form that identified the nature of the study and explained participants' rights. Participation in the original study was voluntary. All participants were compensated with $50 reimbursements at the beginning of the study as well as at each follow-up assessment. Participants were randomized into either an intervention group (i.e., MBI) or a control group (i.e., breathing exercises).

Intervention

Research participants in the original study assigned to the intervention group attended 4 weeks of MBI. Specifically, the intervention consisted of Mindfulness-Based Cancer Survivorship, which is an adaption of MBSR tailored to cancer survivors. This program utilizes MBSR techniques over a period of 4 weeks instead of the traditional 8 weeks commonly found with many MBSR programs.

Current Study

In the current study, I used a secondary data analysis to examine changes over time in a group of breast cancer patients who had participated in the MBI. I used a repeated measures ANOVA as the primary analytical design. There were three measurement points in the analytical design: (a) baseline, (b) completion of the intervention, and (c) 3-month follow up. I also examined the persistence of intervention effects (i.e., differences in measures between completion of the intervention and 3-month followup).

Population

The targeted population for this study included women between 18–60 years of age with a confirmed diagnosis of breast cancer in Stages 0–III. The study included female breast cancer patients who participated in the original study at the Cancer Institute in South Carolina. According to the South Carolina Department of Health and Environmental Control (SCDHEC; 2016), breast cancer is the most commonly diagnosed cancer in the state of South Carolina among women and the second leading cause of cancer-related deaths. In 2013, there were 3,767 new cases of female breast cancer reported in the state of South Carolina (SCDHEC, 2016). The SCDHEC (2016) estimated a total of 1,089 cases of female breast cancer within the upstate area.

Sample

The sample for the secondary data analysis included all female study participants from the original study. The sample size for the secondary data analysis was 28 participants.

Inclusion and Exclusion Criteria

The original study included female breast cancer survivors with a confirmed diagnosis of malignancy of the breast Stages 0–III. Inclusion criteria of the original study required that participants were cancer survivors who were at least 18 years old and able to read, understand, and speak English. Participants needed to commit to completing assessments, attending mindfulness sessions, and be available for follow up. Potential participants were excluded from the original study if they were unable to participate in the group process, if they had previously participated in a formal mindfulness-based course or group, or they had corticosteroid therapy greater than prednisone 25 mg per day or equivalent.

Power Analysis

Lenth (2001) asserted that to establish a scientifically meaningful effect, a study must be large enough to statistically identify the intended effect. While this is accurate, equally important is ensuring a study is not undersized, potentially exposing participants to damaging treatments without progressing understanding of the topic being studied (Florey, 1993; Lenth, 2001). I calculated the sample size for the present study using G*

Power statistical tool (Faul et al., 2007). I acquired the calculations using a repeated measures ANOVA with two groups and three repeated measurements, assuming a medium effect size (0.25), α error probability (.05), and power (1- β error probability; .80). These parameters yielded a minimum preliminary sample size of 28 study participants.

Data Collection

I obtained written permission to use the secondary data from the Cancer Institute. Representatives at the Cancer Institute granted me access to the data set after I sought written permission from the Cancer Institute Institutional Review Board and legal department. The process of seeking and gaining permission involved several weeks of conversation and communications with the two aforementioned departments. During the permission process, I learned that researchers from other institutes were involved in the research. While sole ownership belonged to the health system, once I was granted permission to use the data set, I did have to visit the University of South Carolina to physically pick up the data set because the original researchers were uncomfortable with electronic transfer of the data.

The original data collection, including introduction of the study and signing informed consents, took place within the Cancer Institute. All participants attended a baseline preassessment session in which participants completed the study questionnaires (which included the CES-D 10 and PSS) and had biological measurements taken. Participants in the control group then received a presentation on breathing exercises. Participants in the intervention group attended 4 weeks of MBI sessions. One week following the last MBI session, all participants (both control and intervention groups) returned to complete the same assessments that were conducted at the preassessment. Three months later, all participants returned to complete the assessments a final time.

Instrumentation

Distress was the dependent construct in this study and was operationally defined by two dependent variables, the presence of stress or depression, as measured by the PSS and CES-D 10, respectively. Stress was an interval-level score calculated by summing the responses to the items of the PSS. Depression was an interval-level score calculated by summing the responses to the items of the CES-D 10

The CES-D 10 is a shortened version of CES-D scale Radloff (1977) developed. This instrument is a self-report survey measure of depression. The instrument consists of 10 items that respondents rate according to how often they experienced the items in the past week on a scale ranging from 0 (*rarely or none of the time*) to 3 (*all of the time*). Example items included “I felt depressed” and “my sleep was restless.” After reverse-coding appropriate items, a researcher sums the responses to the items to create a total score with a possible range of 0 to 30. Higher scores indicate higher levels of depression. Andresen et al. (1994) demonstrated validity of the CES-D 10 through correlations with poor health status (r = .37) and positive affect (r = -.63). Additionally, the CES-D 10 has demonstrated reliability with a 12-month test-retest correlation of .59. Internal consistency for the CES-D 10 is strong ($\alpha > 0.80$; Gonzalez et al., 2017).

Cohen et al. (1983) developed the PSS as a global measure of perceived stress. The instrument contains 10 items that respondents rate according to how often they experienced the items in the past month on a scale ranging from 0 (*never*) to 4 (*very often*). Example items include “been upset because of something that happened unexpectedly” and “unable to control the important things in your life.” After reverse-coding appropriate items, researchers sum the responses to the items to create a total score with a possible range of 0 to 40. Higher scores indicate higher levels of stress. The PSS has demonstrated validity through correlations with number and impact of life events as well as depressive symptomology (Cohen et al., 1983). Reliability coefficients for the PSS across multiple samples ranged from .84 to .86 (Cohen et al., 1983).

Data Analysis Plan

The central question guiding this study was: Do MBIs have a long-term impact on distress symptoms in breast cancer patients? I also examined the following research questions:

RQ1: What is the effect of MBI on depression among women with breast cancer at different time points following treatment?

H_a1: $\mu1 \neq \mu2 \neq \mu3$ There will be differences in depression scores between baseline and follow-up measures among patients who receive MBI.

H_01: $\mu1 = \mu2 = \mu3$ There will be no differences in depression scores between baseline and follow-up measures among patients who receive MBI.

RQ2: What is the effect of MBI on stress among women with breast cancer at different time points following treatment?

H_a2: $\mu1 \neq \mu2 \neq \mu3$ There will be differences in stress scores between baseline and follow-up measures among patients who receive MBI.

H_02: $\mu1 = \mu2 = \mu3$ There will be no differences in stress scores between baseline and follow-up measures among patients who receive MBI.

I analyzed quantitative secondary data using the IBM SPSS 25 software statistical package. For the purposes of this study, the data analysis only included female breast cancer survivors. I checked the data for missing responses and the presence of outliers prior to analysis. I excluded participants with any significant missing data from the analysis. I also replaced missing data from participants who dropped out of the study before all follow-up measures were completed by mean imputation. Outliers were checked by calculating standardized values (i.e., the number of standard deviations each score is from the mean). Scores with standardized values greater than 3.29 or less than -3.29 were considered outliers and removed from the data (see Tabachnick & Fidell, 2013). I used descriptive statistics (e.g., percentages, means) to describe the study sample.

I used a repeated measures ANOVA to address the research questions. A repeated measures ANOVA, also known as a within subjects ANOVA, is an appropriate statistical analysis when the aim of the research is to determine if there are significant differences within groups in repeated measurements of a dependent variable (Tabachnick & Fidell, 2013). The secondary data analysis consisted of a repeated measures within group design for all subjects across three data points. The dependent variable in this analysis was distress (represented by measures of depression and stress), which I measured at three different time points: baseline, postassessment, and 3 months. Prior to the analysis, I tested the assumptions of normality, homogeneity of variance, and sphericity. I tested normality using Shapiro-Wilk tests, tested homogeneity of variance using Levene's test, and tested sphericity using Mauchly's test.

I conducted separate ANOVAs for depression and stress and used a significance level of .05 to determine statistical significance. The analysis of the time main effect helped determine if there was a significant change over time across the repeated measurements of distress.

Threats to Validity

External validity is the extent that the results of the study can be generalized beyond the study sample. A possible threat to external validity in this study may have resulted from selection bias (see Harris et al., 2008). Individuals voluntarily participated in the original study and, ultimately, the intervention. Therefore, individuals who chose to participate in the study may have differed in important ways from individuals who did not choose to participate, thereby making generalizations to the wider population difficult. Another potential threat to external validity was construct validity. Distress is a broad term/idea and can encompass a magnitude of problems, as indicated by its definition in Chapter 1. For the purposes of this study, the term/topic has been narrowed to focus of two specific symptoms of distress: depression and stress. Due to this narrowing, generalizations from results were confined by the operational definition provided for the study.

Internal validity is the extent to which the study findings are attributable to the independent variable. One possible threat to internal validity in this study was the potential for testing effects. Researchers in the social sciences have documented that repeated measurements can create a reactive effect, whereby the testing process itself leads to a change in behavior rather than serving as a record of behavioral changes (Harris et al., 2008). Because of the chosen research design, which included multiple follow-ups, there was a chance that pretesting may have affected postintervention measurements. Maturation was another potential threat to internal validity. Participants in the original study were required to be posttreatment for inclusion in the study, which lasted several months. This time frame offered the opportunity for natural changes in the studied symptoms. Finally, there was also a risk of interactive effects (Harris et al., 2008). While participants were required to be done with cancer treatments, inclusion and exclusion criteria did not limit their participation in other interventions, such as exercise, support groups, or nutritional programs that may account for observed effects during the study.

Finally, statistical conclusion validity is the extent that the results of the statistical analysis can be interpreted accurately (Garcia-Perez, 2012). To ensure statistical conclusion validity, I conducted a power analysis to determine the sample size required for the analysis. Additionally, I tested the statistical assumptions of the analysis prior to interpreting the results.

Ethical Procedures

Before I obtained any data, I obtained approval of the study procedures from the university’s Institutional Review Board. All participants in the original study read and agreed to an informed consent form before any data were collected. All data were kept, and remain, confidential and secure. I kept pencil and paper data in a locked room, and I stored electronic data on a password-protected computer kept in a locked room. I will keep data secure for 5 years after the conclusion of the study, after which time I will shred all paper data and securely erase all electronic data.

Summary

This chapter included an outline of the research design and the methodological issues of this study. I selected a quantitative experimental design involving analysis of secondary data for this study. Specifically, I used the CES-D 10 and PSS to measure distress symptoms among female breast cancer patients over a period of 3 months following either MBI or no intervention. I analyzed the data using a repeated measures ANOVA. In Chapter 4, I present the results of the data analysis I conducted to address the research questions.

Chapter 4: Results

Breast cancer is the most frequently diagnosed cancer and ranked the most common cause of death in women throughout the world (Zhang et al., 2016). Although the prevalence of breast cancer is high, there is evidence that survival rates for breast cancer may be increasing. The 5-year survival rate for women diagnosed with breast cancer at all stages has reached 85% (Zhang et al., 2016). The shift in survival rate has increased the number of women dealing with the aftermath of the disease. As more women survive breast cancer, more psychosocial interventions are needed to prepare patients to confront the long-term effects of the disease (Würtzen et al., 2013). In this study, I sought to add to the body of existing knowledge by examining the sustained effects of MBI on distress symptoms among female breast cancer patients at Stages 0–III, as defined by the AJCC, over a period of 3 months.

In this chapter, I present descriptive statistics of the sample and results of the data analyses addressing the research questions of the study. The research questions were:

RQ1: What is the effect of MBI on depression among women with breast cancer at different time points following treatment?

H_a1: $\mu1 \neq \mu2 \neq \mu3$ There will be differences in depression scores between baseline and follow-up measures among patients who receive MBI.

H_01: $\mu1 = \mu2 = \mu3$ There will be no differences in depression scores between baseline and follow-up measures among patients who receive MBI.

RQ2: What is the effect of MBI on stress among women with breast cancer at different time points following treatment?

H_a2: $\mu1 \neq \mu2 \neq \mu3$ There will be differences in stress scores between baseline and follow-up measures among patients who receive MBI.

H_02: $\mu1 = \mu2 = \mu3$ There will be no differences in stress scores between baseline and follow-up measures among patients who receive MBI.

Data Collection

Description of the Sample

Researchers at the Cancer Institute originally collected the primary data in 2015–2016 for an RCT that examined how depression and stress impacted sleep patterns of breast cancer patients. The sample was pulled from cancer patients being treated in the Upstate of South Carolina. The Upstate region of South Carolina includes Abbeville, Anderson, Cherokee, Greenville, Greenwood, Laurens, McCormick, Oconee, Pickens, Spartanburg, and Union Counties. The raw archival data set included data from 38 participants. I cleaned and processed the data to remove and separate all males and participants under 18 years of age. After screening the data eligibility, I removed data from 10 participants, so 28 data entries remained. I examined depression and stress measures for missing data at each time point and used mean imputations to replace missing values for those participants missing data points for the depression and stress measures. Preliminary data analyses were conducted to determine whether the data set met the assumptions (i.e., normality, sphericity, and homoscedasticity). I calculated summary statistics for each variable and conducted repeated measures ANOVAs to answer the research questions and hypotheses.

Descriptive Statistics

There were equal numbers of participants in the control (*n* = 14, 50%) and intervention groups (*n* = 14, 50%). All participants were women (*n* = 28, 100%). The majority of participants identified as White (*n* = 25, 89%). Most participants were married (*n* = 20, 71%), and the most common level of education was a master's degree (*n* = 11, 39%). Frequencies and percentages are presented in Table 1.

The mean age for the sample was 61.46 (*SD* = 11.07) years. I also calculated means for the three depression and stress measures for the control and intervention groups. The means are presented in Figures 2 and 3.

I examined univariate outliers for baseline depression score, baseline stress score, postintervention depression score, postintervention stress score, 3-month depression score, and 3-month stress score. Outlier was defined as any value that fell outside the range of +/- 3.29 standard deviations from the mean (see Tabachnick & Fidell, 2013). There were no outliers present in any of the variables.

Before running statistical analyses, I conducted a Levene's test for measurement points, baseline depression score, baseline stress score, postintervention depression score, postintervention stress score, 3-month depression score, and 3-month stress score by group (i.e., control versus intervention). The results of the Levene's tests were not significant (all *p* values > .05), indicating that variance was not different between the two groups on any of the measurements. I conducted a Shapiro-Wilk test to determine whether the model residuals could have been produced by a normal distribution (Razali & Wah, 2011). The results of the Shapiro-Wilk test were not significant for stress but were significant for depression, $W = 0.96$, $p = .017$. This result suggests the residuals of the model for depression are unlikely to have been produced by a normal distribution. I assessed the assumption of normality by plotting the quantiles of the model residuals against the quantiles of a chi-square distribution, also called a Q-Q scatterplot (see DeCarlo, 1997). Examination of the Q-Q scatterplots showed that the assumption of normality was met. Finally, I tested the assumption of sphericity using Mauchly's test (see Field, 2013; Mauchly, 1940). The results of the Mauchly's tests showed that the variances of difference scores between repeated measurements were all similar (all p values > .05), indicating the sphericity assumption was met.

Table 1

Frequency Table for Nominal Variables

Variable	*n*	%
Group		
Control	14	50.00
Intervention	14	50.00
Race		
White	25	89.29
Black	3	10.71
Marital Status		
Married	20	71.43
Single	2	7.14
Divorced	2	7.14
Separated	1	3.57
Widowed	3	10.71
Education Level		
Less high school diploma	1	3.57
High school/GED	2	7.14
Associates degree	5	17.86
Bachelor's degree	4	14.29
Master's degree	11	39.29
Doctorate degree	4	14.29
Professional degree	1	3.57
Employment Status		
Refused	1	3.57
Working full-time	3	10.71
Homemaker	4	14.29
Working part-time	5	17.86
Disabled	3	10.71
Unemployed	1	3.57
Other	11	39.29

Note. Due to rounding errors, percentages may not equal 100%.

Figure 2

Mean Depression Scores for the Control and Intervention Groups at Baseline, Postintervention, and 3-Month Measurements

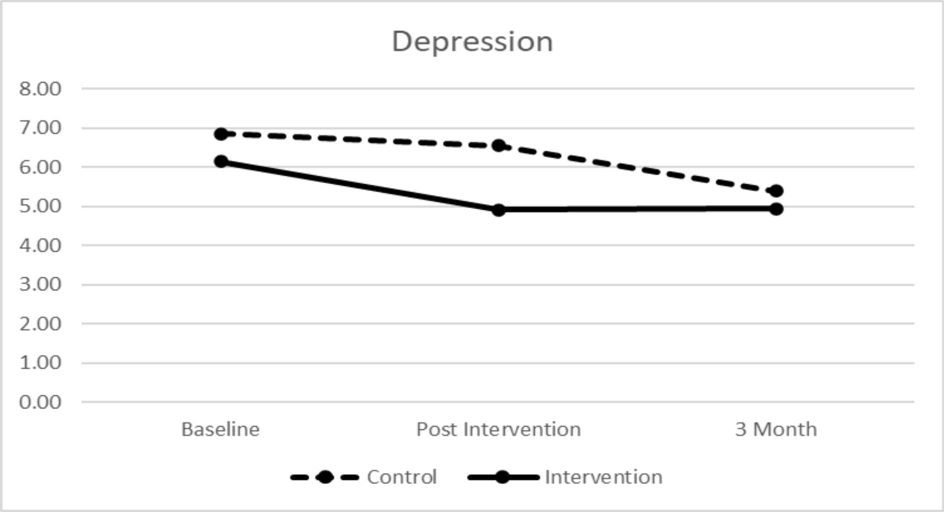
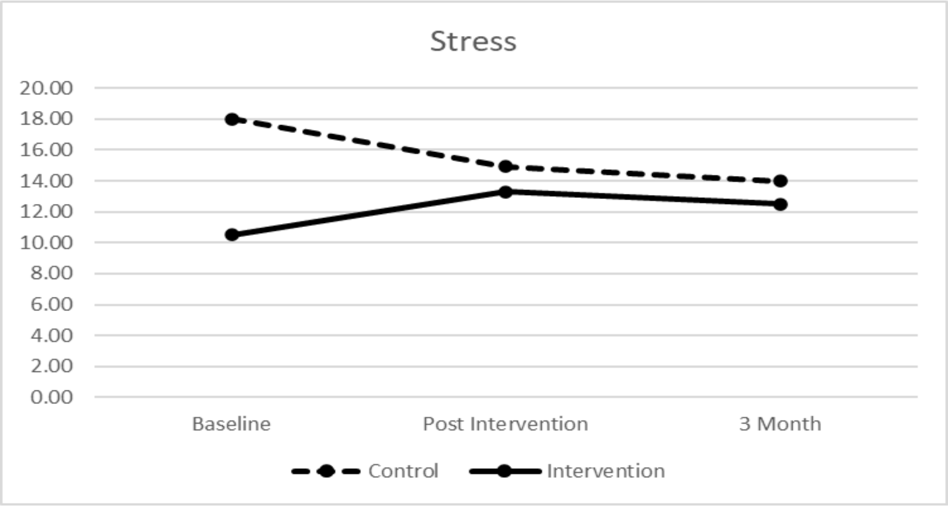


Figure 3

Mean Stress Scores for the Control and Intervention Groups at Baseline, Postintervention, and 3-Month Measurements



Results

RQ1 addressed the impact of a MBI on depression at different posttreatment time points in the indicated population as measured by the CESD-10 for depression. The results of a repeated measures ANOVA indicated that participants in the intervention group did not show a significant reduction in depression levels following intervention (see Table 2). Thus, for the first research question, I failed to reject the null hypothesis was accepted. To further explicate, these results indicate that there was no significant different in depression between baseline and the first follow-up (i.e., immediate treatment effect). There was also no significant different in depression scores between the end of treatment and the 3-month follow up (i.e., persistent treatment effects).

Table 2

Repeated Measures ANOVA Results for CESD Intervention Group

Source	*df*	*SS*	*MS*	*F*	*p*	$\eta_p 2$
Within-subjects						
Within factor	2	13.85	6.93	1.44	.255	0.10
Residuals	26	125.04	4.81			

I conducted another repeated measures ANOVA to compare the depression levels across time points for the control group. The results of the repeated measures ANOVA indicated that participants in the control group did not show a significant reduction in depression levels immediately following intervention (see Table 3).

Table 3

Repeated Measures ANOVA Results for CESD Control Group

Source	*df*	*SS*	*MS*	*F*	*p*	$\eta_p 2$

Within-subjects						
Within factor	2	16.71	8.36	0.84	.443	0.06
Residuals	26	258.52	9.94			

RQ2 addressed the impact of intervention on stress at different posttreatment time points in the indicated population as measured by the PSS. The results of a repeated measures ANOVA indicated that participants in the intervention group did not show a significant reduction in stress levels immediately following intervention (see Table 4). The null hypothesis failed to be rejected because a significant change was not seen. To further explicate, these results indicate that there was no significant difference in the stress between baseline and the first follow-up (i.e., immediate treatment effect). There was also no significant difference in stress scores between the end of treatment and the 3-month follow up (i.e., persistent treatment effect).

Table 4

Repeated Measures ANOVA Results for PSS Intervention Group

Source	*df*	*SS*	*MS*	*F*	*p*	η_p^2
Within-subjects						
Within factor	2	58.24	29.12	0.88	.425	0.06
Residuals	26	855.55	32.91			

Another repeated measures ANOVA was conducted to compare the stress levels across time points for the control group. The results of the repeated measures ANOVA indicated that participants in the control group in the original study did not show a significant reduction in stress levels immediately following intervention (see Table 5).

Table 5

Repeated Measures ANOVA Results for PSS Control Group

Source	*df*	*SS*	*MS*	*F*	*p*	η_p^2
Within-subjects						
Within factor	2	123.38	61.69	2.28	.123	0.15
Residuals	26	704.10	27.08			

The biggest changes over time appeared to be in the control group rather than the intervention group. Descriptively, mean stress scores in the control group were 3 points lower at Time 2 compared to Time 1, and 4 points lower at Time 3 compared to Time 1 (see Table 6). Descriptively, the intervention group showed an increase in mean stress scores between Time 1 and Time 2 and between Time 1 and Time 3 (see Table 6).

Table 6

The Marginal Mean Contrasts for Stress in Each Combination of Within-Subject Variables for the Control and Intervention Groups

Contrast	Difference	*SE*	*t*	*p*
Control				
Baseline stress score – Postintervention stress score	3.06	1.79	1.71	.219
Baseline stress score – 3-Month stress score	4.02	2.26	1.78	.197
Postintervention stress score – 3-Month stress score	0.95	2.13	0.45	.896
Intervention				
Baseline stress score – Postintervention stress score	-2.79	1.79	-1.56	.279
Baseline stress score – 3-Month stress score	-2.02	2.26	-0.89	.649
Postintervention stress score – 3-Month stress score	0.78	2.13	0.36	.930

The biggest changes over time appeared to be in the control group rather than the intervention group. Descriptively, mean depression scores in the control group were 1.5 points lower at Time 2 compared to Time 1, and 1 point lower at Time 3 compared to Time 1 (see Table 7). Overall, the intervention group showed little difference in mean depression scores between Time 1 and Time 2 and an increase between Time 1 and Time 3 (see Table 7).

Table 7

The Marginal Means Contrasts for Depression in each Combination of Within-Subject Variables for the Mixed Model ANOVA

Contrast	Difference	*SE*	*df*	*t*	*p*
Intervent|control					
CESD1 - CESD2	0.30	0.98	26	0.31	.948
CESD1 - CESD3	1.46	0.90	26	1.63	.250
CESD2 - CESD3	1.16	1.18	26	0.98	.594
Intervent|intervention					
CESD1 - CESD2	1.23	0.98	26	1.26	.433
CESD1 - CESD3	1.20	0.90	26	1.34	.386
CESD2 - CESD3	-0.03	1.18	26	-0.03	1.000

Note. Tukey Comparisons were used to test the differences in estimated marginal means.

Summary

Findings from this study indicated the null hypotheses for RQ1 and RQ2 failed to be rejected, supporting the overall claim that there was not a significant change in depression or stress immediately following intervention. There were also no changes in levels of depression over time points, indicating intervention impacts were not sustainable, and finally, stress levels were not impacted by the intervention.

Chapter 5: Discussion, Conclusions, and Recommendations

Breast cancer research has largely focused on the impact of mental health interventions on the psychological distress experienced after a diagnosis and treatment of breast cancer. However, there have been considerably less contributions to the area of sustained intervention outcomes for those with breast cancer diagnoses. The purpose of this quantitative experimental study was to explore the magnitude and prevalence of distress symptoms among female breast cancer patients and help identify best social work practices for treating distress symptoms in cancer patients. Specifically, I investigated the sustained effects of MBIs on distress symptoms experienced by female breast cancer patients. This research study was designed to address the following research questions:

RQ1: What is the effect of MBI on depression among women with breast cancer at different time points following treatment?

RQ2: What is the effect of MBI on stress among women with breast cancer at different time points following treatment?

To answer the aforementioned research questions, I conducted a secondary data analysis on data from a 2015-2016 RCT that examined how depression and stress impacted sleep patterns among breast cancer patients. Data used for this study was exclusively from female breast cancer patients ages 18-60 with a confirmed diagnosis of breast cancer in Stages 0–III. Key findings for this study indicated that: (a) neither participants in the intervention group nor the control group showed a significant reduction in depression levels immediately following intervention, (b) neither participants in the intervention group nor the control group showed a significant reduction in stress levels immediately following intervention, (c) there were no significant sustained changes for depression between time points for the intervention participants or the control participants, and (d) there were no significant sustained changes for stress levels between time points for the intervention participants or the control participants. Thus, the null hypothesis failed to be rejected for both research questions. It should be noted, however, that the biggest changes over time appeared to be in the control group rather than the intervention group because descriptive statistics indicated that the control group showed mean stress scores 3 points lower immediately following the intervention and 4 points lower from baseline to 3-month follow up, suggesting a possible maturation effect. In contrast, the intervention group showed increases in stress scores at these time points.

This chapter includes a discussion of major findings as related to the literature on female breast cancer patients; sustained interventions for distress symptoms; and what implications may be valuable for practices of physicians, specifically oncologists, and mental health clinicians, specifically oncology social workers. Also included is a discussion on connections between this study and social cognitive theories and workplace policies. The chapter concludes with a discussion of the limitations of the study, recommendations for future research, and a brief integrative summary.

Interpretation of the Findings

While findings of this study suggest that MBI is, perhaps, not the best practice to address distress among women with breast cancer, particularly with regard to long-term stress and depression, the findings offer insight to important factors regarding intervention following a breast cancer diagnosis; variations of MBI; and, ultimately, populations impacted by the aforementioned. Major findings are described in detail in the following subsections.

The Effect of MBI on Depression Immediately Following Treatment

This study's conclusion that participants who received MBI did not show significant reduction in depression levels immediately following intervention conflicts with the historical literature that indicates that MBIs are effective in treating oncology patients for symptoms of depression and anxiety (Carlson, 2016; Piet el al., 2012; Rouleau et al., 2015). More specifically, previous researchers asserted a positive effect of MBI in reducing anxiety and depression in breast cancer patients (Zhang et al., 2015). Explanations for the nonsignificant results could include length of intervention period, sample makeup, and sample size. For instance, though previous research indicated a need for consideration of shorter versions of MBIs, it is reasonable to assume that an intervention that is shorter may have less significant outcomes than longer interventions. In the current research study, a 5-week intervention period was implemented in contrast to the more common 8–10-week intervention period under which successful treatment outcomes have been found. Additionally, both the sample makeup, recruitment (i.e., diversity), and size may have skewed the data, offering a distorted view of participant outcomes. However, since previous literature has called for additional studies using different variations of mindfulness interventions (Carlson, 2016), to determine sustainable effects of MBIs on distress in cancer patients and whether previous findings of reductions in distress are attributable to the intervention (Rouleau et al., 2015), the current study offers valuable contributions to the scholarly discussion of MBIs' effectiveness on distress (i.e., depression and stress) related to breast cancer diagnoses. Findings suggest that additional efforts should be made to explore and compare how variations of mindfulness interventions (e.g., length of treatment, mobile-supported applications, online adaptions, etc.) similar to the one used in the current study are associated with distress outcomes (i.e., depression and stress) in breast cancer patients and their effects on sustained outcomes following intervention.

The Effect of MBI on Stress Immediately Following Treatment

In addition to lack of significant reduction in depression, study participants who received MBI also did not show a significant reduction in stress levels immediately following intervention. Carlson (2016) made reference to mindfulness interventions being proven effective in helping individuals to address uncontrollable, unpredictable, and emotionally charged life events. Additionally, several other studies indicated the positive effects of MBI on anxiety- and/or stress-related symptoms following MBI treatment (Baniasadi & Jamshidifar, 2014; Dobos et al., 2015; Kenne Sarenmalm et al., 2017; Piet et al., 2012; Rouleau et al. 2015; Zhang et al., 2015). It is likely that in the case of stress outcomes immediately following treatment, explanations similar to that of the nonsignificant depression results can be applied. These suspected explanations include length of intervention period, sample makeup/recruitment, and sample size.

This study's conclusion emphasizes the importance of determining if the effects of MBIs on distress symptoms like depression and anxiety are entirely attributed to the intervention, which aligns with the concerns of Rouleau et al. (2015) whose descriptive review of literature questioned whether results of previous studies were attributable to the intervention (i.e., MBIs) and called for more pre- and poststudy research designs. One of the noticeable differences in the results of this study, as compared to existing studies, was the pre- and poststudy design. The emphasis on pre- and poststudy results helps to capture more nuanced results on the topic in comparison to previous studies that were difficult to analyze due to lower quality research designs (see Zhang et al., 2016).

The Persistent Effect of MBI on Depression 3 Months Following Treatment

Existing literature related to MBIs has yet to answer to what extent MBIs produced long-term effects, and thus, many researchers have called for newer studies to address the issue of the persistent effect of MBI following treatment (Rouleau et al., 2015; Zhang et al., 2016). The current study findings indicated that there were no significant, persistent effects of MBI on depression between the intervention and follow-up time points for the intervention participants. Explanations for nonsignificant results could include high attrition rates, small sample size, length of intervention period, and/or a need for intervention maintenance following the end of treatment. More specifically, MBIs have been associated with high attrition rates leading to a lack of long-term follow up for some participants. In the current study, this may have contributed to the small sample size for the secondary data analysis. It is also plausible that either a longer intervention period is needed to sustain effects of MBIs or that continued use of MBIs is necessary to maintain benefits. Since previous literature on the persistent effects of MBI on depression is limited, the current study findings represent foundational insights on the topic from which future research studies can build upon. Despite there being limited research to confirm, disconfirm, and/or extend the knowledge that emerged from this study, the findings are aligned with Zhang et al.'s (2015) prediction that MBI outcomes may not persist long term among cancer patients.

The Persistent Effect of MBI on Stress 3 Months Following Treatment

Research findings indicated that there were no significant, persistent effects of MBI on stress between intervention and follow-up time points for the intervention participants. While existing literature boasts extensive support of MBIs on reduction of anxiety- and stress-related symptoms immediately following treatment (Baniasadi & Jamshidifar, 2014; Dobos, et al., 2015; Kenne Sarenmalm et al., 2017; Lengacher et al., 2014; Piet et al., 2012; Zhang et al., 2015), research is more limited in the area of long-term effects of MBIs on stress outcomes similar to that of depression outcomes. It is likely that in the case of stress outcomes 3 months following treatment, explanations similar to that of the nonsignificant results regarding depression 3 months following treatment can be applied. These suspected explanations included high attrition rates contributing to small sample size, length of intervention period, and/or a need for intervention maintenance following the end of treatment. Because of the limited information in the existing body on knowledge on the persistent effects of MBI, it is reasonable to suggest that long-term effects of MBIs on anxiety- and stress-related symptoms have yet to be achieved and this area of knowledge needs further research to determine if this is a possibility, perhaps with changes to types of MBIs administered. What remains unclear is whether these changes will be effective for oncology, specifically breast cancer, patients. As previous research asserted that elevated distress symptoms in cancer patients may have negative effects on the outcomes of cancer therapies (Zabora et al. 2001), it is crucial that further research be conducted to clarify.

Limitations of the Study

Some limitations for this study should be noted. First, despite the original study using valid and reliable measures (i.e., PSS and CES-D 10) for depression and stress outcomes, these self-report measures are vulnerable to many biases (e.g., social desirability bias) that may affect the reliability of the data participants provided.

Second, there were some threats to external and internal validity within the study. For example, individuals voluntarily participated in the study (i.e., purposive sample), which was only advertised within the Cancer Institute resulting in vulnerability to selection bias, making generalizations to the wider population more difficult. Participants in the original study were also paid $50 at the beginning of the study as well as at each follow-up assessment, resulting in $150 total for participation in the study. Though financial incentives are frequently used to encourage research participation, it has been argued that this method can be coercive, particularly for people with limited financial resources. It can also be argued that cancer patients are at higher risk for financial burden due to costs associated with cancer treatments and, thus, more likely to be enticed by the financial reward of this research study. This contributes to selection biases and could have skewed the research findings. Additionally, the term distress was operationally defined as depression and stress as measured by the PSS and CES-D-10, which limited generalizability of the results to this definition provided within the study.

This study was also vulnerable to testing and maturation effects due to multiple measurement points (including pretesting and follow ups), threatening internal validity. The risk of interactive effects were also moderately high in this study because the inclusion and exclusion criteria did not limit participants' participation in other interventions, such as exercise, support groups, or nutritional programs, that may have had effects on the participants during the study.

Finally, despite an initially diverse sample in the original study, the sample for the secondary analysis after inclusion and exclusion criteria were applied was significantly less diverse. This demographic makeup limits generalization of findings to populations of other ethnic backgrounds.

Recommendations

Given the findings of this research study, there are several areas for future research on the effects of MBIs on depression and stress outcomes in breast cancer patients that could build on the findings of this study. Next steps for research should include exploring comparisons of effectiveness between variations of MBIs across variables, such as length of treatment and treatment modality (e.g., in person, online, application based, etc.). For example, it was previously mentioned that while there was a solid rationale to support the use of a short-term MBI for this study, based on previous studies' recommendations for adaptive, shorter versions of MBIs to improve participant recruitment, intervention adherence, and lower the historically high attrition rates associated with MBIs resulting in lack of long-term follow up (Carlson, 2016; Eyles et al., 2015; Rouleau et al., 2015), this study may have benefited from a longer intervention period. As previously indicated, the intervention selected for the present study was shorter than typical MBI programs, lasting only 5 weeks instead of the traditional 8-10-week protocol. However, previous studies with favorable results of MBIs on the effects of depression and anxiety used lengths of intervention that ranged from 6-11 weeks (Dobos et al., 2015; Kenne Sarenmalm et al., 2017; Lengacher et al., 2014; Zhang et al., 2015), suggesting that a longer intervention period may have had a more significant effect on research participants' outcomes. Previous research also indicated that there are only a small number of high-quality studies on this topic (Zhang et al., 2016). Thus, I also recommend conducting a national, follow-up study with a larger and more diverse sample. Using a larger and more diverse population within this topic of research would increase the rigor and/or quality of the research, help to improve the generalizability of participant outcomes related to MBIs, and determine if there are large differences within and between groups of participants.

Longer-term recommendations for further research should involve (a) developing and piloting various MBIs appropriate for breast cancer treatment to test their levels of effectiveness with breast cancer patients; (b) using previous research findings to standardize an MBI variation model, likely the one with the highest effectiveness rates, for use with breast cancer patients across various cancer treatment facilities, which could then be integrated into a training program specifically designed for clinical professionals involved in breast cancer treatment (e.g., social workers, psychologists) who may not have received the specific training during their educational studies or professional development trainings; (c) policy development that provides greater access to the interventions and related resources in underserved populations; and (4) exploring differences across allied helping professions in breast cancer treatments (e.g., nurses, psychologists, and social workers) to compare allied professions' orientation with this area of research focus, which could provide more nuanced information from collateral sources on perceptions of participant outcomes from the perspective of various professions.

Implications

The prevalence of breast cancer in women worldwide and its association with heightened depression and stress warrants urgency in developing and identifying effective interventions for reducing distress symptoms and sustaining positive outcomes. The current study makes an initial attempt to identify best social work practices for treating distress symptoms in female breast cancer patients. While the results of this study did not support the effectiveness of MBIs in significantly reducing depression and stress in female breast cancer patients or sustaining any reductions in symptoms, the study helps to identify future directions for research that could potentially transform social work practices for treating distress symptoms in cancer patients at the micro, mezzo, and macro levels. For example, the current study highlights a need to further explore length of intervention period, treatment modalities (e.g., online, in-person, application based), and more rigorous sampling methods to explore effectiveness of MBIs. The findings of this future research could lead to many positive changes at the micro, mezzo, and macro levels within the area of mental health interventions for the psychological distress experienced after a diagnosis and treatment of breast cancer. Positive changes could include reduction in depression and stress symptoms for individuals after experiencing a breast cancer diagnosis and/or treatment (i.e., micro), improved interpersonal relationships for patients (e.g., family, social support; i.e., micro), expansion and development of group- and community-based mental health interventions (i.e., mezzo), development of training programs for clinical professionals (i.e., mezzo), and hospital and medical policy development that provides wider access to effective interventions in cancer populations (i.e., macro). Additional implications for the current study are discussed in the following subsections.

Implication for Theory and Research

Chapter 2 included a description of the social cognitive model of restorative well-being because it focuses on the emotional and psychological well-being of individuals who experience emotional setbacks due to disease or trauma. This model is helpful in the conceptualization of how individuals recover their sense of well-being after said emotional setbacks (Hoffman et al., 2013; Lent, 2007). It operates under the premise that individuals learn by observing others and subsequently forming beliefs based on what they observed (Lent, 2007). The social cognitive model of restorative well-being can help in understanding how individuals cope with traumatic experiences and chronic illness like cancer (Benight & Bandura, 2004; Hoffman et al., 2013; Lent, 2004).

In this study, participants were narrowed down to those with Stages 0-III breast cancer diagnoses. Based on their diagnoses and pre test scores, it can be argued that many of the research participants were experiencing a significant amount of stress making the implementation of the social cognitive model of restorative well-being perfectly aligned for this research. The complexities of a cancer diagnosis and the capacity to contextualize the experience are important factors addressed by restorative well-being. Rather than rely solely on their own ability to make sense of such a traumatic experience, which can be made considerably more difficult by the accompaniment of such significant levels of stress, individuals are offered new ways of understanding and experiencing that trauma. Thus, the theoretical concepts provided by this framework for restorative well-being can give insight into an individual's levels of resilience, self-efficacy, modeling, and coping mechanisms as well as aid social workers in delivering interventions such as MBIs more effectively. The use of this theoretical lens in social work practice with cancer patients could potentially result in improvement of patient outcomes, both emotionally and physically, and reinforce use of the social cognitive model of restorative well-being and thus, increasing the likelihood of appropriate intervention facilitation among social workers and other mental health professionals in this area of practice. Evaluation of practice (i.e., measure the impact against standardized measures) would be beneficial to determine individual outcomes in these scenarios.

Implications for Practice

Considering the prevalence of breast cancer in women, social workers can provide invaluable assistance to physicians, nurses, and families through clinical and organizational practice approaches as well as provide guidance for community support services. Oncology social work services during times of crisis can offer unique, evidence-based perspectives that help cancer patients work through distress symptoms, learn new coping skills, and provide support of each other. Oncology social workers are positioned to provide leadership and support in implementing interventions like MBIs that will support physicians, nurses, and that will ultimately meet the various emotional needs of patients, and thus, likely helping to reduce distress symptoms that patients often display following diagnosis and treatment. Social workers may also help in support family members and loved ones of patients diagnosed with cancer in their own processing and healing. These roles are necessary in the overall care of an individual diagnosed with cancer in that it increases the emotional and behavioral well-being of patients. This is especially important because being diagnosed with a chronic illness can be identified as a traumatic event, and traditional techniques and interventions, even when skillfully implemented, are less effective when trauma is involved (Siegel, 2015).

Managing distress symptoms following a diagnosis and/or treatment of breast cancer may be facilitated by implementing MBIs because research indicates that distress symptoms after a cancer diagnosis is often associated with anxiety, which has responded positively to MBIs (Carlson, 2016; Dobos et al., 2015). This conceptualization makes it easier to recognize a need for MBIs to address distress symptoms related to cancer treatments. Oncology social workers are central to this because they are one of the few team members that could potentially interact and/or intervene with patients, family members, physicians, nurses, medical staff, hospital policymakers, and service providers in the community. These micro, mezzo, and macro practice skills provide the scope of care needed following the diagnosis of breast cancer. Thus, the social worker may assume many roles such as an educator, advocate, mediator, therapist, and lobbyist.

Recommendations for practice as it relates to MBIs and cancer treatment include regular, comprehensive screening for psychosocial distress in breast cancer patients, follow-up assessment and evaluation of screening results using the social cognitive model of restorative well-being, further development and future use of evidence-based versions of MBIs, and evaluation of practice outcomes. It is also recommended that these steps be completed using an interdisciplinary team model during screening and evaluation periods for psychosocial distress in patients. For example, trained staff members could administer regular screenings and ensure that a clinician or team of clinicians (e.g., social worker, nurse, psychologist, physician) reviews the screening results while a separate clinician or team of clinicians is responsible for follow-up assessments of distressed patients. Using this model offers a more comprehensive treatment approach.

Implications for Policy

The prevalence and impact of breast cancer has also increased discussion surrounding policy change nationally as well as locally for cancer treatment institutions. Policy changes in areas such as frequency of breast cancer screening, equitable access to affordable cancer treatments, funding for safe and effective cancer treatment and support therapies, and expedited development of survivorship plans have been suggested among researchers, policy makers, concerned stakeholders and various cancer advocacy organizations across the nation (Beard & Beard, 2016; CancerCare, 2021). Any changes to policy related to cancer diagnoses and treatment should attempt to intersect the social influences of cancer treatment in order to appropriately address the impact on patients, families, and their surrounding communities. The growing need for policy development in this area across the nation is clear as this affects individuals across all regions of the United States and many cancer institutions have differing policies related to cancer treatments. Some of these policies may benefit patients and others may pose significant barriers to treatment which often enhance psychosocial distress symptoms.

The current study highlights areas of concern that may be alleviated by further development of policies within cancer institutions and nationally to better meet the needs of cancer patients. For example, previous research suggests that more severe cancer diagnoses often lead to elevated distress symptoms due to increased mortality rates which may not respond well to interventions such as MBIs (Zabora et al., 2001). However, in addition to developing interventions that are effective for psychosocial distress related to more severe cancer diagnoses, it could also prove to be beneficial to develop and advocate for policies that minimizes these types of scenarios. Beard and Beard (2016) assert that early breast cancers go undetected due to mammography screening policies that prevent universal screening in women under age 50. Thus, undetected breast cancers continue to develop in severity until screened for, at which time the cancer may have reached a more advanced stage and psychosocial distress is more likely. Although cancer research has made tremendous strides in managing scenarios like this, the underlying issue points to larger policy issues such as lack of universal screening for breast cancer in younger women. Implications suggest that if this policy were amended to include women even just 5 to ten years younger than 50, there would be less occurrences of early breast cancers would go undetected and reaching more advanced stages which would likely decrease severity of psychosocial distress.

Conclusion

The notion that MBIs are effective in reducing depression and stress levels in women diagnosed with breast cancer is generally rejected in this study, although there are previous studies that indicated otherwise. Across participants in this study, those that received MBI did not show any significant reductions in levels of depression or stress across time points (i.e., immediately after the intervention and 3 months after the intervention). Despite what appears to be consistent support in the existing body of literature for MBIs in reducing distress symptoms related to cancer diagnoses, the support is varied and the current study asserts that there is still work to do to help improve effectiveness rates, and sustained participant outcomes, particularly for those diagnosed with breast cancer. Furthermore, there is limited research that suggests there are consistent MBI models and interventions among treatments for distress symptoms. Findings of this study suggested that there are important factors related to MBIs that must be considered in future research including: (a) length of intervention period, (b) treatment modality, and (c) barriers to treatment intervention.

Despite the unfavorable findings for MBIs in the current study, it is still unclear if MBIs and their treatment of psychosocial distress in cancer patients can be effective due to the favorable findings of pervious research. Based on this knowledge, it appears that some variations of MBI are effective in treating psychosocial distress in cancer patients. Thus, follow-up studies to compare the effectiveness of variations of MBIs for treatment psychosocial distress in cancer patients are warranted. Additionally, follow-up studies would need to focus on populations with whom these treatments are most effective. The findings of said studies would have significant implications for oncology social work practice.

Overall, the implementation of MBIs for treatment of psychosocial distress in breast cancer patients has the potential to enhance quality of cancer care in various institutions. However, the results of this study suggest that there is still a long way to go in determining which variations of MBI are most effective and appropriate for breast cancer patients. If researchers continue to strategically explore and develop MBIs for distress related to cancer treatment, then these interventions are likely to benefit providers and patients alike. Ultimately, it is my hope that the future research developed in this area will provide opportunities to personalize psychosocial care of breast cancer patients. Implications for such an accomplishment could mean less suffering, increased satisfaction with care, and hopefully improved health outcomes.

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